

ASD 535

Aspirating smoke detector

From production number 310712 and FW version 01.06.00

The ASD 535 aspirating smoke detector performs the task of taking continuous air samples via one or two sampling pipe networks from a monitored area and feeding the samples to one or two smoke sensors.

The ASD 535 consists of the detector housing and one or two sampling pipe tube networks. The sampling pipes have several sampling holes whose size is such that each hole withdraws the same amount of air. The sampling pipes may be I-, U-, T-, H-, or E-shaped. The sampling pipes are usually symmetrically designed. Asymmetrical sampling pipe tube networks can also be implemented using the "ASD PipeFlow" calculation software.



Fig. 1 ASD 535-4

Description

Integrated in the detector housing is a high-speed fan which, in conjunction with the sampling pipe, ensures uninterrupted air supply to the detector housing. Airflow monitoring detects any blockages or breaks in each of the sampling pipe networks.

The ASD 535 is available in four versions:

- ASD 535-1 for 1 sampling tube, and 1 smoke sensor without smoke level indicator;
- ASD 535-2 for 2 sampling tubes, and 2 smoke sensors without smoke level indicator;
- ASD 535-3 for 1 sampling tube, and 1 smoke sensor with smoke level indicator;
- ASD 535-4 for 2 sampling tubes, and 2 smoke sensors with smoke level indicator.

The ASD 535 can be equipped with the following smoke sensor types:

- SSD 535-1 Sensitivity range 0.5%/m to 10%/m
- SSD 535-2 Sensitivity range 0.1%/m to 10%/m
- SSD 535-3 Sensitivity range 0.02%/m to 10%/m

The ASD 535 aspirating smoke detector has four slots for expansion modules. The following modules can be added:

- XLM 35 eXtended Line Module
- SLM 35 SecuriLine module
- RIM 35 Relay Interface Module with 5 relays (max. 2 units);
- MCM 35 [Memory Card Module](#)
- SIM 35 [Serial Interface Module](#)

The ASD 535 can be linked to a higher level FACP by means of potential-free change-over contacts.

With the installation of an **XLM 35** or **SLM 35**, the ASD 535 can be ideally connected via the addressable loop to the SecuriFire and [Integral](#) fire alarm systems (with SLM also to SecuriPro).

A further expansion option is the **RIM 35**. This module enables the availability of all three pre-signal levels as well as the states "smoke sensor dirty" and "LS-Ü blockage" as relay contacts. The relays are also freely configurable via the [ASD Config](#) configuration software.

The **MCM 35** serves to record operating data.

Up to 250 ASDs can be networked with the **SIM 35**; they can then be visualised and operated from a PC using "[ASD Config](#)".

The ASD 535 aspirating smoke detector can be used for:

- **Equipment monitoring:** EDP systems, electrical distributors, switch cabinets, etc.
- **Space surveillance:** EDP rooms, clean rooms, warehouses, high-rack storage buildings, deep-freeze warehouses, hollow floors, protection of cultural objects, transformer stations, prison cells, etc.

The ASD 535 is also deployed in areas where conventional point type detectors are used. The local provisions and regulations must be observed from case to case.

The response behaviour of the ASD 535 has been tested in compliance with EN 54-20, Class A, B and C.



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 |

Opening the detector housing



Press the rotary snap locks down **firmly** with a screwdriver (min. No. 5) toward the housing base and then **turn 90°**. The position of the lock slit shows the current state:

- approx. 45° angled toward detector housing corner = closed
- approx. 45° angled toward detector housing edge = open

The rotary snap locks **must** snap into place.

The **housing cover** (control unit) is connected to the **Main Board** by a **flat cable**. Make sure that when the housing cover is lifted away the flat cable does not become damaged.

