1. GENERAL SPECIFICATION

1.1 The contractor shall provide an AlarmLine Linear Heat Detector for early detection of fire or overheat condition in protected areas or equipment. The AlarmLine Linear Heat Detector shall consist of AlarmLine Sensor Cable and AlarmLine FACP (Fire Alarm Control Panel) Interface Module. The sensor cable shall be an analog (integrating) type linear heat detector. The alarm temperature shall be programmed in the FACP Interface Module. The FACP Interface Module shall communicate alarm and trouble conditions to the Fire Alarm Control Panel.

1.2 The AlarmLine Linear Heat Detector must be manufactured and/or supplied by: Kidde Fire Systems, 400 Main Street, Ashland, MA 01721, U.S.A., phone: (508) 881-2000, URL: http://www.kiddefiresystems.com

1.3 The manufacturer shall warrant the AlarmLine Linear Heat Detector manufactured by it for a period of eighteen (18) months from the date of shipment.

1.4 The system shall be supplied and installed by a factory authorized Kidde Fire Systems distributor. The distributor shall be trained by the manufacturer to design, install, test and maintain the AlarmLine Linear Heat Detector and shall be able to produce a certificate stating such on request.

1.5 The factory authorized Kidde Fire Systems distributor shall confirm in writing that he stocks a full complement of spare parts and offers 24-hour emergency service for all equipment being furnished.

1.6 All materials and equipment used for this project shall be new and unused.

2. CODES/STANDARDS COMPLIANCE

2.1 The design, installation, testing and maintenance of the AlarmLine Linear Heat Detector shall be in accordance to the following codes, standards and regulatory bodies:

A. NFPA 70: National Electrical Code

B. NFPA 72: National Fire Alarm Code

C. Factory Mutual Approval Guide (latest edition).

D. Requirements of the local Authority Having Jurisdiction.

2.2 The AlarmLine Linear Heat Detector shall be Factory Mutual System (FM) approved.

2.3 The manufacturer of the AlarmLine Linear Heat Detector shall have a minimum of 15 years experience in the design, production and distribution of fire detection and fire alarm systems.

2.4 The manufacturer of the Fire Alarm-Suppression system shall be certified to ISO 9001 for a minimum period of 5 years for the design, production and distribution of fire detection and fire alarm systems.

3. SYSTEM DESCRIPTION

3.1 The Linear Heat Detector shall consist of an AlarmLine Sensor Cable and an AlarmLine FACP Interface Module. The Sensor Cable shall be connected to the AlarmLine FACP Interface Module that communicates through relays, alarm and trouble conditions to the fire alarm control panel. The Sensor Cable alarm temperature shall be field adjustable through the FACP Interface Module.

4. COMPONENTS – DESCRIPTION AND OPERATION

4.1 Linear Heat Detector Sensor Cable

A. The Linear Heat Detector Sensor Cable shall be an integrating or averaging type detector cable that detects a localized hot spot or a low-level temperature increase over its entire length. Fixed temperature sensor cable is not acceptable.

B. Changes in temperature shall produce a change in resistance between the Sensor Cable conductors. This resistance change shall be monitored by the FACP Interface Module to detect an alarm condition.

C. The Sensor Cable shall be capable of self-restoration when temperature drops below its set point, provided it has not been heated above the temperature point of 257° F (125° C).

D. The Sensor Cable shall consist of four 26AWG solid copper conductors each insulated with a negative temperature coefficient material. The conductors shall be twisted at a rate of approximately thirty turns per foot (90 per meter) to cancel out potential high voltage inductance. The conductor insulation shall be color coded for ease of installation. The sensor cable shall have an outer protective extrusion of high temperature PVC material.

E. [OPTIONAL FOR -016 SENSOR] The sensor cable shall have an additional outer extrusion of nylon as additional protection against harsh environments.

F. [OPTIONAL FOR -019 SENSOR] The sensor cable shall have an outer braid of Phosphor Bronze to increase its tensile strength and for protection against abrasion.

G. The Sensor Cable shall be approved for installation in classified hazardous areas when installed with an intrinsic safety barrier.

4.2 Linear Heat Detector FACP Interface Module

A. The FACP Interface Module shall monitor the resistance of the sensor cable for an

alarm condition.

B. The Sensor Cable alarm set point shall be set in the FACP Interface Module.

C. The FACP Interface Module shall be cable of monitoring up to 3,200 ft (1000 m) of Sensor Cable.

D. The FACP Interface Module shall be capable of monitoring the sensor cable for both open and short circuit conditions. Non-fire related short circuit conditions must not cause a false alarm condition.

E. The FACP Interface Module shall interface to any 24VDC fire alarm control panel.

F. The FACP Interface Module shall consist of the following:

1. Alarm and trouble relay contacts to connect to the fire alarm control panel detection input circuit.
2. Two (2) separate LED indicators for FIRE and FAULT.
3. Momentary test switch that tests alarm and trouble monitoring circuitry.

