ADW 535

Line type heat detector

Beginning with production version 140214 and FW version 01.00.19

The ADW 535 is an integrating line type heat detector that consists of the cable terminal processor and one or two sensing tubes. The sensing tube is made of copper (Cu), stainless steel (St) or Teflon (PTFE).

Apart from the processor-controlled evaluation electronics, there is one fully electronic pressure sensor and one artificial pressure generation device in the cable terminal processor per sensing tube.

Fig. 1 ADW 535-2

Description

The working principle is based on the volume expansion of gas due to heating in a pneumatically sealed system and the consequential pressure increase. If the pressure in the sensing tube rises to values as defined by the ADW 535 firmware, the system triggers an alarm.

The pneumatically sealed system is composed of the sensing tube that is locally installed in the area to be monitored and is sealed at the end with a terminal screw fitting. The sensing tube is connected to the cable terminal processor, in which the pneumatic line is wired to the LTHD supervising unit. The supervising unit consists of a fully electronic differential pressure sensor, a pressure pump and a step motor. There is regular ambient air in the entire pneumatic volume.

The ADW 535 with two sensing tubes has two completely independent pneumatic circuits, thus it also has two supervising units. All control circuitry and measured value recordings are individually designed for each sensing tube.

The ASD 535 is available in four versions:

Thermoplastic housing for normal applications:
- ADW 535-1 for 1 sensing tube, 2 relays/OCs
- ADW 535-2 for 2 sensing tubes, 4 relays/OCs

Housing for difficult ambient conditions and Ex applications (in preparation):
- ADW 535-1HDx for 1 sensing tube, 2 relays/OCs
- ADW 535-2HDx for 2 sensing tubes, 4 relays/OCs

The ASD 535 has four slots for expansion modules. The following modules can be fitted:
- XLM 35 SecuriLine eXtended Module
- RIM 36 Relay Interface Module with 5 relays (2 units)
- SIM 35 Serial Interface Board

The ADW 535 can be connected to a superordinate FACP by means of potential-free change-over contacts.

With the installation of an **XLM 35**, the ADW 535 can be ideally connected via the addressable loop to the SecuriFire and Integral fire alarm systems.

The **RIM 36** is available as a further installation option. This module makes the individual alarms and the pre-signals “Diff” and “Max” available as relay contacts. The relays are also freely programmable via the “ADW Config” configuration software.

Up to 250 ADWs can be networked with the **SIM 35** and can also be visualised and operated on a PC using “ADW Config”.

The ADW has an SD memory card to log operating data.

Thanks to its excellent properties under severe ambient conditions, the ASD 535 is used wherever problems are to be expected owing to latent disturbance variables during operation such that optimal protection can no longer be guaranteed with conventional point detectors. Examples of such applications:
- Road, railway and underground railway tunnels
- Paint spray and paint shops, chemical industry, etc. (for Ex zones see “Technical Description ADW 535”)
- Loading platforms, tank storage, underground mining
- Car park halls and car decks on ships

The ADW 535 can also be deployed in areas where conventional point detectors are used. Local regulations and provisions must be observed from case to case.

The response behaviour of the ADW 535 is tested in compliance with **EN 54-22**:
- Class **A1l**, **A2l** and **Bl** as of FW V 01.00.19
- Class **A1l** to **Gl** from FW V 01.0X.00 (in preparation)

- When using **Teflon sensing tubes**, according to EN 54-22 only Classes **A1l** to **Bl** are possible.
- When setting up ASD 535 fire alarm systems, the information and specifications in “**Technical Description ASD 535**” must be observed and adhered to. This includes among others:
  - **General** Section 1
  - **Planning** Section 4
  - **Mounting** Section 5
  - **Installation** Section 6
  - **Commissioning** Section 7
  - **Operation** Section 8

Connection

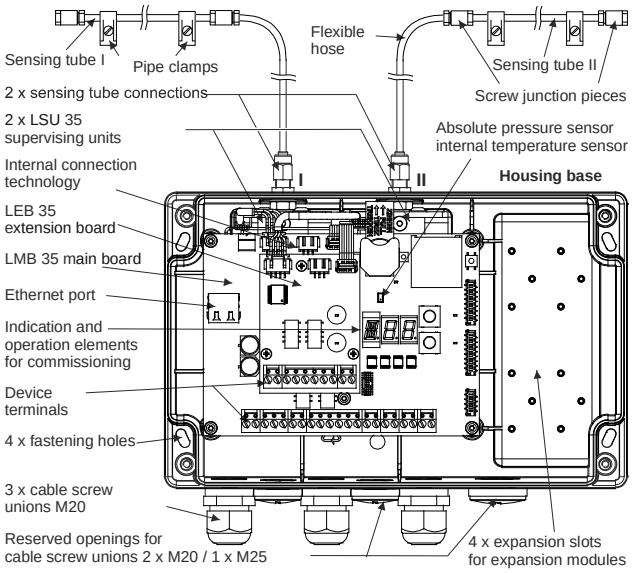

Fig. 2 View inside the ADW 535-2

Devices connection on the LMB 35 main board

The electrical connection is by means of plug-in terminals.