Connection

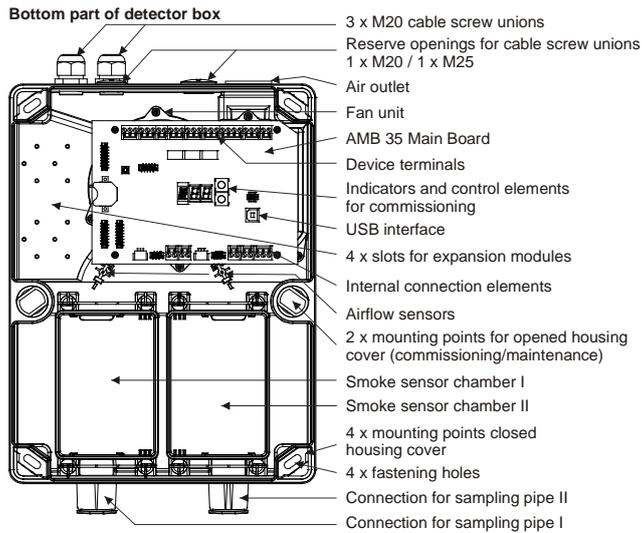


Fig. 2 View inside the ASD 535

AMB 35 device connections

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

Term.	Signal	
1	+10.5 to +30 VDC	Main power supply line
2	0 V	
3	+10.5 to +30 VDC	Redundant supply line
4	0 V	
5	+ Supply (for OC consumers)	
6	Output fault, OC (all events)	
7	Output alarm I, OC	
8	Output alarm II or freely programmable, OC	
9	unused	
10	Rel. 1 "(NO)"	Fault
11	Rel. 1 "(NC)"	Contact (te. 10/12) closed in idle state
12	Rel. 1 "COM"	
13	Rel. 2 "NO"	Alarm I
14	Rel. 2 "NC"	
15	Rel. 2 "COM"	
16	Rel. 3 "NO"	Alarm II or freely programmable
17	Rel. 3 "NC"	
18	Rel. 3 "COM"	
19	External reset input +	Optocoupler input
20	External reset input -	
21	+ F	
22	DF	(may be available at a later date)
23	-	
24	+ S	Connection MFU 535, REK 535 (available later)
25	DS	
26	-	

AMB 35 internal connections

Terminal	Signal	
MOT / M-	Fan - (black wire)	
MOT / T	Fan tach signal (white wire)	
MOT / M+	Fan + (red wire)	
OEM2 / AI-	Optocoupler inputs OEM2	<ul style="list-style-type: none"> In some cases, actuations may not comply with the requirements of EN 54-20; thus, use only after consulting with the manufacturer. The OEM inputs are not line monitored.
OEM2 / AI+		
OEM2 / St-		
OEM2 / St+		
OEM1 / AI-	Optocoupler inputs OEM1	
OEM1 / AI+		
OEM1 / St-		
OEM1 / St+		

Terminal assignments XLM 35, SLM 35, RIM 35 and SIM 35

The terminal assignments of the XLM 35, SLM 35, RIM 35 and SIM 35 are found in the corresponding data sheets T 140 088 (XLM 35), T 131 197 (SLM 35), T 131 196 (RIM 35) and T 140 011 (SIM 35).

Wiring principle



Examples of and information about wiring are found in Technical Description ASD 535, T 131 192 E, section 6.

Deploying smoke sensors

Smoke sensors are not fitted when the ASD 535 is delivered. They are application specific (according to required sensitivity range), purchased from the manufacturer and installed after the detector housing is mounted (see Fig. 3).



- The smoke sensors should always be removed from their protective packaging just before deployment in the detector housing.
- Depending on the situation (e.g. if there is a long time between mounting and commissioning or if the environment is very dusty due, for example, to construction), the smoke sensors should be installed just before commissioning the ASD 535.
- Before installing the smoke sensors, check that the protective screens against insects are properly fitted to the air inlet and outlet in the smoke sensor chambers.
- The smoke sensor chamber must be absolutely free of dirt and dust. Any waste or other materials resulting from mounting the detector housing must be removed.

The installation position of the smoke sensors depends on the particular smoke sensor chamber (I or II). The connectors of the smoke sensors are oriented toward the outside of the ASD housing. Incorrect installation positioning is prevented by the anti-twist rib on the smoke sensor housing.

The smoke sensors are fastened with the two lock clamps in the ASD housing. The electrical connection to the AMB 35 Main Board is accomplished with the supplied ribbon cable.

The smoke sensor chamber II on the ASD 535-1 and ASD 535-3 (only one smoke sensor) remain open (insect protection screens and lock clamps are not fitted, air channels are closed).

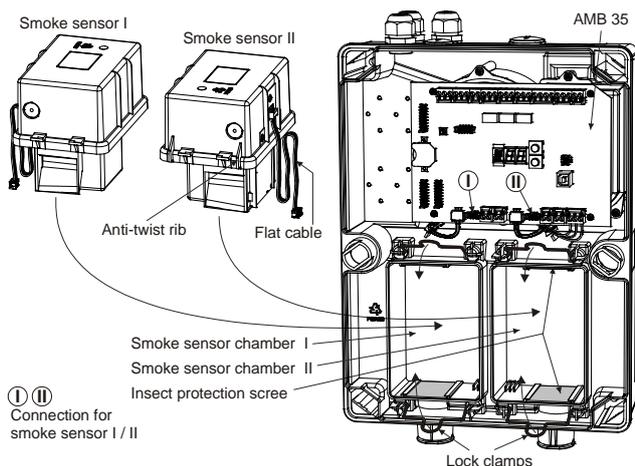


Fig. 3 Deploying the smoke sensors

Displays on the control unit

Several LEDs on the control unit indicate the current state of the ASD 535. The table below lists only the states for the ASD 535-1 and ASD 535-3 (one smoke sensor / one sampling pipe). Except for the operation display, the displays are doubled for the ASD 535-2 and ASD 535-4 (I and II).

