

LIST-Sensor Cable System

◆ LIST Sensor Cable System is a reliable and perfected system to analyse temperature data with unique specifications:

- 0.1° resolution
- cycling time < 10 sec (2.800m)
- Recurring accuracy $\pm 0.1^\circ$
- power rating < 5W (2.800m)
- bi-directional sensors with fixed addresses



- a permanent functional check of all sensors
- cable is halogen free and flame resistant
- easy checking and repairs with modular system
- operating range -40 °C....+85°C



◆ Damaged cable sections can be easily repaired by cutting out the damaged section and connecting a new piece in it's place with the aid of sleeve joints. It is maintenance- and adjustment-free and can be used in areas which are not or only partly accessible during normal operation.

◆ Due to the constant interrogation of the temperature sensors by the control unit every 10 seconds, a functional check of all temperature sensors is always given. It is not necessary for control to heat the sensors every year.

◆ A fire alarm is generated if either a given maximum threshold is exceeded, or if an increase of temperature takes place within a certain time (differential evaluation). The two thresholds (set-points) can be set individually for definable alarm zones. The best way to avoid errors.

◆ A LIST Sensor Cable System is able to detect and signal two or more fires.

◆ It is easy to change the pc-boards in the control unit. After switch on, the monitoring starts automatically.

◆ Components do not have to be calibrated or setted regularly.



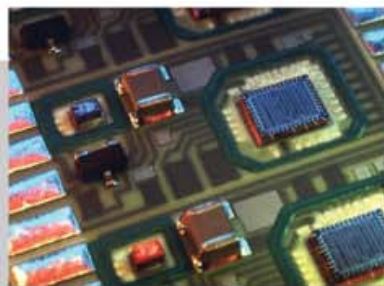
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◆ Public data protocols MODBUS, MODBUS TCP, IEC 60870-5-104 and 3964 R (Simatic) enable interconnection to other control systems.

◆ December 2003: the LIST system was tested according RABT 2003 precisely real conditions in the tunnel Ursulaberg. A 5 MW fire was detected and located exactly in less than 60 seconds with a wind speed of 6 m/s (pre-alarm included). Since this time numerous RABT 2003/2006 tests have been performed successfully in tunnels, protected by LISTEC.



◆ The sensor cable reacts on heat radiation.

◆ LIST has been tested and approved in the Felberntauern tunnel by the IBS Brandschutztechnik institute at wind speed up to 10m/s.

◆ The french syndicate GEM A86 decided to take the LIST system for their big project of a double deck tunnel in Paris. They tested and compared different systems in the „Test gallery Hagerbach“ in Switzerland prior to their decision.



◆ A real challenge for the LIST technology has been various construction methods, tunnel dimensions, ceiling layouts and many entrance and exit ramps in Madrid. No other linear heat detection system is able to be used with the same flexibility, functionality and redundant configuration as it is now performed with the LIST sensor cable in the M30 project.

◆ The cable meets DIN EN 60332-1-2:2006-06 and DIN EN 60332-2-2:2005-06 concerning flame propagation and DIN EN 61034-2:2006-03 concerning smoke density.

◆ The sensor cable is halogen free.

◆ LISTEC GmbH has the complete know-how of manufacturing, commissioning and fault clearing. The company is located in Isen near Munich/Germany.

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