

A complete fire detection solution.

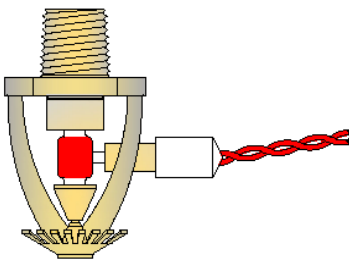
A cable tray fire, however small can cause extensive interruption and damage to building structures, processes and subsequent consequential loss. However by using Patol Linear Heat Detection Cable systems the outbreak of fire may be detected before there is any damage to property or equipment.

Typically, cable tunnels, risers and flats use multi-level cable trays / ladder racking for cable containment.



Linear Heat Detection Cable may be economically applied to monitor above each level to provide rapid detection of overheating cables caused by electrical malfunctions or external conditions.

Linear Heat Detection Cable systems are available with zonal monitors providing distance location or monitored operating signals for sprinklers fitted with single shot metron actuators or zonal valves.



Metron Actuated Sprinkler

Metron actuators are initiated when an appropriate firing current is applied. On firing, the metron protracts a steel pin which shatters the quartzoid bulb of the sprinkler head or multi-jet control valve. Often the requirement is to operate a number of these devices simultaneously, this especially in the case of sprinklers, where a number may be resident within the same zone of LHDC detection. The metron actuators are electrically connected in series, each with a current activated bypass device connected in parallel to provide continuity monitoring, thereby reporting a fault should a single unit fail whilst retaining the ability to operate all other serviceable metron actuators in the event of a fire.

With this combination of early detection and sprinkler operation, fires can be controlled and extinguished with little or no damage to cables. Patol Linear Heat Detection Cable has been proved to respond to a small fire within seconds and repeatedly tested to be less than one minute using a standard crib fire.

A typical cable tray installation will be arranged into zones which are often defined by:-

- Physical barriers or Fire Breaks.
- Access ways etc, for firefighting personnel.
- Zoning of sprinklers or other extinguishants.

Each zone will require a length of Linear Heat Detection Cable (LHDC) and a zone monitor. The length of LHDC in any zone may be determined by the physical constraints or by reference to "Characteristics" of LHDC systems, this typically is up to 500 metres.

The zone monitor may be located in or adjacent to the zone and this as well as the sprinkler actuation signal provides repeat signals to a control area. Alternatively a multi-zone panel can be installed in a central location connected via suitable interposing cables to the LHDC and extinguishing control circuits.

Depending on the type of LHDC employed, various levels of monitoring are available.

Resettable LHDC (Analogue)

The Patol resettable type LHDC (Analogue) is a coaxial cable and the properties of the inner insulator has a resistive negative temperature coefficient. As the LHDC is elevated in temperature an analogue signal is monitored at the controller. Pre-alarm and Alarm set point outputs are configured to operate indications and outputs at fixed temperatures for a known length of LHDC.

Zone Monitor Controllers are equipped with sensitivity / trip adjustments. The graphs show three typical settings.

The controller also monitors for open and short circuit LHDC faults and provides an indication and output for either condition.

The graphs show a typical application where 300m of LHDC Analogue is employed in conjunction with a zone monitor adjusted for a 3 Volt set point.

- The graph on the left shows that the whole of the zone will withstand ambient temperatures up to 53°C **without** any alarm triggers
- The graph on right shows that a temperature elevation of a 10m section of the zone **will** produce an alarm trigger at a maximum of 118°C
- Margin and tolerance are applied to the curves. In practice the withstand will be greater than 53°C.

