

Technical Documentation

Fire and temperature sensor MM-KO

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1 Universal safety instructions

Assembly, operation, inspection, failure search and repair of the suitable components must be made only by qualified staff. Damages resulting from non-observance of this rules are out of guarantee!

Qualified personnel are people skilled by national authorities of instruction, having enough experience as well as knowledge on relevant standards, safety regulations, accident-prevention rules and working conditions. They should be entitled from the local organization for good managing and being responsible for the security of the components / construction at the time of activities and recognize possible endangerments and be able to execute necessary operations avoiding danger for life or injuring. (Definition for qualified operators see GERMAN INDUSTRIAL STANDARDS VDE 0105 or IEC 364). Mandatory is knowledge in first aid activity and local rescue establishments.

1.1 Personal safety instructions

Important instructions for technical security and the employment protection during work in this document are highlighted by: **Heavy print** and the label **Attention, Warning** or **Indication**.

Attention stands on working and operational hazards to eliminate hazard for the health condition of people. It references also to special risks resulting from the use of the components.

Warning stands on working and operating procedures that should be kept exactly to eliminate damages or destruction of components. This applies to regular performed operations as well as operations under high stress or on exceptional atmospheric condition and operating methods providing service.

Indication applies to technical requirements for the good functioning of the products and the system.

1.2 Technical safety instructions

The parts are components of a fire warning system. Any remove, convert and change of the original components and the electric installation is basically not allowed. The operator of the system is responsible reporting if any change of the assembly which may affects the safety have taken place.

The user is also bound to use the system always in good order and condition.

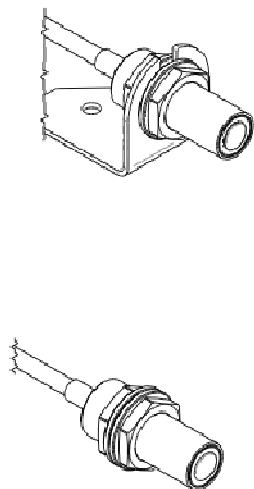
2 Application

International UN/ECE Regulation is requesting for fire prevention of public transport. For the safety of passengers fire sensors are mandatory in rear engine compartments since January 2014.

3 Description

The **MM-O spot fire detector** serves to recognize temperatures being the origin of fire also in battery or other compartments where i.e. a combustion heater is being located communicating a signal to the control unit of a fire warning system at drivers dashboard.

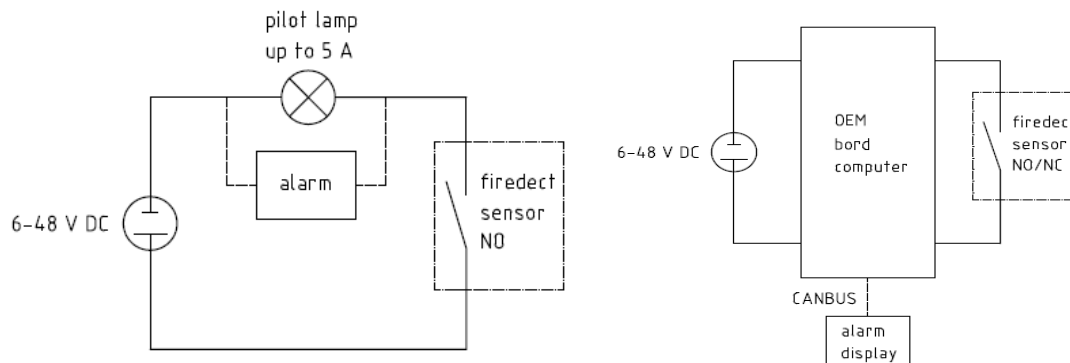
3.1 Type MM-KO LZ2 brass thread M22 x 1.5 and PTFE flange Temperature range from -25°C to $180^{\circ}\text{C} \pm 5$



Standard terminal is the OMERIN Silicone cable MC-ECS with 2 wire of $0,5\text{mm}^2$ and outer Diameter of $6 \pm 0,5\text{mm}$ (Appendix A1). For Rolling stock application we use the approved Silicone cable according French Standard (NF F 63-826) OMERIN NY-500 with 2 wire of 0.75mm^2 and outer diameter $8.6 - 9.9 \text{ mm}$.

4 Electrical wiring diagrams

4.1 Direct communication for alarm release or onboard system



5 Technical specifications

Stand-alone hermetically sealed high sensitive temperature sensor, ready for assembly, wire terminal, brass body and PTFE support, mechanical resistant, shock and vibration proof.