Function / state	Operation	Alarm	Fault	Det. dusty / dirty	Smoke level ①
	green	red	yell.	yell.	yell.
System off (no voltage)					
System inactive (external reset)	On	½ T			
Smoke sensor off (from FACP)	On	½ T			
Idle state	On				
Blockage / pipe breakage, delay time running ②	On		1 T		
Blockage / pipe breakage, fault triggered	On		On		
Fan tacho signal lacking	On		On		
Fault triggered	On		On		
Pre-signal 1 (ASD 535-1 / -2)	On	2 T			
Pre-signal 2 (ASD 535-1 / -2)	On	1 T			
Pre-signal 3 (ASD 535-1 / -2)	On	½ T			
Smoke level 1–10 (ASD 535-3 / -4) ③	On				On
Pre-signal 1, 2, 3 (ASD 535-3 / -4) ③	On				1 T
Alarm	On	On			
Dusty smoke sensor	On			1 T	
Dirty smoke sensor	On			½ T	
Smoke sensor fault	On			On	



- ① Additional for ASD 535-3 and ASD 535-4
 - ② No fault triggered (triggers only after the delay time expires → "Fault" LED display continuously lit).
 - ③ The LED of the respective smoke level 1–10 (corresponds to 10–100% of alarm threshold) is continuously lit when exceeded. If a pre-signal is programmed on this level, the LED subsequently begins to flash (default: VS 1 = level 3, VS 2 = level 5, VS 3 = level 7).
- T = Flashing indicator; ½ s cycle / 1 s cycle / 2 s cycle

Displays on the AMB 35 Main Board

On the AMB 35 there is a 3-digit segment display which can have the following outputs and displays:

- flashing point and AL = Autolearning running;
- flashing point and point continuously lit = day/night control active;
- switch setting E = event memory (99 events E01 to E99), for more information see T 131 192 E, section 8.5.3;
- switch setting F = firmware version, for more information see T 131 192 E, section 7.3.6;
- pushbutton "UP" = the set configuration (A11 to C32, W01 to W48, X01 to X03), see also "Programming";
- switch setting V = airflow values (airflow rate), for more information see T 131 192 E, section 7.6.1

Programming

The ASD 535 has several switch settings which are configured with permanently assigned parameters:

- normative system limits according to EN 54-20, Class A to C, settings A11 to C32;
- non-normative system limits, settings W01 to W48;
- configurable settings for saving settings after using "ASD PipeFlow" and/or changing the device configuration via the "ASD Config" configuration software and SecuriPro or Integral FACP (SLM 35), X01 to X03.



The parameters are configured ex factory with default states and values so that the triggering properties comply with EN 54-20. Changing the parameters may result in non-compliance with EN 54-20. Any adjustments or modifications to the ASD 535 via "ASD Config" may be performed only by the manufacturer or by persons under the supervision of and trained by the manufacturer.

Switch settings on the AMB 35 Main Board

Pos.	Range / Display	Purpose
A	A11 / A12	Normative system limits according to EN 54-20, Class A
b	b11 / b12 / b21 / b22	Normative system limits in compliance with EN 54-20, Class B
C	C11 / C12 / C21 / C22 / C31 / C32	Normative system limits in compliance with EN 54-20, Class C
E	E01 to E99 ↳ G00 to G99	Event memory E01 – E99 ↳ Event group G00 – G99
F	F00 to F99 (3 x)	Display of firmware version
o	o00	Log off expansion modules (optional modules)
T	Y10 to Y99 / M01 to M12 d01 to d31 / H00 to H23 M00 to M59	Poll (T00) and adjust (T01) the date and time
U	U01	Execute initial reset
V	V01 / V02, each 000 to 255	Output airflow rate in % Pipe I (= V01), pipe II (= V02)
W	W11 to W48	Non-normative system limits
X	X01 to X03	Configurable switch settings



The table lists only the available switch settings. Information about entry procedure is found in Technical Description T 131 192 E, section 8.3.

Data sheet

System limits without “ASD PipeFlow” calculation

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

- **Normative system limits** compliant to EN 54-20, Class A to C, switch settings **A11** to **C32**;
- **Non-normative system limits**, switch settings **W01** to **W48**.

Normative system limits

Switch settings **A11** to **C32** have configured values which are necessary for alarm response sensitivity and airflow monitoring compliance with EN 54-20 Class A to C. The switch setting designation is deciphered as follows:

- First figure Response class **A, b, C** compliant with EN 54-20;
- Second figure System limit **1, 2, 3** (pipe topology);
- Third figure Number of pipe networks **1, 2** on the ASD.

Example: **b22** Response class **b** / system limit **2** / **2** sampling pipe tube networks.

