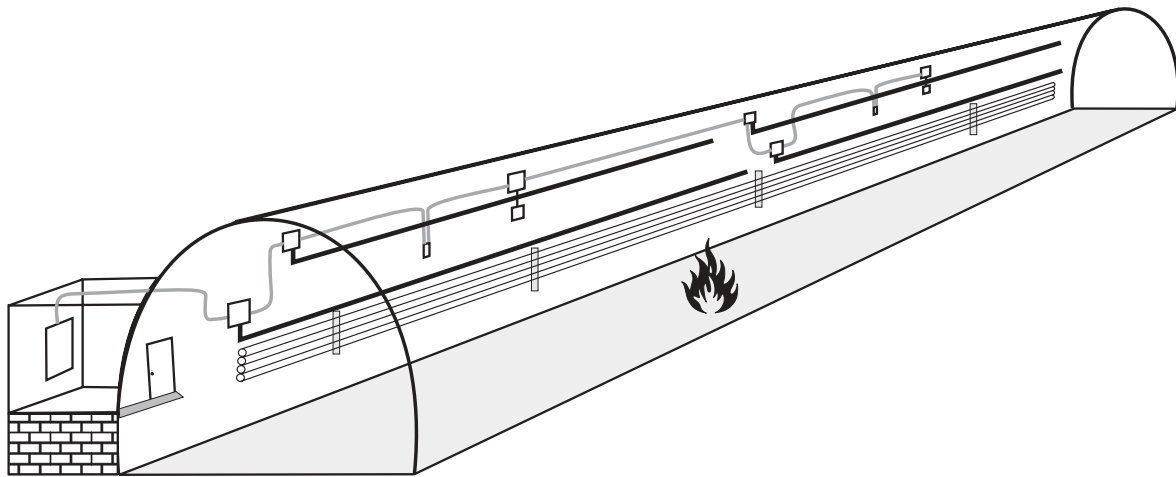


# Intelligent Linear Heat Detection Systems

Fire Alarm Zone Identification and Output Control



## INTRODUCTION

An Intelligent Linear Heat Detection System is recommended for applications where fire zone location requires zone output control for notification appliances, HVAC control, suppression control and annunciation. It is a preferred design method over traditional linear heat point locators and provides the added benefit of zone output control, text location indicator and installation cost savings.

An Intelligent Linear Heat Detection System consists of

- Discrete Addressable LHS™ Cable Zones: Initiating zones that activate programmed suppression and notification outputs.
- PEGAsys Intelligent Fire Alarm Panel: Microprocessor-based fire alarm/suppression control system.
- Output Modules: Modules available for audible/visual signals, municipal tie, suppression agent release and control relays.
- (Optional) Other Input Devices: Smoke detectors, waterflow switches, manual pull stations, etc.

Figure 1 illustrates an Intelligent Linear Heat Detection System in a tunnel application. The tunnel is divided into 30 foot fire zones. Each zone has a LHS cable zone, manual pull station, horn and strobe. A zone alarm initiates a shut down of air supply to reduce the spread of smoke and inhibit fire growth, activates the notification appliances and opens the water valves for pre-action sprinklers.

## ADDRESSABLE LHS ZONES

For many applications, local code requires location of initiating devices to be indicated by fire zone or other approved subdivision. Zoning cannot be accomplished with a point locator and single continuous run of linear heat detector. Each zone must report individual alarms to the panel for use in zone output control of signal notification and suppression.

Zoning is simple and easy with an Intelligent Linear Heat Detection System. Each zone is created with an Addressable Input Module (P/N 70-407008-001) interfaced with LHS Sensor cable. Up to 255 devices (any mix of devices including LHS zones, smoke detectors, manual pull stations, waterflow switches, etc.) can be connected to a single PEGAsys addressable loop.

