Application Note

Cable Trays, Racks and Tunnels.

LINESENSE
Fire Detection Ltd

www.linesense.co.uk

Cable trays typically consist of a number of individual cables closely packed together, should an overheat situation occur it can easily evolve into a fire. If this is not detected early it can cause significant loss of plant, down time of production, and in severe situations even risk to life. All of these can have a large financial impact.

Cable trays can be located in areas where access is either difficult or restricted; service tunnels, vertical risers and ladder racking. Where cable is run in external environments standard detection methods can find it difficult and challenging to work. With it's ease of installation and low maintenance Digital Linear Heat Detection (LHD) provides a cost effective solution.

The sensing cable is formed from a pair of twisted steel conductors each with temperature sensitive insulation and then an overall outer sleeve. When the temperature sensitive insulation reaches it's predetermined alarm temperature the two conductors short together providing the digital or switched signal.

The cable can be connected to any unit capable of monitoring a switched signal, i.e. conventional fire panel, addressable switch monitor unit or PLC.

The fire detection capability can be enhanced when the LHD is used in conjunction with the Digital Location Interface (DLI)

The DLI has the ability to monitor up to 2000m of LHD for both Fire and Fault conditions, when activated it identifies the location of the alarm. The distance in meters is displayed on the 3½ digit LCD and allows for appropriate action to be taken.

By installing test switches in each zone along the application length, periodic maintenance tests can be carried out to simulate Fire and Fault conditions without the need to replace any cable. Alternatively Linsense have within our range a 1m test oven which can be used to test a sample of the LHD to confirm operation.

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The layout and makeup of the cable trays will determine how the Linear Heat Detection (LHD) cable is installed and configured. System design should consider:

- Physical barriers.
- Zones for alarms and extinguishing.
- Size and spacing of cable trays.
- Local fire regulations.

The use of mounting brackets and clips allows for ease of access to the cable tray for site maintenance or additional cable laying and helps prevent the LHD from being trapped under cables and being damaged.

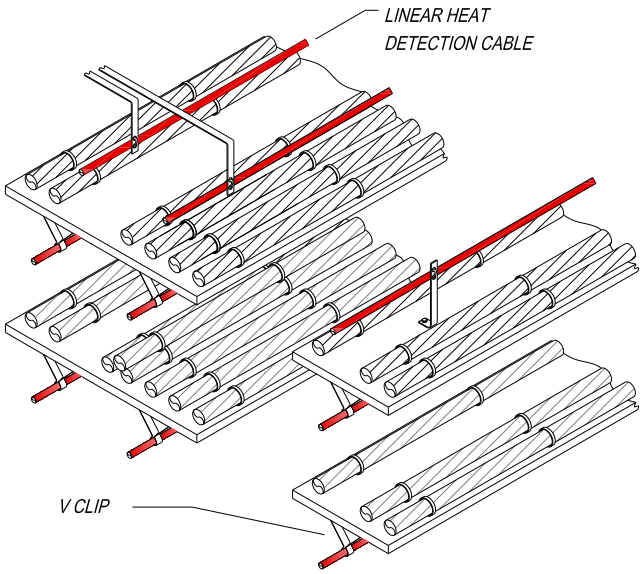
Linesense provide a selection of fixings and clips to retain the LHD cable in place. Fixings should be placed at intervals of no more than 1.2m apart.

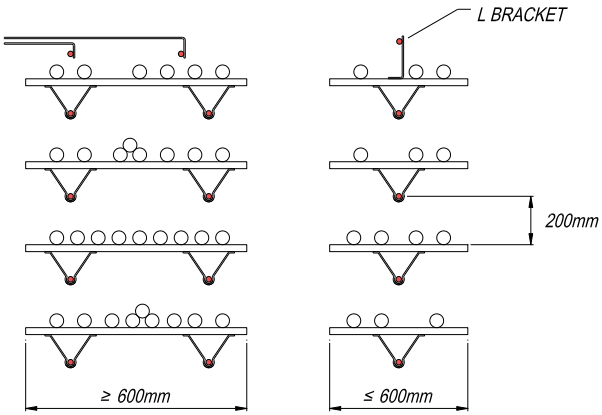
Where cable ties are used they should be used in conjunction with a neoprene sleeve and not over tightened to prevent damage to the outer sleeve of the LHD, alternatively “P” clips can be fixed to the bracket ends.

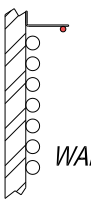
The following are guidelines only:

- LHD cable should be installed no more than 200mm above the cable tray to permit access to the tray without affecting operating effectiveness.
- Where there is a number of trays above each other, “V” clips can be used to suspend the LHD over the tray beneath.
- A length of LHD is also recommended to be fitted beneath the lowest tray to protect against any rubbish or debris fire.
- A single run of LHD should be used for a cable tray <600mm wide. If greater than 600mm additional cable should be used.
- By mounting the LHD on brackets positioned in line with the cable tray, it minimises any variation in distance that the LHD may be from a hot spot.

TYPICAL TRAY MOUNTING CONFIGURATIONS







WALL MOUNTED CABLES