Non-normative system limits

Switch settings **W01** to **W48** contain system limits which fulfil only the alarm response sensitivity for EN 54-20 Class A to C but not the normative limits concerning airflow monitoring. Since these are identical to system limits **A11** to **C32** concerning pipe topology (pipe network length, number of sampling holes), switch settings **W01** to **W48** are also included in the tables below. Additional information about switch settings **W01** to **W48** concerning number of pipe networks and airflow monitoring can be found in Technical Description T 131 192, section 4.4.4.4.



Switch settings **W01** to **W48** may be used only after consulting with the manufacturer. The configured values they contain concerning airflow monitoring are not tested in accordance with EN. For further information about using the system limits table is found in Technical Description T 131 192, sections 4.4.4.3 and 4.4.4.4.

System limits table for planning without “ASD PipeFlow” calculation

EN 54-20 compliance, Class A (highly sensitive)

Shape	System limit	Switch setting to EN 54-20		Switch setting Non-normative 		Smoke sensor type SSD 535	Alarm threshold (%/m) [†]	Length from ASD to the last T-piece/cross	Max. length from ASD to the farthest sampling hole	Number of sampling holes per sampling branch	Max. total length of the sampling pipe per pipe network (smoke sensor)
		1 tube	2 tube	1 tube	2 tube						
I	1	A11	A12	W01 – W04	W05 – W08	-3	0.03	---	50 m	1 – 7	50 m
U / T	1	A11	A12	W01 – W04	W05 – W08	-3	0.03	1 – 20 m	40 m	1 – 4	80 m
H	1	A11	A12	W01 – W04	W05 – W08	-3	0.03	1 – 20 m	40 m	1 – 2	160 m
E	1	A11	A12	W01 – W04	W05 – W08	-3	0.03	1 – 20 m	40 m	1 – 3	120 m

EN 54-20 compliance, Class B (sensitive)

I	1	b11	b12	W09 – W12	W13 – W16	-3	0.09	---	50 m	1 – 7	50 m
	2	b21	b22	W17 – W20	W21 – W24	-3	0.06	---	70 m	5 – 9	70 m
U / T	1	b11	b12	W09 – W12	W13 – W16	-3	0.09	1 – 20 m	40 m	1 – 3	80 m
	2	b21	b22	W17 – W20	W21 – W24	-3	0.06	1 – 20 m	55 m	3 – 5	110 m
H	1	b11	b12	W09 – W12	W13 – W16	-3	0.09	1 – 20 m	35 m	1 – 2	140 m
	2	b21	b22	W17 – W20	W21 – W24	-3	0.06	1 – 20 m	45 m	2 – 3	180 m
E	1	b11	b12	W09 – W12	W13 – W16	-3	0.09	1 – 20 m	40 m	1 – 2	120 m
	2	b21	b22	W17 – W20	W21 – W24	-3	0.06	1 – 20 m	50 m	2 – 3	150 m

EN 54-20 compliance, Class C (standard)

I	1	C11	C12	W25 – W28	W29 – W32	-1	0.8	---	40 m	1 – 5	40 m
	2	C21	C22	W33 – W36	W37 – W40	-2	0.35	---	80 m	3 – 9	80 m
	3	C31	C32	W41 – W44	W45 – W48	-2	0.13	---	110 m	7 – 16	110 m
U / T	1	C11	C12	W25 – W28	W29 – W32	-1	0.8	1 – 20 m	30 m	1 – 3	60 m
	2	C21	C22	W33 – W36	W37 – W40	-2	0.35	1 – 20 m	60 m	3 – 5	120 m
	3	C31	C32	W41 – W44	W45 – W48	-2	0.13	1 – 20 m	70 m	5 – 9	140 m
H	1	C11	C12	W25 – W28	W29 – W32	-1	0.8	1 – 25 m	35 m	1 – 2	140 m
	2	C21	C22	W33 – W36	W37 – W40	-2	0.35	1 – 25 m	45 m	2 – 3	180 m
	3	C31	C32	W41 – W44	W45 – W48	-2	0.13	1 – 25 m	60 m	3 – 5	240 m
E	1	C11	C12	W25 – W28	W29 – W32	-1	0.8	1 – 20 m	30 m	1 – 2	90 m
	2	C21	C22	W33 – W36	W37 – W40	-2	0.35	1 – 20 m	50 m	2 – 3	150 m
	3	C31	C32	W41 – W44	W45 – W48	-2	0.13	1 – 20 m	60 m	3 – 6	180 m

Sampling holes for planning without “ASD PipeFlow”-calculation

The tables below show the respective hole diameters for the numbers in Fig. 4 as a function of the number of sampling holes per sampling branch.