## ZONING VERSUS POINT LOCATION

Traditional linear heat detector point locators display the alarm point location in feet or meters from the start of the linear heat detector zone to the heat actuated alarm point. This method requires proper calibration, accurate and available layout drawings to reliably find the location of the fire event. In fact, a point locator is actually designed for service and maintenance purposes, not fire location, to find the section of cable where a fire event or damage to the cable requires a new piece of cable to be spliced in. Actual fire event location requires **zone output control** capability where the fire alarm panel can initiate programmed notification or suppression response based on a zone alarm. Point locators are unable to translate an event location for use in an automatic fire alarm and suppression system.

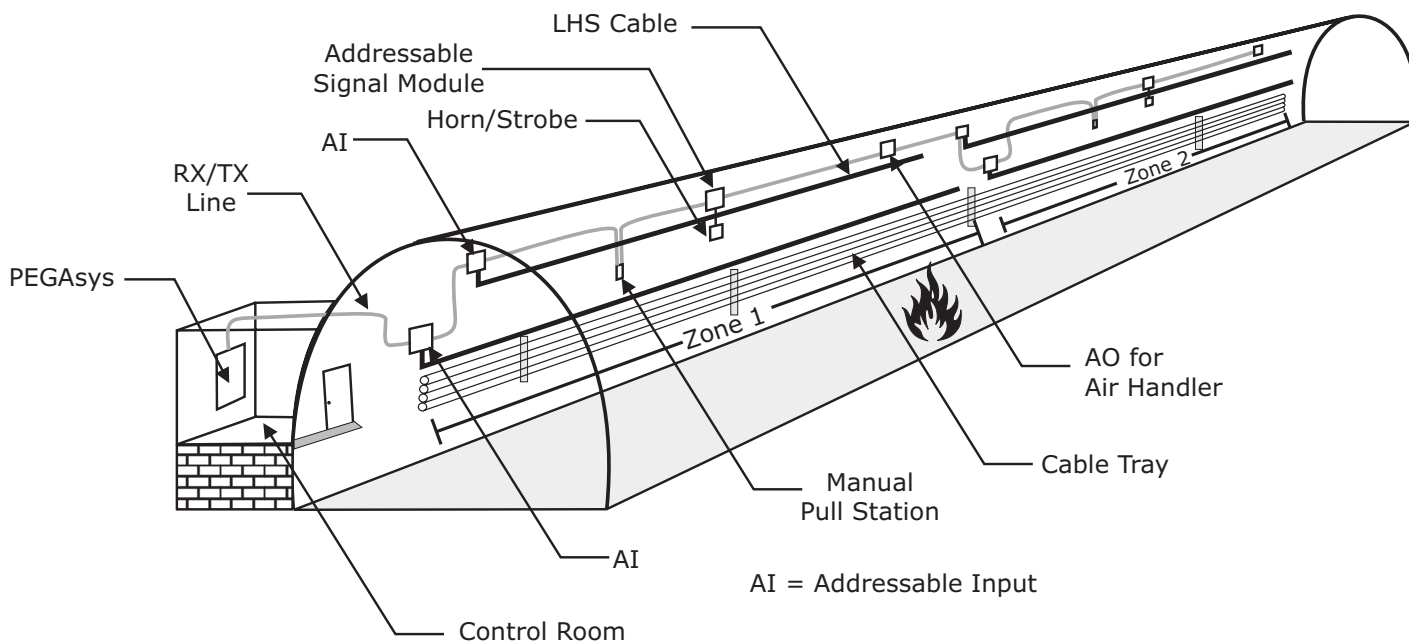


Figure 1. Tunnel Application

## ZONE OUTPUT CONTROL

The PEGAsys Intelligent Fire Alarm Control Panel is 100% field programmable through the proprietary Event Output Control (EOC) programming language.

EOC is a simple language that relates addressable input devices to addressable output devices or modules. Typical fire alarm system designs such as cross-zones, counting zones, time delays, etc. can be implemented through EOC.

