

ADW 511 A Linear Heat Detector

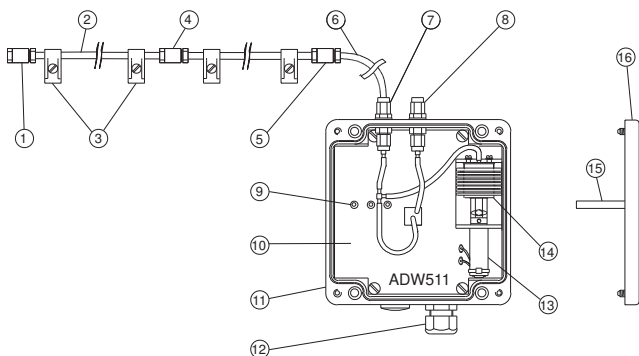
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- ▶ Compact, robust design
- ▶ Suitable for use under extreme environmental conditions
- ▶ Low maintenance costs through periodic fully automated seal verification and self-monitoring
- ▶ Application-specific default settings by rotary switch
- ▶ Response behavior can be programmed by PC

The Transafe ADW 511A is a Linear Heat Detector with differential and maximum temperature recording. The mode of operation is based on volumetric expansion of a gas on heating and the corresponding increase in pressure in a pneumatically sealed system. The heat detector comprises a sensor tube (SENSTUBE) and a detector box (with control unit). The robust design makes the ADW 511A particularly suitable for use in extreme areas in which conventional detectors cannot be used (e. g. response grades in line with EN 54 Part 5 and for increased ambient temperatures in line with EN 54 Part 8).

System Overview



Pos.	Description
1	End screw cap
2	Sensor tube segment
3	Fixing bridles
4 + 5	SERTO clamp
6	Sensor tube segment
7	Sensor tube connection
8	Reference tube
9	Operating status display LEDs
10	PC board with evaluation electronics
11	Detector box housing
12	Cable duct (PG clamp)
13	Pump drive motor
14	Pump
15	Fiber-optic cable for the 3 display LEDs (Pos. 9)
16	Housing cover of the detector box

Functions

The pressure sensor continually measures the pressure in the sensor tube. The sensor signals are evaluated by the microprocessor. The differential behavior is electronic.

If the pressure in the sensor tube rises strongly over a short time, the ADW 511A triggers an alarm.

Disturbance variables such as slow pressure changes, e. g. as a result of weather-related temperature fluctuations or pressure blows caused by high volumes of traffic in tunnels are filtered out.

The evaluation of maximums is designed so that the pressure value corresponding to a programmable maximum temperature triggers the alarm. The ADW 511A also responds to gradual temperature increases over a longer time period, e.g. $\Delta T = 40K/h$ overheating of an oven. A temperature sensor in the detector box continually measures the current ambient temperature and derives the reference value for the maximum evaluation value.

Self-monitoring

A test motor with a pressure pump generates a specified pressure excess in the sensor tube in regular, configurable intervals.

If the value measured by the sensor does not correspond to the set value, e. g. because of a leak or crushing of the sensor tube, a fault indication is displayed.

Alarm and fault indications take the form of three LEDs on the PC board using three fiber-optic cables in the housing cover.

Certifications and Approvals

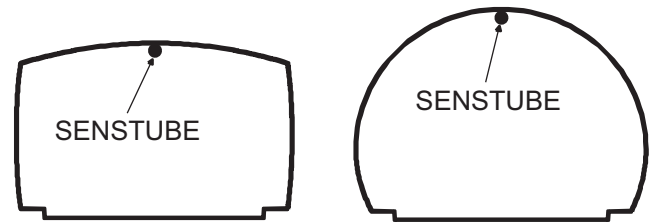
Region	Certification	
Europe	CE	ADW 511 A
Germany	VdS	G 204122 ADW 511A
Switzerland	VKF	AEAI 19205 ADW511A

Installation/Configuration Notes

General Planning Notes

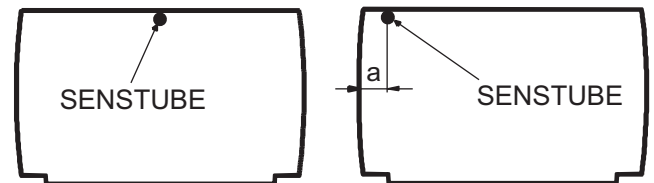
- The mounting location of the detector box and sensor tube (SENSTUBE) must not be exposed to direct sunlight.
- The detector box can be mounted anywhere, although a minimum distance of 0.1 m from switching boxes, niches etc. must be provided on the sensor tube connection side.
- If used in a tunnel, or if it must be fitted outdoors, the detector box must be installed in an additional protective box.
- At tunnel entrance portals, a distance of 25 m must be maintained between the sensor tube end and the portal.
- The minimum sensor tube length is 20 m.