I-shaped sampling pipes																
Number of sampling holes per sampling branch	Hole diameter in mm for the sampling hole number from ASD															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	5.0															
2	4.0	5.0														
3	4.0	4.0	5.0													
4	3.5	3.5	4.0	5.0												
5	3.5	3.5	3.5	4.0	5.0											
6	2.5	2.5	2.5	2.5	3.0	5.0										
7	2.5	2.5	2.5	2.5	2.5	2.5	5.0									
8	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0								
9	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	5.0							
10	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	3.0	7.0						
11	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	2.5	4.0	7.0					
12	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	4.0	7.0				
13	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	4.0	7.0			
14	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	2.5	2.5	4.0	7.0		
15	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	2.5	4.0	7.0	
16	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.5	4.0	7.0

U/T-shaped sampling pipes									
Number of sampling holes per sampling branch	Hole diameter in mm for the sampling hole number from ASD								
	1	2	3	4	5	6	7	8	9
1	5.0								
2	4.0	5.0							
3	4.0	4.0	5.0						
4	4.0	4.0	4.0	5.0					
5	4.0	4.0	4.5	5.0	6.5				
6	3.0	3.0	3.5	3.5	4.0	6.5			
7	2.5	3.0	3.0	3.5	3.5	4.0	6.5		
8	2.5	2.5	3.0	3.0	3.5	3.5	3.5	7.0	
9	2.5	2.5	3.0	3.0	3.5	3.5	3.5	3.5	7.0

H/E-shaped sampling pipes						
Number of sampling holes per sampling branch	Hole diameter in mm for the sampling hole number from ASD					
	1	2	3	4	5	6
1	5.0					
2	4.0	5.0				
3	4.0	4.0	5.5			
4	3.0	3.0	3.5	5.5		
5	2.5	3.0	3.0	3.0	6.0	
6 (E-shaped only)	2.5	2.5	3.0	3.0	3.5	6.0

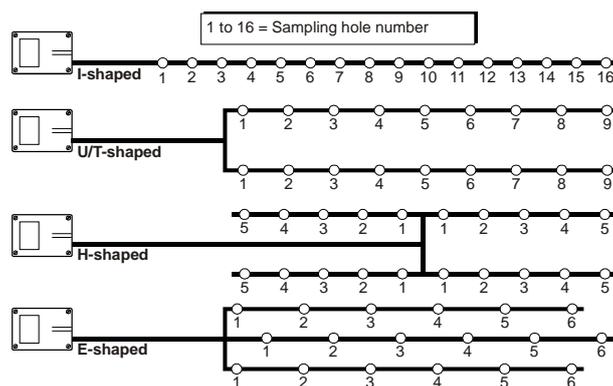


Fig. 4 Size of sampling holes

Data sheet

Configuration options, Table A:

The following criteria can be set for each smoke sensor / sampling pipe. Also, the criteria for day/night control can be separately set. Configuration changes are saved on one of the freely programmable switch settings **X01 to X03**.

Sector • Parameter	Default Setting	Range	Resolution / Levels	Saving after change
Alarm 2				
• Alarm 2 On / Off	Off	Off / On		X01 – X03
• Sensitivity (always at least 20% over Alarm)	1 %/m	– 10 %/m	0.0002 %/m	X01 – X03
• Alarm 2 delay	2 s	0 s – 60 s	1 s	X01 – X03
• Alarm 2 self-hold	On	On / Off		X01 – X03
• Holding time for area switching (AI 2 to AI)	20	10 – 250	1 s	X01 – X03
Alarm				
• Alarm threshold (dependent on smoke sensor type and response class according to EN 54-20)	C11 / C12	0.02 – 10%/m 0.1 – 10%/m 0.5 – 10%/m	0.0002 %/m	X01 – X03
• Smoke level average value formation (number)	4	1 – 10	1	X01 – X03
• Alarm delay	2 s	0 s – 60 s	1 s	X01 – X03
• Alarm cascade	Off	Off / On		X01 – X03
• Alarm self-hold	On	On / Off		X01 – X03
Pre-signal				
• Pre-signal 1 On / Off	On	On / Off		X01 – X03
• Pre-signal 2 On / Off	On	On / Off		X01 – X03
• Pre-signal 3 On / Off	On	On / Off		X01 – X03
• Pre-signal 1 (100% = alarm threshold)	30%	10 – 90%	10%	X01 – X03
• Pre-signal 2 (100% = alarm threshold)	50%	VS 1 + 10 – 90%	10%	X01 – X03
• Pre-signal 3 (100% = alarm threshold)	70%	VS 2 + 10 – 90%	10%	X01 – X03
• Pre-signal delay (VS 1 – VS 3)	2 s	0 s – 60 s	1 s	X01 – X03
• Pre-signal self-hold	Off	Off / On		X01 – X03
Smoke sensor dust/dirt				
• Smoke sensor dust On / Off	On	On / Off		X01 – X03
• Smoke sensor dirt On / Off	On	On / Off		X01 – X03
• Dust threshold (% of AI)	50%	5 – 60%	5%	X01 – X03
• Dirt threshold (% of AI)	75%	65 – 90%	5%	X01 – X03
• Dust self-hold	On	On / Off		X01 – X03
• Dirt self-hold	On	On / Off		X01 – X03
• Fault delay of smoke sensor	30 s	0 s – 60 s	1 s	X01 – X03
Airflow monitoring				
• LS-Ü blockage On / Off	On	On / Off		X01 – X03
• LS-Ü pipe breakage On / Off	On	On / Off		X01 – X03
• LS-Ü sensitivity (applies to A01 to C32) ①	±20% ①	±10 – ±70%	± 10%	X01 – X03
• LS-Ü average value formation (number)	20	1 – 30	1	X01 – X03
• LS-Ü delay time (applies to A01 to C32) ①	300 s ①	2 min – 60 min	10 s / 1 min	X01 – X03

