

# Guide for Tunnel Protection with Thermofuser Cable

The TASC thermofuser cable helps reduce the risks a fire can cause in a tunnel.

Tunnel installations include conditions with dirt, dust, moisture and corrosive environments. Conventional technology often fails to provide a reliable and cost-effective protection solution. Forced by conditions, conventional detectors tend to result in false alarms and often lead to significant disbursements in maintenance. The TASC Linear Sensing System is designed to minimize operating costs and to operate with maximum reliability even under adverse conditions such as:

- Dirty, dusty and corrosive environments.
- High humidity and dynamic temperature fluctuations.
- Solvent vapours and radioactive radiation.
- ATEX classified areas with gas or dust.

**Thermo-fuser or digital cable technology is long-lasting and maintenance-free.**

The most dangerous incident that can occur in a tunnel is a FIRE. Due to the fuel of the vehicles that circulate through the tunnels and / or transport of dangerous goods, the possible fires that would be generated in a tunnel would be of great caloric power. In addition to this, it would be necessary to count on the great presence of toxic gases, poor visibility due to smoke, disorientation of users, emergency exits difficult to locate and the so called "oven effect".

## **FIRE DETECTION**

For the reasons stated above, fire prevention in a tunnel is critical.

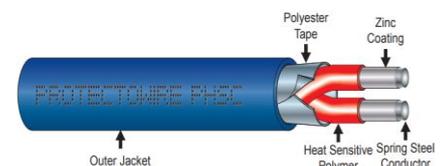
TASC's Linear Heat Sensing thermo-fuser cable System leaves

no area unmonitored, maintenance free and **much** cheaper than fiber optic sensor cable or microsensor cable technologies.

The versatility of the TASC thermo fuser cable means that it can be installed in the tunnel key as usual, but also serves to protect specific risks such as cable trays or technical galleries inside the tunnel.

It is designed to provide early fire detection and overheating under conditions where other forms of detection (e.g. point detectors) would not be feasible, because they would not withstand the environmental requirements of a tunnel.

This early detection, where other equipment cannot act, will result in a proper evacuation of persons and the necessary means of extinction.



## **Easy integration**

The thermo fuser cable integrates easily with the rest of the tunnel fire detection system. It can either be connected directly to a conventional area of the Fire Panel or the different modules (1 or more zones) specific to the cable can be used.

With the option to connect to the specific modules of the cable you will have the possibility to visualize the meter in which the fire occurred and integrate the signals of: alarm, fault and measurement; Via ModBus (for a zone modules). Up to 2,000 meters of sensor cable can be connected to the specific modules.



There is also the possibility of a single cable being able to distinguish up to 9 programmable zones with output to 9 individual relay signals. This is achieved through the LDM-519-DDL module. This module also has a display indicating which meter the fire occurred in. You also have the possibility to transmit all these signals via a 4-20 mA output.



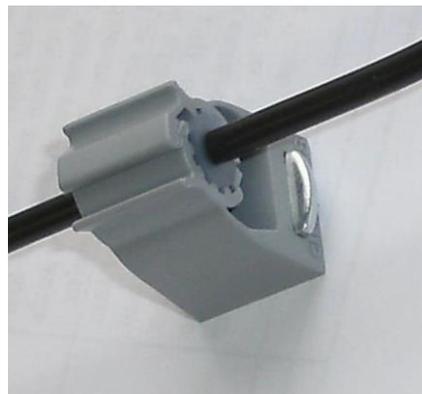
### Types of cable and installation

For the application of tunnels our cables with vinyl or nylon cover are recommended. The most appropriate triggering temperature is 68-70 °C. It is possible, near the tunnel mouths or other places where the temperature is expected to exceed 40 °C in long periods of time, to install cable with a higher triggering temperature.



The same cable could also protect galleries of facilities and evacuation routes from tunnels.

There are many accessories to fix the sensor cables, such as the one in the image below.



At the end of the cable route a box, called an end-of-line box, containing a circuit monitoring resistor, must be installed. TASC advises installing a box with the possibility of a key or test for ease of maintenance.

### REGULATIONS

TASC thermofuser cables comply with the following certifications in fire detection systems:

- UL521.
- ULC S530.
- FM GLOBAL.

In addition, they are SIL2 certified and have a lifespan of 30 years.

Depending on the regulations to be applied, the distance from the sensor element (cable) to the different wall or walls and between cables may vary.

For any questions or clarification about this guide and request for prices and references, you can contact us at the following email addresses: [comercial@tasc.es](mailto:comercial@tasc.es), [logistica@tasc.es](mailto:logistica@tasc.es).