Tunnel with curved roof, or round construction and 2 to 3 traffic lanes



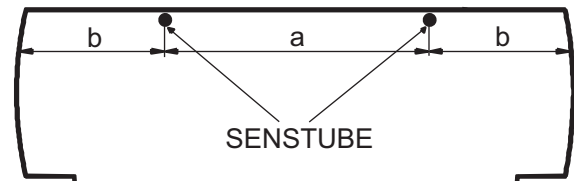
- The sensor tube **must always** be installed in the middle of the tunnel roof (max. permitted side tolerance ± 0.5 m).
- The maximum permitted sensor tube length is 130 m.

Tunnel with flat roof and 2 to 3 traffic lanes



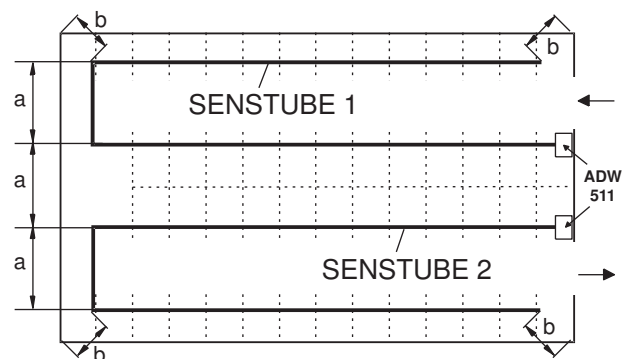
- The sensor tube **should** preferably be installed in the middle of the tunnel roof (max. permitted side tolerance ± 0.5 m).
- The sensor tube side mounting is possible taking a minimum distance (a) to tunnel wall into account.
 - For 2 traffic lanes: $a > 0.5$ m
 - For 3 traffic lanes: $a > 1.0$ m
- The maximum permitted sensor tube length is 130 m.

Tunnel with flat roof and more than 3 traffic lanes



- At least two sensor tubes are required
- The maximum distance (a) between the sensor tubes is 10 m.
- The maximum distance (b) between sensor tube and tunnel wall is $\frac{1}{2} a = 5$ m.

Storage halls, parking garages, vehicle decks and applications with similar usage



- It is possible to lay the sensor tube in a spiral.

- The maximum permitted sensor tube length is 80 m.
- The maximum distance (a) between the sensor tubes is 7.2 m.
- The maximum distance (b) between sensor tube and tunnel wall is $\frac{1}{2} a = 3.6$ m.
- Roof underpinnings must take guidelines in force into account.

Other applications

- For all other applications, the sensor tube must be installed after agreement with the commissioning authorities responsible.
- The permitted sensor tube length is 80 m as standard. Longer lengths are application-specific and must be approved by the manufacturer.
- For use in areas with raised ambient temperature, metal bridles must be used for sensor tube mounting. In addition, the detector box must be mounted in an area with normal ambient temperatures.

Parts Included

Qty.	Components
1	Transafe ADW 511A detector box, signal analysis and monitoring module of the linear maximum and differential heat detector

Technical Specifications

Electrical

Operating voltage	10 V DC to 30 V DC
Max. current consumption (12 / 24 V DC operation)	Measured at 10.5 V DC / 14 V DC
• In standby	114 mA / 90 mA approx.
• In the event of an alarm (diff./max.)	124 mA / 99 mA approx.
• In the event of pre-alarm + alarm	135 mA / 108 mA approx.
• In the event of malfunction	103 mA / 81 mA approx.
• When testing	127 mA / 102 mA approx.
Maximum contact load of alarm relay	1 A / 50 V DC

Mechanics

Connections	Contact outputs for <ul style="list-style-type: none"> • Alarm • Pre-alarm • Malfunction • Leakage
RS232 serial interface	9-pin D-SUB connector for programming and data transmission
Displays	
• ALARM DIFF	LED red

• ALARM MAX	LED red
• POWER / FAULT	LED yellow
Detector box	
• Material	Polyester, fiber-reinforced
• Color	Dark gray, RAL 7000
• Dimensions (W x H x D)	160 x 205 x 93 mm
• Weight	1700 g approx.
Sensor tube	
• Material	Copper
• Dimensions (Ø x L)	Ø 5 mm x 20 m to 130m

Environmental conditions

Protection class as per EN 60529	IP 65
Permissible operating temperature	
• Detector box	-20 °C to +50 °C
• Sensor tube ⁽¹⁾	-40 °C to +160 °C
Permissible relative humidity	
• Detector box	95 %
• Sensor tube	100 %

(1) Subject to prior consultation with Bosch ST, lower or higher operating temperatures may be possible

System limits

Maximum permitted sensor tube length	
• Tunnel applications (incl. tube mounting)	20 m to 130 m
• For other applications (incl. tube mounting)	20 m to 80 m

Special features

Detection principle	Change in volume of gases caused by temperature change
Detector class according to EN 54-5	A1 - G

Ordering Information

ADW 511 A Linear Heat Detector

Order number ADW 511 A

Accessories

Copper Pipe and Accessories

order quantity must be specified in meters, delivery occurs in 5.5 m long pieces, Ø 5 mm, including 6 clamps and 1 SERTO screw connector
Order number **ADW53A6M-CU-PIPE**

Plastic Hose, 25 m Reel
PA (polyamide)
Order number **ADW53A-TUBE**

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