 ① Increased values are configured for switch settings **W01 to W48**; these are **not** tested for EN compliance (see Technical Description T 131 192 E, section 4.4.4.4).

Configuration options, Table B:

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

Sector • Parameter	Default Setting	Range	Resolution / Levels	Saving after change
Autolearning				
• Autolearning On / Off	Off	On		X01 – X03
• Autolearning duration	3 days	1 min to 14 days	min, h, days	X01 – X03
• Autolearning factor (of measured AI threshold)	1.5	1.1 – 10 x		X01 – X03
Day/night control / day of the week 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
• Day of the week control	On	Mo to Su	days	X01 – X03

→→

Continuation table B:

General faults				
• Lithium battery / clock fault	On	On / Off		X01 – X03
Ventilator				
• Fan speed	Level III	Level I to V	1	X01 – X03
Deactivate / switch off sensor				
• Smoke sensor I / Smoke sensor II • Switch off (partial planning) only smoke sensor II	On	On / deactivated / switched off (partial planning)		X01 – X03

Configuration options, Table C:

Independent configurations. These can be changed independently of the switch settings in the ASD 535.

Sector	Default Setting	Selection	
• Parameter			
Time			
• Year, month, day, hour, minute	---	Minutes - year	
Relay / OC module / reset button / various			
• Relay 3 and OC module 3, AMB 35	Alarm II	According to “Configuration options relay allocation”	
• Relay 1, 1st RIM 35	Pre-signal 1 smoke sensor I		
• Relay 2, 1st RIM 35	Pre-signal 2 smoke sensor I		
• Relay 3, 1st RIM 35	Pre-signal 3 smoke sensor I		
• Relay 4, 1st RIM 35	Smoke sensor I dirty		
• Relay 5, 1st RIM 35	Sampling tube I blockage		
• Relay 1, 2nd RIM 35	Pre-signal 1 smoke sensor II		
• Relay 2, 2nd RIM 35	Pre-signal 2 smoke sensor II		
• Relay 3, 2nd RIM 35	Pre-signal 3 smoke sensor II		
• Relay 4, 2nd RIM 35	Smoke sensor II dirty		
• Relay 5, 2nd RIM 35	Sampling tube II blockage		
• Reset button On / Off	On		On / Off
• Heating control, subsequent heating time	2 min		1 – 60 min
• MCM settings, recording interval	1 s		1 – 120 s
• MCM smoke peak value memory	Off		Off / On
• Perform initial reset	---	On / Off	
• Smoke sensor operation mode (smoke sensor I / II)	SSD/DMB	SSD/DMB or OEM inputs (single or in combination) Switched off	
• Isolate smoke sensor (smoke sensor I / II)	Normal operation	Isolate / normal operation	

Relay allocation configuration options:

The following criteria can be programmed on a max. of 11 relays (1 AMB 35 unit on ASD 535-1 and ASD 535-3, 6 units on 1st RIM 35, 5 units on 2nd RIM 35):

Smoke sensor I / LS-Ü I	Smoke sensor II / LS-Ü II	General
Smoke sensor I alarm	Smoke sensor II alarm	Fan fault
Pre-signal 1 smoke sensor I	Pre-signal 1 smoke sensor II	Operating voltage fault
Pre-signal 2 smoke sensor I	Pre-signal 2 smoke sensor II	Initial reset fault
Pre-signal 3 smoke sensor I	Pre-signal 3 smoke sensor II	Lithium battery / clock fault
Smoke sensor I dusty	Smoke sensor II dusty	
Smoke sensor I dirty	Smoke sensor II dirty	
Smoke sensor I fault	Smoke sensor II fault	
Sampling tube I pipe blockage	Sampling tube II pipe blockage	
Sampling tube I pipe breakage	Sampling tube II pipe breakage	
Heating control sampling pipe I	Heating control sampling pipe II	
Alarm 2 sampling pipe I	Alarm 2 sampling pipe II	

The criteria can also be allocated with the or function (example: smoke sensor dust or dirt together on one relay).

Commissioning

When commissioning the ASD 535, it is necessary to perform an initial reset for automatically adjusting the airflow monitoring on the connected sampling pipe(s).

If the ASD 535 is operated without "ASD PipeFlow" calculation, commissioning with the "EasyConfig" method can be carried out directly on the ASD 535.