Terminal	Signal	
1	PWR +	Main power supply line
2	PWR –	9 to 30 VDC (UL/FM = 10.6 – 27)
3	PWR +	Redundant supply line
4	PWR –	9 to 30 VDC (UL/FM = 10.6 – 27)
5	+OC	+ Supply (for OC consumers)
6	Flt OC Out1	Output Fault I, OC
7	Al OC Out1	Output Alarm I, OC
8	Rel Flt1 (“NO”)	Fault I
9	Rel Flt1 (“NO”)	Contact (terminals 10/8) closed in
10	Rel Flt1 “COM”	idle state
11	Rel Al1 “NO”	
12	Rel Al1 “NC”	Alarm I
13	Rel Al1 “COM”	
14	TempSens1 +	External temperature sensor I
15	TempSens1 –	
16	ResExt +	Reset external input
17	ResExt –	(opto-isolator input)
18	InPrg1 +	Day/night control from FACP
19	InPrg1 –	(opto-isolator input)
20	InPrg2 +	Reserve, no function
21	InPrg2 –	(opto-isolator input)

Device connection on the LEB 35 extension board

On version ADW 535-2 the connection for the sensing tube II is on the LEB 35.

Terminal	Signal	
22	Flt OC Out2	Output Fault II, OC
23	Al OC Out2	Output Alarm II, OC
24	Rel Flt2 (“NO”)	Fault II
25	Rel Flt2 (“NC”)	Contact (terminals 26/24) closed in
26	Rel Flt2 “COM”	idle state
27	Rel Al2 “NO”	
28	Rel Al2 “NC”	Alarm II
29	Rel Al2 “COM”	
30	TempSens2 +	External temperature sensor II
31	TempSens2 –	

Terminal assignment XLM 35, RIM 36, SIM 35

The terminal assignments of the XLM 35, RIM 36 and SIM 35 can be found in data sheets T 140 088 (XLM 35), T 140 364 (RIM 36) and T 140 011 (SIM 35).

External temperature sensor ART 535

The purpose of external temperature sensor ART 535 is to compensate (adjust) the maximum response behaviour and must be used:

- For applications compliant with EN 54-22, Class Cl to Gl
- Always (for all response grades), as soon as the application temperature in the monitored area deviates more than 20°C from the temperature of the cable terminal processor.

The ART 535 is to be introduced to the monitored area and positioned so that it is optimally exposed to the local ambient temperatures.

Connection principle

Examples and information about the connection principle are found in Technical Description ADW 535, T 140 358, Section 6.

Displays

The following displays are included on the cable terminal processor (may be doubled on ADW 535-2 **I** and **II**):

⏻	Alarm	Fault	Function / state
Green	Red	Yellow	
			System off (no voltage)
On		½ s T	System inactive (reset external)
On			Quiescent state
On		1 s T	Start phase of the system (approx. 60 s)
On		1 s T	Sensing tube fault, test running ① / ②
On		On	Sensing tube fault, fault triggered
On		On	Gen. fault triggered (internal faults)
On	½ s T		Pre-signal (Diff or Max)
On	On		Alarm (Diff or Max)

① No fault triggered (only if negative test procedure ➔ LED “Fault” continuous display).
② Does not apply to cyclical test.
T = flashing display; ½ s cycle / 1 s cycle

The **LMB 35** main board includes additional indicators. More information is available in Technical Description ADW 535, T 140 358, Section 8.5.2.

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Programming

The ADW 535 has several switch positions that are configured with permanently assigned parameters:

- Normative systems limits compliant with EN 54-22, Class A1l to Gl, settings ***C*** > ***A11*** to ***G02*** (observe **FW version**)
- Non-normative system limits concerning sensing tube monitoring, settings ***W04*** to ***W09***
- Parameterised positions ***X01*** to ***X03*** for saving settings after using “ADW HeatCalc” and/or changes in the device configuration via “ADW Config”

Changing the parameters may result in non-compliance with EN 54-22. Any adjustments or modifications to the ADW 535 via “ASD Config” may be performed only by the manufacturer or by qualified personnel instructed and trained by the manufacturer.