Figure 2 illustrates sample EOC programming code for the tunnel example in Figure 1. Any zone alarm in the tunnel will activate the notification appliances and release water into the sprinkler system. If a fire is detected in any zone, the air supply is turned off in that zone only. (See Table 1 for address descriptions.)

```
(1001 # 1002) + 1005 = 1006, I001
(1003 # 1004) + 1008 = 1009, I002
I001 + I002 = MP01, 1007, 1010
```

Figure 2. Sample EOC Code

Table 1. Input/Output Addresses

| INPUT/OUTPUT ADDRESSES |                                   |
|------------------------|-----------------------------------|
| 1001                   | Zone 1 Tunnel Ceiling (LHS Cable) |
| 1002                   | Zone 1 Cable Tray (LHS Cable)     |
| 1005                   | Zone 1 Manual Release             |
| 1006                   | Zone 1 Air Handler                |
| 1007                   | Zone 1 ASM Zone 1                 |
| 1003                   | Zone 2 Tunnel Ceiling (LHS Cable) |
| 1004                   | Zone 2 Cable Tray (LHS Cable)     |
| 1008                   | Zone 2 Manual Release             |
| 1009                   | Zone 2 Air Handler                |
| 1010                   | Zone 2 ASM Zone 2                 |
| MP01                   | Pre-Action Valve Actuation        |
| I001                   | Identifier - Zone 1 Alarm         |
| I002                   | Identifier - Zone 2 Alarm         |

## TEXT ZONE LOCATION INDICATOR

The PEGAsys Configuration Software allows each addressable LHS zone to be assigned a descriptive, 80 character text location. (Figure 3) Text indication is an easier means of identifying the zone in alarm; traditional point location indicators display the alarm location in feet or meters from the start of the linear heat detector zone.

STEP 1: ASSIGN DESCRIPTION TO LHS FIRE ZONE



STEP 2: DOWNLOAD SYSTEM CONFIGURATION TO CCM.

STEP 3: FIRE ZONE ALARM LOCATION IS DISPLAYED AT PANEL.

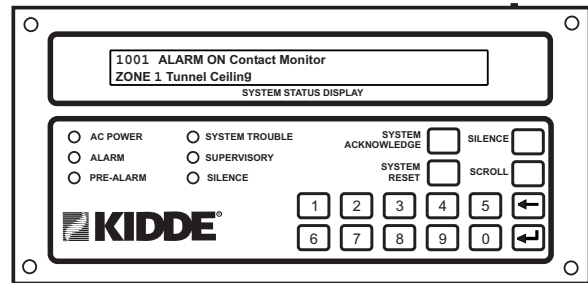


Figure 3. Zone Location

## INSTALLATION COST SAVINGS

Installing an Intelligent Linear Heat Detection System results in substantial installation cost savings over traditional hard wired linear heat detection systems. With conventional fire alarm panels, each initiating zone must be home run back to the fire alarm panel, thus increasing wiring requirements and installation time and cost. Conversely, an addressable system, such as the PEGAsys intelligent fire alarm system requires only a 2-wire loop to interface to all initiating devices, zones and output devices.

A Kidde Intelligent Linear Heat Detection system, designed with a PEGAsys fire alarm panel is a cost-effective, clean and simple fire alarm system design for typical large linear heat detection applications.

## ALARMLINE LINEAR HEAT DETECTOR SYSTEM

Intelligent Linear Heat Detection Systems can also be designed with the Kidde AlarmLine Linear Heat Detector. AlarmLine is recommended for linear heat detection applications that require the following:

- Programmable alarm threshold
- Pre-alarm level
- Short-circuit trouble discrimination
- Reset after overheat condition

Discrete addressable AlarmLine zones can be created with the Addressable AlarmLine Module (P/N 73-100001-001) and AlarmLine Linear Heat Detector Cable (P/N 73-117068 -013, -016, -019).

### ADDITIONAL INFORMATION

Additional information on the Intelligent Linear Heat Detection System components mentioned in this guide can be found at [www.kiddefiresystems.com](http://www.kiddefiresystems.com). Components include:

- LHS™ Sensor Cable
- PEGAsys™ Intelligent Suppression Control System (panel and modules)
- AlarmLine™ Linear Heat Detector
- Addressable AlarmLine Module



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These instructions do not purport to cover all the details or variations in the equipment described, nor do they provide for every possible contingency to be met in connection with installation, operation and maintenance. All specifications subject to change without notice. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to Kidde-Fenwal, Inc., Ashland,