For projects in which the "ASD PipeFlow" calculation software was used or in which customer-specific adaptations have to be made in the device configuration, the "ASD Config" configuration software has to be used.

Starting up



Before the ASD 535 is switched on, it is absolutely necessary that all of the required measures have been performed (see T 131 192, section 7.1).

- sampling pipe correctly mounted and connected;
- smoke sensors installed and connected;
- isolation strip on the Lithium battery (AMB 35) removed.

Sequence and procedure for starting up:

1. Switch on supply voltage (FACP); while the fan accelerates stepwise to its final speed (takes about 100 s), the next procedure can be carried out. **The system is immediately armed for alarm.**
2. "EasyConfig": select necessary switch setting for operation according to "System limit table" (e.g. "b22") → see "Re-programming".
- or:
"ASD Config": after adapting the configuration (alarm threshold according to "ASD PipeFlow" and other criteria in Tables A and B), select switch setting "X01", "X02" or "X03".
3. Set date and time via AMB 35 with "EasyConfig" or from "ASD Config" (adoption by PC).
4. Following a **minimum waiting time of 5 min** after switching on, an initial reset must be performed (possible only via AMB 35) → see "Initial reset".
5. The ASD 535 is now ready for operation.

Re-programming

Example: Response class B, system limit 2, ASD 535-4 (2 sampling tubes), required switch setting **b22**.

Measure	Display / indication	Procedure Remark
	Switch settings W01 to W48 may be used only after consulting with the manufacturer. The configured values they contain concerning airflow monitoring are not tested in accordance with EN.	
6. Press the "UP" button	Flashing C32	• Display of the default setting
7. Press "UP" twice until display shows b	In sequence: A / b	• Display switch setting group b
8. Press the "OK" button	b11	• Display of the smallest possible setting in group b
9. Press "UP" until display shows b22	In sequence: b11 / b12 / b21 / b22	• Display of the possible settings in group b
10. Press the "OK" button	Flashing b - - (approx. 4 x)	• New setting is programmed
11. Check: Press the "UP" button	Flashing b22	• Display of the new setting

Initial reset

Measure	Display / indication	Procedure Remark
	Before performing an initial reset after switching on the ASD 535, a waiting time of at least 5 min must be observed.	
1. Press the "UP" button	Flashing C32 or other	• Display of the default setting or the installation-specific switch setting
2. Press "UP" several times until display shows U	In sequence: A to U	• Display of the switch setting group U
3. Press the "OK" button	U01	• Display initial reset On
4. Press the "OK" button again	Flashing U - - (5 to max. 120 s)	• Initial reset runs
5. Wait	Flashing point (watchdog indicator)	• Initial reset completed

Measurements / commissioning protocol

Carry out the following measurements:

- Measure operating voltage on terminals 1 (+), 2 (-) (if redundant supply, then also terminals 3 & 4) → target value = 12.3 to 13.8 VDC (in 12 VDC operation) or 21.6 to 27.6 VDC (in 24 VDC operation).
- Airflow values in switch settings **V** (see Technical Description T 131 192, section 7.6.1)

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

Checking fault and alarm actuation

Test	Procedure	Action
	Block or switch off fire control installations and remote alarms on the superordinate FACP.	
Check airflow monitoring	Tape sampling holes (adhesive tape); number depends on the pipe configuration	<ul style="list-style-type: none"> As soon as the resulting change in the airflow is exceeded by $\pm 20\%$ (can be checked via the switch setting V) the "Fault" LED begins to flash. When the LS-Ü delay expires (300 s), the ASD triggers a fault → fault on FACP ① / ②.
Check alarm actuation	Subject maintenance sampling hole or sampling hole to smoke.	<ul style="list-style-type: none"> ASD actuates an alarm → alarm on FACP; correct alarm actuation checked (zone and range actuation) on the FACP ① / ②. If there are pre-signals they are also actuated.

- ① Between each check the ASD 535 must be reset (caution: a reset on the ASD does not reset the FACP).
- ② For the ASD 535-2 and ASD 535-4 checks have to be carried out for both sampling pipes.

Article numbers / spare parts

Brief description	Article number
Aspirating smoke detector ASD 535-1	5000623.0101
Aspirating smoke detector ASD 535-2	5000623.0102
Aspirating smoke detector ASD 535-3	5000623.0103
Aspirating smoke detector ASD 535-4	5000623.0104
Smoke sensor SSD 535-1; 0.5%/m to – 10%/m	5000613.0101
Smoke sensor SSD 535-2; 0.1%/m – 10%/m	5000613.0102
Smoke sensor SSD 535-3; 0.02%/m – 10%/m	5000613.0103
SSD 535-1 CP; 0,5 %/m – 10 %/m	5000613.2201
SSD 535-2 CP; 0,1 %/m – 10 %/m	5000613.2202
SSD 535-3 CP; 0,02 %/m – 10 %/m	5000613.2203