Switch positions on the LMB 35 main board

Pos.	Area / Display	Purpose
C	***A11*** to ***G01*** / ***A12*** to ***G02*** / ↳ ***L01*** / ***L02*** ↳ ***015*** to ***115*** (per tube) ***W00*** to ***W09***	**Normative system limits** Compliant with EN 54-22, Cl. A1l to Gl ↳ Sensing tube length I + II ↳ Sensing tube length in m **Sensing tube monitoring**
E	***E01*** to ***E99*** ↳ ***G00*** to ***G99***	**Event mem.**; ***E01*** – ***E99*** ↳ Event group ***G00*** – ***G99***
F	***V00.*** to ***99*** (3 blocks)	Read out **firmware version**
I	***IA1*** / ***IA2*** ***IF1*** / ***IF2*** ***IP1*** / ***IP2*** ***IC1*** / ***IC2***	**Trigger**; test alarm (***IA.***) Test fault ***IF.***) Test pre-signal ***IP.***) Test testing ***IC.***)
N	***IP*** / ***Sub*** / ***GA*** ↳ ***169.*** / ***254.*** / ***000.*** / ***007*** (example)	**IP setting poll**
o	***o00***	**Log off expansion modules**; (optional modules, all)
P	***UP1*** / ***UP2*** ***TP1*** / ***TP2*** ***MP1*** / ***MP2***	**Pressure values output**; “Initial reset pressure” (***UP.***) “Test pressure” ***TP.***) “Absolute pressure” ***MP.***)
R	***R00***	Perform **state reset**
T	***Y10*** to ***Y99*** / ***M01*** to ***M12*** ***d01*** to ***d31*** / ***H00*** to ***H23*** ***M00*** to ***M59*** / ***S00*** to ***S59***	**Date and time**; Poll (***RE***), Setting (***SE***)
U	***U01*** / ***U02***	Start **initial reset** (per tube)
X	***X01*** to ***X03***	**can be parameterised** (with ADW Config)

The table lists only the available switch positions. For information about the input procedure please refer to Technical Description T 140 358, Section 8.3.

System limits without “ADW HeatCalc” calculation

The system limits apply to planning without the “ADW HeatCalc” calculation software. There are two areas, with the following meaning:

- **Normative system limits** compliant with EN 54-22, Class A1l to Gl,
  Settings ***C*** > ***A11*** to ***G02*** (note **FW version**)
- **Non-normative system limits**
  concerning sensing tube monitoring, settings ***W04*** to ***W09***.

Normative system limits

Positions ***C*** > ***A11*** to ***G02*** have configured values which are necessary for alarm response sensitivity and sensing tube monitoring compliant with EN 54-22. The setting designation is deciphered as follows:

- First digit — Response grade ***A***, ***b***, ***C***, etc.
- Second digit — Response grade addition ***1***, ***2***, (only on A / B)
- Third digit — Sensing tube ***1***, ***2*** (number on ADW).

Example: ***A22*** — Response grade ***A*** / response grade addition ***2*** / ***2*** sensing tubes = Class A2 with 2 sensing tubes

Non-normative system limits

Settings ***W04*** to ***W09*** contain **non-normative system limits** concerning **sensing tube monitoring**. The alarm response sensitivity compliant with EN 54-22 is not influenced but rather corresponds to the settings of the additionally set ***EasyConfig*** switch positions ***C*** > ***A11*** to ***G02***.

For more information about switch positions ***W01*** to ***W09*** with regard to sensing tube monitoring, please refer to Technical Description T 140 358, Sec. 4.6.1.2. The settings always apply to **both** sensing tubes.