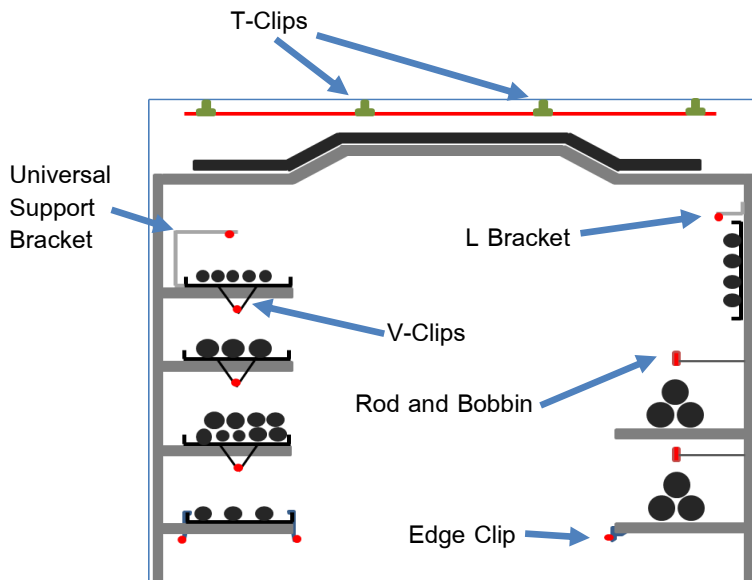
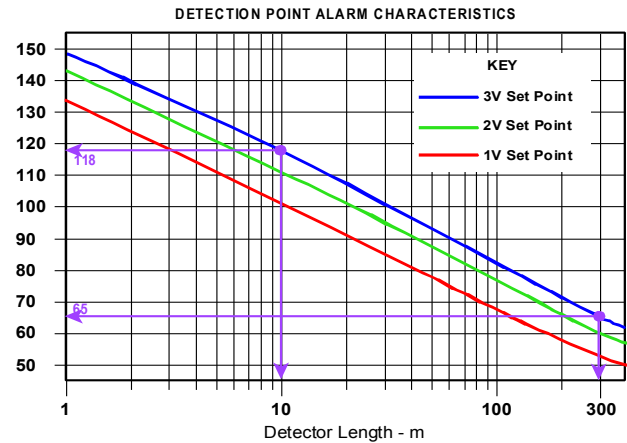
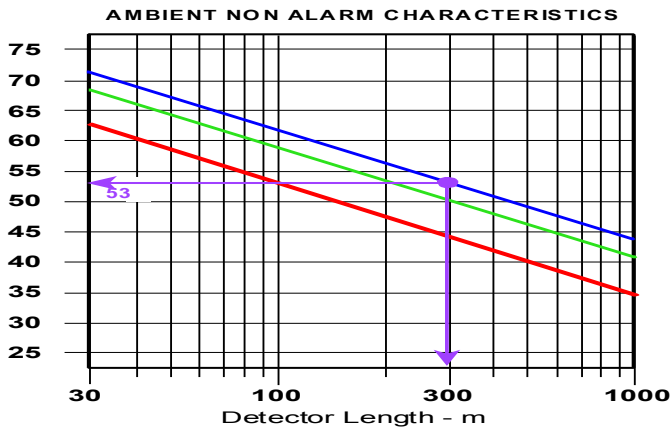
Note: For further information refer to full LHDC Data Sheet.

Commissioning and Routine Maintenance

Commissioning and routine maintenance of the Patol Analogue Linear Heat Detection Cable system can be conducted at site by use of a calibrated 1 metre test oven and can be tested repeatedly without detriment to its operation.



The portable 1 metre test oven concept of testing allows accessible LHDC to be subjected to temperatures within the alarm range. Thus confirming correct calibration setting selection and alarm levels in accordance with the project specification.



Typical LHDC Fixing Methods

A variety of LHDC fixing methods are available for all applications and all cable containment types.

See Sales Information Sheet : Application Fixings Document No. D1183

Non-resettable LHDC (Digital)

The Patol non-resettable type LHDC (Digital) is a two core twisted pair cable. The two cores are tinned copper coated spring steel conductors. The insulation of the two cores is a specially formulated polymer such that it plasticizes at a fixed specific temperature. This provides a switch contact which is monitored at the zonal monitor. The zone monitor can provide indications and outputs for a fire or open circuit fault conditions. Digital cable monitors are also available to provide fire distance location along the LHDC with a maximum length of 2,000 metres.

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