G. The FACP Interface Module shall be reset through the fire alarm control panel.

4.3 Intrinsic Safety Barrier

A. Intrinsic Safety Barriers must be used if the Sensor Cable is installed in the following hazardous classification areas:

4. Class I, Division 1, Groups A, B, C, D
5. Class II, Division 1, Groups E, F, G
6. Class III, Division 1

4.4 Mounting Hardware and Accessories

A. The Sensor Cable shall be supported at a minimum of ten-foot intervals on straight runs and more as conditions dictate at corners and transition points to provide suitable strain relief. The Sensor cable shall be attached to supports that allow minimal movement.

B. The Sensor Cable shall be installed with the following mounting hardware to insure proper support and adequate distance away from metal surfaces. All mounting hardware shall use a nylon cable clamp to fasten the Sensor Cable to the hardware.

7. Master Clamp
8. Flange Clip
9. Nylon Cable Tie

C. A Sensor Cable Heat Pad shall be used in critical areas where greater lengths of Sensor Cable need to be concentrated into a compact area. The Heat Pad shall also be used as a test point at the end of each Sensor Cable zone.

4.5 General Electrical Materials

A. All electrical enclosures, raceways, and conduits shall be provided and installed in accordance with applicable codes and intended use, and shall contain only those electrical circuits associated with the fire detection and control system. No circuit or circuits that are unrelated to the fire detection and control system shall be routed through the enclosures, raceways, and conduits dedicated to the fire detection and control system.

B. All conductors shall be enclosed in rigid or thin walled, steel conduit unless open wiring is permitted by the local electrical code.

C. Any conduit or raceway exposed to dampness or other similar conditions shall be properly sealed and installed to prevent moisture entrapment. Provisions for draining and drying shall be employed as required.

D. All wiring shall be of the proper size to conduct the circuit current, but shall not be smaller than #18 AWG unless permitted by the local electrical code. Wire that has scrapes, nicks, gouges, or crushed insulation shall not be used. The manufacturer's minimum wire-bending radii shall be observed in all enclosures, raceways, and conduits. Aluminum wire shall not be used.

E. Splicing of circuits shall be kept to a minimum, and is only permitted in an electrical box suitable for the purpose. Appropriate hardware shall be used to make the wire splices. Wires that are spliced together shall have the same color insulation.

F. White colored wire shall be used exclusively for the identification of the neutral conductor of an alternating-current circuit. Green colored wire shall be used exclusively for the identification of the earth-ground conductor of an AC or DC circuit.

G. Appropriate color-coding shall be utilized for all other field wiring.

H. All electrical circuits shall be numerically tagged with suitable markings at each terminal point. All circuits shall correspond with the installation drawings.

5. SUBMITTALS

5.1 The factory-authorized Kidde Fire Systems Distributor shall provide the following drawings and documentation, acceptable to the local AHJ, for approval prior to starting any work on the project:

A. Installation and Electrical layouts drawn to the scale depicting the locations and mounting details of the all equipment

B. Details of Auxiliary functions required such as equipment shutdown, door holders, etc.

C. The complete point-to-point conduit routing plan.

D. Internal Wiring Diagrams for the fire alarm control panel showing the power supply requirements and all field wire terminations.

E. Calculations performed in accordance with the Manufacturers recommendations to justify the capacities of all standby batteries used on the system.

F. A document detailing the sequence of system operations and outputs provided on the receipt of individual system activation inputs.

5.2 The contractor shall submit a test plan that describes how the system shall be tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be used. Tests shall not be scheduled or conducted until the engineer of record approves the test plan.

5.3 The contractor shall submit Ten (10) copies of shop drawings and product data sheets.

5.4 The contractor shall submit Five (5) copies of the AlarmLine Linear Heat Detector Design, Installation, Operation and Maintenance Manual after complete installation.

6. SYSTEM INSTALLATION, COMMISSIONING AND MAINTENANCE

6.1 The contractor shall install the system in accordance with the manufacturer's installation, operation and maintenance manual.

6.2 The contractor shall be certified and trained by the manufacturer on design, installation, operation and maintenance of the AlarmLine Linear Heat Detector. The certification must be valid throughout the completion time period for the project.

6.3 The contractor shall record all equipment, tests and system configurations in a format approved by the manufacturer and/or the local Authority Having Jurisdiction. A copy of the commissioning results shall be provided to the end-user.

6.4 The AlarmLine Linear Heat Detector shall be maintained as recommended by the manufacturer's Design, Installation, Operation and Maintenance Manual, the relevant NFPA Codes and the requirements of the local Authority Having Jurisdiction.