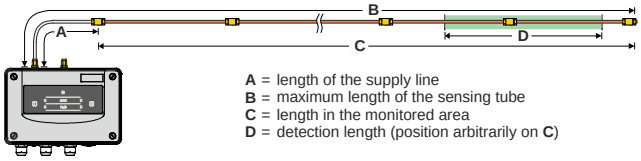

Fig. 3 Sensing tube lengths definition

System limit table for planning without “ADW HeatCalc” calculation

Switch position compliant with EN 54-22: *C > A11 to G02* ①		Switch position (additional), not standards compliant	Application	Diff alarm			Max alarm	AI delay	Length of line (ADW to monit. area) ③	Max. length of the sensing tube (ADW to tube end) ②
				Diff alarm threshold ②	Alarm verification: Delta pressure ②	Alarm verification: Time	Max alarm threshold ②			
1 tube	2 tube	1 tube / 2 tube		(mbar/min)	(mbar)	(s)	(mbar)	(s)	(Fig. 3 „A“)	(Fig. 3 „B“)
A11	A12	W04 – W09	R	2.3	6.1	600	210.9	4	5 m	115 m
A21	A22	W04 – W09	R	2.3	8.2	600	220.4	4	5 m	115 m
b01	b02	W04 – W09	E	2.3	8.2	600	273.2	4	5 m	115 m
C01 ①	C02 ①	W04 – W09	E	2.3	8.2	600	326.8	4	5 m	115 m
d01 ①	d02 ①	W04 – W09	E	2.3	8.2	600	380.5	4	5 m	115 m
E01 ①	E02 ①	W04 – W09	E	2.3	8.2	600	433.2	4	5 m	115 m
F01 ①	F02 ①	W04 – W09	E	2.3	8.2	600	486.9	4	5 m	115 m
G01 ①	G02 ①	W04 – W09	E	2.3	8.2	600	540.6	4	5 m	115 m

Switch positions ***W04*** to ***W09*** may be used only after consulting with the manufacturer. The configured values they contain concerning sensing tube monitoring are **not** tested in accordance with EN.

R = space surveillance / **E = equipment monitoring**

① For response-class-related use of the ADW 535, the **FW version** of the ADW 535 must be observed. For classes **CI** to **GI**, the external temperature sensor ART 535 must always be used for temperature compensation.

② Values for a sensor tube length of 115 m. The values are converted and set accordingly in the ADW via the ***EasyConfig*** submenu ***C*** > > ***L01*** / ***L02*** > ***015*** to ***115***.

③ The length of the **line** must be observed as specified above. Deviations of +/–10% are permitted.

When operating the **Teflon sensing tube**, the “**ADW HeatCalc**” software must be used to determine alarm thresholds.

Configuration options, Table A

The following criteria can be set for each sensing tube. Also, the criteria for day/night control can be separately set. Configuration changes are saved on one of the freely programmable switch positions ***X01*** to ***X03*** using "**ASD Config**".

Sector • Parameter	**Default setting**	**Area**	**Resolution / levels**	**Saving after change**
Sensing tube parameters (length / outer diameter)				
• Supply line "**A**" (see also **Fig. 3**)	5 m	0 – 20 m	1 m	X01 – X03
• Supply line, inner diameter	3 mm	3 – 4 mm	1 mm	X01 – X03
• Monitored area "**C**" (see also **Fig. 3**)	10 m	10 (> "**A**") – 200 m	1 m	X01 – X03
• Monitored area, inner diameter	4 mm	(in preparation)	1 mm	X01 – X03
Alarm (EN 54-22)				
• Diff alarm status (On/Off)	On	On / Off ①		X01 – X03
• Diff alarm threshold (dependent on sensing tube length and the response grade acc. to EN 54-22)	A11 / A12	0.5 to 100 mbar/min.	0.1 mbar/min.	X01 – X03
• Diff alarm verification status (On/Off)	On	On / Off		X01 – X03
• Diff alarm verification delta pressure value	A11 / A12	1 – 100 mbar	0.1 mbar	X01 – X03
• Diff alarm verification time	600 s	60 s – 1,200 s	1 s	X01 – X03
• Diff alarm delay	4 s	0 s – 30 s	1 s	X01 – X03
• Diff alarm self-holding	On	On / Off		X01 – X03
• Max. alarm status (On/Off)	On	On / Off ①		X01 – X03
• Max. alarm threshold (dependent on sensing tube length and the response grade acc. to EN 54-22)	A11 / A12	1 – 1,200mbar	0.1 mbar	X01 – X03
• Max. alarm delay	4 s	0 s – 30 s	1 s	X01 – X03
• Max. alarm self-holding	On	On / Off		X01 – X03
• Adjustment (compensation), On / Off	On	On / Off		X01 – X03
• Adjustment (compensation), temp.sensor selection	Intern	Int. / Ext. I / Ext. II		X01 – X03
• Adjustment (compensation), interval	60 min	1 – 1.440 min	1 min	X01 – X03
• Alarm ext. temp.sensor	Off	55 – 300°C	1°C	X01 – X03
• Alarm ext. temp.sensor, delay	4 s	0 s – 30 s	1 s	X01 – X03
• Alarm ext. temp.sensor, self-holding	On	On / Off		X01 – X03
Pre-signal				
• Pre-signal Diff alarm On/Off	On	On / Off		X01 – X03
• Pre-signal Max alarm On/Off	On	On / Off		X01 – X03
• Pre-signal Diff alarm (100% = alarm threshold)	70%	5 – 95%	5%	X01 – X03
• Pre-signal Max alarm (100% = alarm threshold)	70%	5 – 95%	5%	X01 – X03
• Pre-signal delay (Diff and Max)	2 s	0 s – 30 s	1 s	X01 – X03
• Pre-signal self-holding (Diff and Max)	Off	On / Off		X01 – X03
Sensing tube monitoring / testing				
• Sensing tube monitoring On / Off	On	On / Off		X01 – X03
• Testing through monitoring (EN) / cyclic ②	Monit. + cycl.	Monit. + cycl.		X01 – X03
• Testing interval	24 h	1 – 48 h	1 h	X01 – X03
• Testing sensitivity	Medium	Low / Medium / High		
• Testing repetition rate ②	2 ②	1 – 4	1	X01 – X03
• Testing waiting time ②	30 min ②	1 – 60 min	1 min	X01 – X03