5.1 Ratings

Temperature range:	-25°C to 180°C ± 5°C
Automatic reset differential:	5°C...15°C lower than action temperature
Electrical ratings:	6...30 VDC max.130 W / 20 mA...5 A
Life time:	30.000 cycles
Contact resistance:	< 25 mΩ Silver
Ingress protection grade:	IP 68 sensor with PTFE housing
Assembly:	brass threads M22 x 1.5 torque 25 Nm
Standard wire:	1000 mm silicone wire with protection hose
Vibration / shock proof:	40 g 50...500 Hz 24 h
Electro smog:	emission free
Ambient temperature:	-25°C to 200°C ± 5°C
Dielectric strength to cap:	2000 V effective 50 Hz
Tracking resistance:	PTI
Net weight:	approximately 100g

The materials of the fire and temperature sensor (Teflon, brass, stainless steel) are corrosion proof and selected for harsh environment conditions. The sensor resists mechanically to shock, acceleration and vibration and was developed for application in vehicles of road sea and air transport.

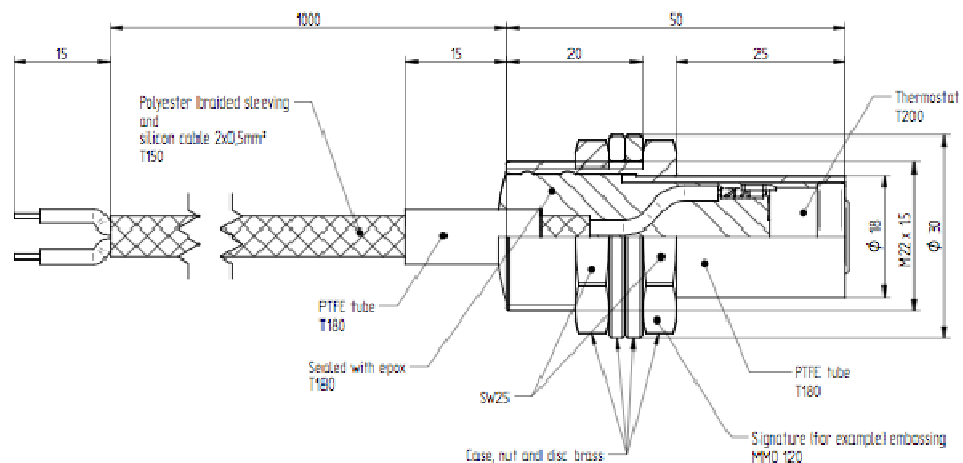
Even the sensor element is hermetically encapsulated the simulated response time at fire tests has been checked and the sensor releases between 60 to 80 seconds depending to the placement to the fire place. If the fire sensor is placed directly vertical above the engine the estimated response time reduces to 40 seconds.

The sensor element is a fast responding bimetal disc which breaks and makes an electrical contact. Therefore it operates stand alone and is EMC low band emissions and inductions free (electro smog).

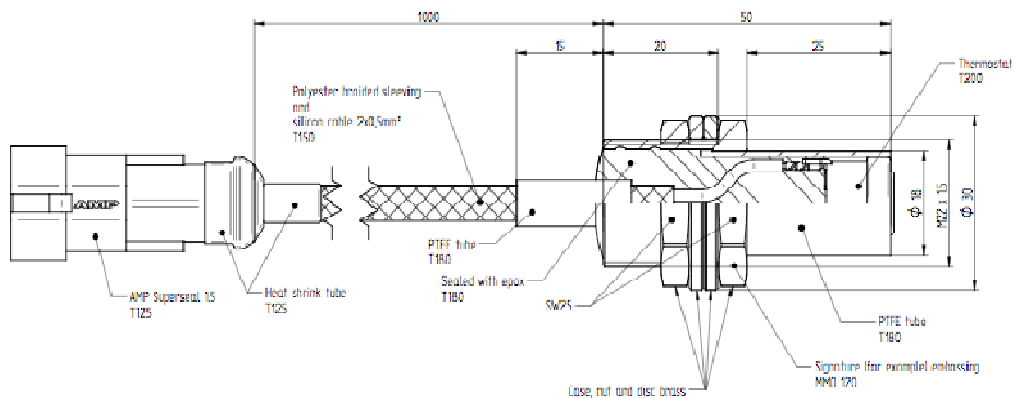
Options: Fire resistant cable up to 5m length, protection hoses and gold contacts $R \leq 10 \text{ m}\Omega$ suitable for TTL signal and assembly bracket.

6 Technical drawings

6.1 Fire sensor MM-1KO LZ2 12005 DWB+18051



6.2 Fire sensor MM-1KO LZ2 12005 DWB+18050



6.1 Fire sensor MM-1KO LZ2 12005 DWB+18092