① Diff alarm status "Off" / Max alarm status "Off"; both criteria cannot be switched off at the same time.

② Valid for ***C*** > ***A11*** to ***G02*** and ***W00*** to ***W03***. Increased values are configured for switch positions ***W04*** to ***W09***; these are **not** tested for EN compliance (see Technical Description T 140 358, Section 4.6.1.2).

Configuration options, Table B

The following criteria apply to the entire ADW 535. Saving a configuration after changes is performed in conjunction with the adaptations in Table A on one of the freely programmable switch positions ***X01*** to ***X03***.

Sector • Parameter	**Default setting**	**Area**	**Resolution / levels**	**Saving after change**
Day/night control / weekday control				
• Day/night control On/Off	Off	Off / clock / FACP		X01 – X03
• Day start time	06:00	00:00 – 24:00	15 min	X01 – X03
• Night start time	20:00	00:00 – 24:00	15 min	X01 – X03
• Weekday control	On	Mon to Sun	Days	X01 – X03
General faults				
• Lithium battery / clock fault	On	On / Off		X01 – X03
Deactivate / switch off sensing tube				
• Sensing tube I / sensing tube II • Switch off (partial planning) sensing tube II only	On	On / deactivated / switched off (partial planning)		X01 – X03

Configuration options, Table C

Independent configurations. These can be changed regardless of the switch position in the ADW 535.

Sector • Parameter	**Default adjustment**	**Selection**
Clock		
• Year, month, day, hour, minute, second	---	Seconds – year
Relay / OC output / reset key / various		
• Relay 1, 1st RIM 36	Diff alarm of sensing tube I	According to "***Configuration options relay allocation***"
• Relay 2, 1st RIM 36	Max alarm of sensing tube I	
• Relay 3, 1st RIM 36	Diff alarm pre-signal of sensing tube I	
• Relay 4, 1st RIM 36	Max alarm pre-signal of sensing tube I	
• Relay 5, 1st RIM 36	Alarm temperature sensor LMB	
• Relay 1, 2nd RIM 36	Diff alarm of sensing tube II	
• Relay 2, 2nd RIM 36	Max alarm of sensing tube II	
• Relay 3, 2nd RIM 36	Diff alarm pre-signal of sensing tube II	
• Relay 4, 2nd RIM 36	Max alarm pre-signal of sensing tube II	
• Relay 5, 2nd RIM 36	Freely programmable	
• Logging interval of SD memory card	1 s	1 – 3,600 s
• Perform initial reset, sensing tube I	---	On / Off
• Perform initial reset, sensing tube II	---	On / Off
• Manually initiate testing, sensing tube I	---	On / Off
• Manually initiate testing, sensing tube II	---	On / Off
• Isolate sensing tube (sensing tube I / II)	Normal operation	Isolate / normal operation

Relay assignment configuration options

The following criteria are freely programmable on max. 10 relays (5 units on 1st RIM 36, 5 units on 2nd RIM 36):

Sensing tube I	**Sensing tube II**	**General**
Diff alarm, sensing tube I	Diff alarm, sensing tube II	Alarm temperature sensor LMB
Max alarm, sensing tube I	Max alarm, sensing tube II	Undervoltage fault
Diff alarm pre-signal, sensing tube I	Diff alarm pre-signal, sensing tube II	Clock fault
Max alarm pre-signal, sensing tube I	Max alarm pre-signal, sensing tube II	
Ext. alarm temperature sensor I	Ext. alarm temperature sensor II	
Pressure sensor I fault	Pressure sensor II fault	
Testing I fault	Testing II fault	
Ext. fault temperature sensor I	Ext. fault temperature sensor II	
Sensing tube I interruption	Sensing tube II interruption	
Sensing tube I crushing	Sensing tube II crushing	
Sensing tube I leak	Sensing tube II leak	

The criteria can also be allocated with the "OR" function (example: sensing tube I interruption or sensing tube II interruption together on one relay).

Commissioning

When commissioning the ASD 535, it is necessary to perform an initial reset in order to acquire basic data (e.g. pressure check dependent on the connected sensing tube volume). A sealing check of the connected sensing tube is also carried out during the initial reset.

If the ASW 535 is operated without the “ADW HeatCalc” calculation, commissioning with the “**EasyConfig**” **procedure** can be carried out directly on the ASD 535.

For projects in which the “ADW HeatCalc” calculation software was used or in which customer-specific adaptations have to be made in the device configuration, the “**ADW Config**” configuration software has to be used.

Startup

Before the ADW 535 is switched on, it is absolutely necessary that all of the required measures have been performed (see T 140 358, Section 7.1).

- Sensing tube correctly mounted, cleaned (blown out) and only then connected to the ADW
- Isolation strips on the Lithium battery (LMB 35) removed

Startup sequence and procedure:

1. Switch on voltage supply (FACP), step motor goes into starting position, pressure pump is completely wound.
2. “**EasyConfig**”: Select required switch position for operation according to “***System limit table***” (e.g. “***C*** > ***A22*** > ***L01*** > ***085*** > ***L02*** > ***095***”) ➔ see “***Re-programming***”.
   - or:
   “**ADW Config**“: after making adjustments to the configuration (alarm thresholds, set values according to “ASD HeatCalc”, other criteria according to Tables A and B) select switch position “***X01***”, “***X02***” or “***X03***”.
3. Set date and time via LMB 35 with “EasyConfig” or from “ADW Config” (adoption by PC).
4. Following a **minimum waiting time of 5 min** after switching on, an initial reset must be performed. ➔ (See “***Initial reset***”. **Important**: The initial reset must always be performed under the system’s “normal conditions”, i.e. if possible, under the normal operating temperature of the sensing tube.
5. The ADW 535 is now ready for operation.

Measurements / commissioning protocol

The following measurements must be made (only after “***re-programming***” and “***initial reset***”):

- Operating voltage on terminals 1 (+), 2 (–) (if redundant supply then also terminals 3 & 4) ➔ target value = 10.8 to 13.8 VDC (in 12 VDC operation) or 21.6 to 27.6 VDC (in 24 VDC operation).
- Configuration and pressure values in switch positions ***N*** and ***P*** (see Technical Description T 140 358, Section 7.6.1).

The commissioning protocol is like a personal history of the ADW 535 and should therefore be filled out conscientiously and completely and stored in the ADW 535. If required, a copy can be made and stored in the system dossier.

Re-programming

Example: ADW 535-2 (2 sensing tubes) compliant with EN 54-22, Class **A2I**. Sensing tube **I = 85 m**, sensing tube **II = 95 m**. Required switch position ***C*** > ***A22*** > ***L01*** > ***085*** > ***L02*** > ***095***.

Measure	Display	Procedure / remarks
1. Press **UP** key	Flashing ***A12*** > ***W00*** > ***L01*** > ***115*** > ***L02*** > ***115***	• Displays the Default setting
2. Press **UP** key until ***C***	In sequence ***A12*** / ***C***	• Displays switch position group ***C***
3. Press **OK** key	***A1***	• Displays Class ***A1*** in group ***C***
4. Press **UP** key until ***A2***	In sequence ***A1*** / ***A2*** / ***b*** / ***C*** / etc.	• Displays Class ***A2*** in group ***C***
5. Press **OK** key	***A21***	• Displays Class ***A2*** for 1 sensing tube
6. Press **UP** key until ***A22***	In sequence ***A12*** / ***A22***	• Displays Class ***A2*** for 2 sensing tubes
7. Press **OK** key	***L01***	• Displays length entry **sensing tube I**
8. Press **OK** key	***015***	• Displays minimum length = **15 m**
9. Press **UP** key until ***085*** (= 85 m)	Stepwise, ***015*** / ***020*** / ***025*** to ***085***	• Displays length in 5 m steps
10. Press **OK** key	***L02***	• Displays length entry **sensing tube II**
11. Press **OK** key	***015***	• Displays minimum length = **15 m**
12. Press **UP** key until ***095*** (= 95 m)	Stepwise, ***015*** / ***020*** / ***025*** to ***095***	• Displays length in 5 m steps
13. Press **OK** key	Flashing **- - -** (approx. 4 x)	• New setting is programmed
14. Check: Press **UP** key	Flashing ***A22*** > ***W00*** > ***L01*** > ***085*** > ***L02*** > ***095***	• Displays the new setting

Initial reset

Switch position ***U01*** = initial reset for sensing tube I
Switch position ***U02*** = initial reset for sensing tube II

Measure	Display	Procedure / remarks
1. Press **UP** key	Flashing ***A22*** > ***W00*** > ***L01*** > ***085*** > ***L02*** > ***095***	• System-specific setting
2. Press **UP** key until ***U***	In sequence ***A22*** / ***C*** / to ***U***	• Displays switch setting group ***U***
3. Press **OK** key	***U01***	• Displays initial reset On for **sensing tube I**
4. Press **UP** key until ***U01***	Stepwise, ***U01*** / ***U02***	• Selection ***U01***, initial reset for **sensing tube I**
5. Press **OK** key	Static ***U***, Flashing ***01***	• Pressure pump is fully wound
6. Vent sensing tube for **60 s**	Static ***U***, Flashing ***01***	• Pressure equalisation at “0”
7. Press **OK** key ➔ **Wait**	Flashing ***U01*** (automatic sequence, **approx. 2 min**)	• Test pressure • Length check • Pressure build-up • Sealing check
	Flashing **- - -** ①	• Initial reset completed

① The display **- - -** signals only the completed initial reset process. Depending on the result, there may be an initial reset fault.

Following the sequence above, the initial reset must be carried out separately for each individually selected sensing tube.

Checking fault and alarm release

Block or switch off fire incident control and remote alerting on the superordinate FACP.

To check the fault and alarm release, **test triggerings** must be carried out in switch position ***I***. Observe the information in Technical Description T 140 358, Section 7.7.1.

Testing the effective “heat” characteristic is usually not necessary. If required, it is possible to generate the necessary heat (similar to an actual fire) with test devices to simulate the response of the ADW 535 (see Technical Description T 140 358, Section 5.4.2.4).

Article numbers / spare parts

Short designation		Article number
ADW 535-1		11-1000000-01-XX
ADW 535-2		11-1000000-02-XX
ADW 535-1HDx (in preparation)		11-1000001-01-XX
ADW 535-2HDx (in preparation)		11-1000001-02-XX
XLM 35 SecuriLine eXtended line module		11-2200003-01-XX
RIM 36 Relay Interface Module		11-2200005-01-XX
SIM 35 Serial Interface Board		11-2200000-01-XX
SMM 535 Serial Master Module		11-2200001-01-XX
ART 535-10 external temperature sensor		11-1000002-10-XX
Ethernet cable 3.0 m		30-6800006-02-XX
SD memory card		11-1300003-01-XX
LMB 35 main board (for ADW 535-1 / -2)		11-1200001-01-XX
LEB 35 extension board (for ADW 535-2)		11-1200002-01-XX
LSU 35 complete supervising unit		11-1200003-01-XX
Lithium battery		11-4000002-01-XX
M20 cable screw union		11-4000003-01-XX
M25 cable screw union		11-4000004-01-XX
Adapter US cable screw union AD US M-inch		11-2300029-01-XX
UMS 35 Universal Module Support		4301252.0101
Technical Description ADW 535		T 140 358
Mounting and installation		T 140 360
Material for sensing tube		T 140 362
Commissioning protocol		T 140 363
Data sheets	XLM 35	T 140 088
	RIM 36	T 140 364

ADW 535-2 (-1) dimensioned drawing

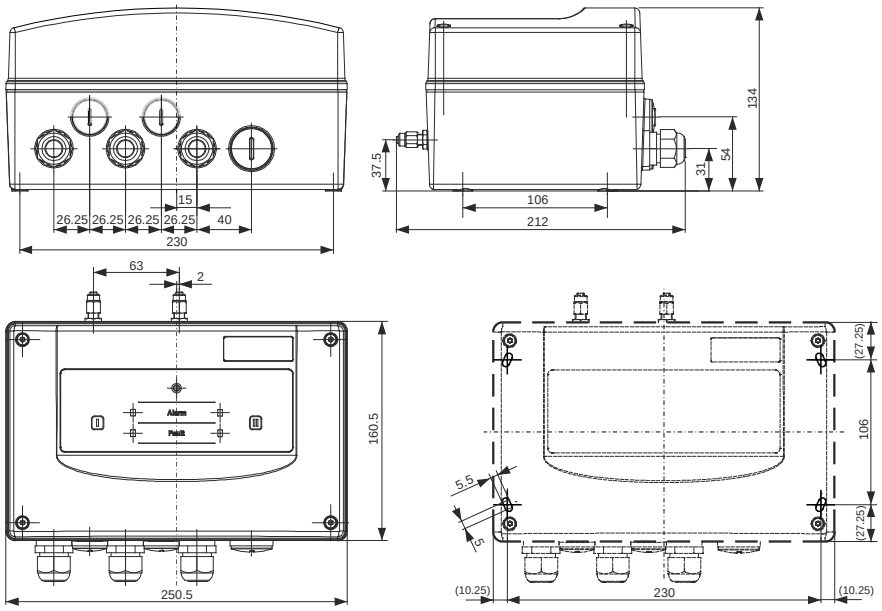

Fig. 4 Dimensioned drawing, drilling plan for cable terminal processor

Technical data

Type				ADW 535	
Voltage supply range				9 to 30 (**UL/FM = 10.6 to 27**)	VDC
Maximum power consumption, measured at ➔		**in 12 VDC operation** 9 VDC ①	**in 24 VDC operation** 18 VDC ①	**typical** 24 VDC	
ADW 535-1	Quiescent/fault	approx. 75	approx. 45	approx. 35	mA
	Alarm I	approx. 90	approx. 52	approx. 42	mA
	Test	approx. 550	approx. 270	approx. 210	mA
ADW 535-2	Quiescent/fault	approx. 95	approx. 53	approx. 43	mA
	Alarm I + II	approx. 125	approx. 71	approx. 57	mA
	Test	approx. 600	approx. 290	approx. 230	mA
Additionally with 1 RIM 35		approx. 15	approx. 10	approx. 7	mA
Additionally with 2 RIM 35		approx. 30	approx. 20	approx. 14	mA
Additionally with XLM 35 / SLM 35		approx. 20	approx. 10	approx. 5	mA
Additionally with MCM 35		approx. 25	approx. 15	approx. 10	mA
Additionally with SIM 35		approx. 20	approx. 10	approx. 5	mA
SMM 535 (not from ADW but rather from PC via USB connection)				max. 100	mA
Switch-on current peak ② (caused by EMC protection elements on the ADW supply input)				approx. 5	A
				for max. 1	ms
Sensing tube length				see T 140 358, Section 4.6	
Sensing tube diameter, copper (Cu), steel (St) (outer / inner)				Ø 5 / 4	mm
Sensing tube diameter, PTFE (outer / inner)				Ø 6 / 4	mm
Response range (note FW version)				EN 54-22, Class A1l – Gl	
Protection type in accordance with IEC 529 / EN 60529 (1991)				65	IP
Ambient conditions in accordance with IEC 721-3-3 / EN 60721-3-3 (1995)				3K5 / 3Z1	Class
Extended ambient conditions:					
• Temperature range cable terminal processor				–25 – +70	°C
• Sensing tube temperature range				–40 – +180 ③	°C
• Max. permissible storage temperature for cable terminal processor (without condensation)				–30 – +70	°C
• Humidity ambient condition of cable terminal processor (continuous, IP65)				95	% rel. humidity
• Humidity ambient condition of sensing tube (continuous)				70	% rel. humidity
Max. loading capacity, relay contact				50 (**UL max. 30**)	VDC
				1	A
				30	W
Max. loading capacity per OC output (dielectric strength 30 VDC)				100	mA
Plug-in terminals				2.5	mm²
Cable entry for cable Ø				Ø 5 – 12 (M20) / Ø 9 – 18 (M25)	mm
Housing material				ABS blend, UL 94-V0	
Housing colour				Grey 280 70 05 / anthracite violet 300 20 05	RAL
Approvals				EN 54-22 / (FM 3210 / UL521)	
Dimensions ADW 535-1 / -2 (W x H x D, without / with packaging)				250 x 212 x 134 / 262 x 238 x 170	mm
Weight ADW 535-1 (without / with packaging)				1,500 / 1,780	g
Weight ADW 535-2 (without / with packaging)				1,970 / 2,250	

① Power consumption at maximum permitted voltage drop in the electrical installation (decisive value for calculating the conductor cross-section).

② May cause the protective circuit to trigger immediately in the case of power supplies with overload protective circuits (primarily in devices with no emergency power supply and output current of < 1.5 A).

③ Lower or higher temperature ranges are also possible subject to consultation with the manufacturer. When using the sensing tube at 100°C and above, use metal pipe clamps.

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