Continuation:

Brief description	Article number
eXtended Line Module XLM 35	11-2200003-01-XX
SecuriLine module SLM 35	4000286.0101
Relay Interface Module RIM 35	4000287.0101
Memory Card Module MCM 35	4000285.0101
SD memory card (min. 2 GB)	4000314.0102
Serial Interface Module SIM 35	11-2200000-01-XX
Serial Master Module SMM 535	11-2200001-01-XX
USB cable, 4.5 m	4301248
CD with "ASD Config" configuration software	4800106 (11-2300013-01-XX)
CD with "ASD PipeFlow" calculation software	4800107 (11-2300014-01-XX)
Main Board AMB 35-1 (for ASD 535-1 / -3)	94301218.0101
Main Board AMB 35-2 (for ASD 535-2 / -4)	94301218.0102
BCB 35 (without smoke level indicator)	4301220.0101
ACB 35 (with smoke level indicator)	4301221.0101
Aspirating fan unit AFU 35, complete	4000299
Airflow sensor AFS 35	4000300
Insect Protection Screen IPS 35 (set of two)	11-2300012-01-XX
Lithium battery	2310032
Cable screw union M20	32000646-01
Cable screw union M25	3610424
Universal Module Support UMS 35	4301252.0101
Technical Description ASD 535	T 131 192
Application guidelines for deep-freeze warehouses	T 131 390
Application guidelines for locking systems	T 131 391
Material for the sampling pipe	T 131 194
Commissioning protocol	T 131 199
XLM 35 data sheet	T 140 088
SLM 35 data sheet	T 131 197
RIM 35 data sheet	T 131 196
MCM 35 data sheet	T 131 195
AFU 35 installation instructions	T 131 200
Integration description on SecuriPro	T 131 218

Dimensional drawing

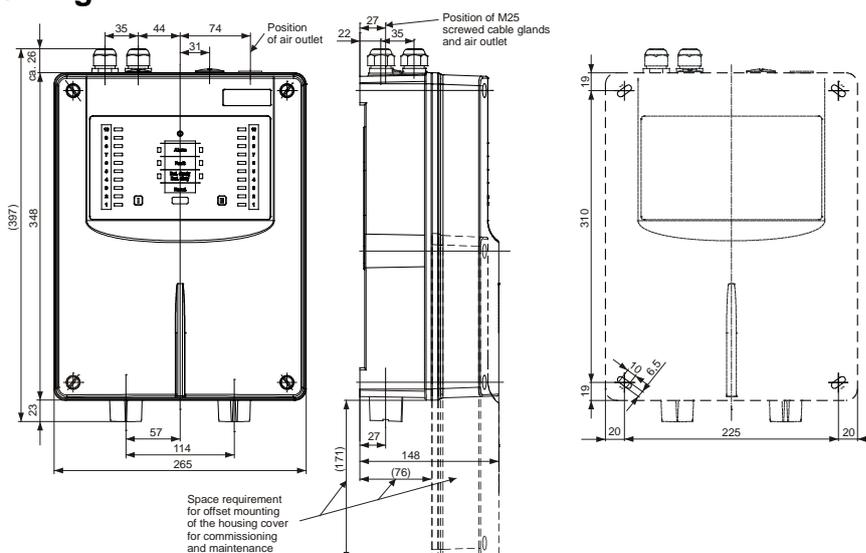


Fig. 5 Detector housing ASD 535 dimensional drawing

Technical data

Type	ASD 535		
Supply voltage range	10.5 to 30		VDC
Max. current consumption, measured in	12 VDC operation	24 VDC operation	Typical
Fan speed level V and at →	10.5 VDC ①	18 VDC ①	24 VDC
ASD 535-1	Idle/fault	approx. 575	approx. 260 mA
	Alarm I	approx. 660	approx. 295 mA
ASD 535-2	Idle/fault	approx. 645	approx. 290 mA
	Alarm I + II	approx. 745	approx. 350 mA
ASD 535-3	Idle/fault	approx. 575	approx. 260 mA
	Alarm I	approx. 695	approx. 310 mA
ASD 535-4	Idle/fault	approx. 645	approx. 290 mA
	Alarm I + II	approx. 820	approx. 385 mA
	Additionally with 1 RIM 35 unit	approx. 15	approx. 7 mA
	Additionally with 2 RIM 35 units	approx. 30	approx. 14 mA
	Additionally with XLM 35 / SLM 35	approx. 20	approx. 5 mA
	Additionally with MCM 35	approx. 25	approx. 10 mA
	Additionally with SIM 35	approx. 20	approx. 5 mA
	SMM 535 (not from ASD but rather from PC via USB connection)		max. 100 mA
Switch-on current peak ② (caused by EMC protection elements on the ASD supply input)			approx. 5 A for max. 1 ms
Sampling pipe length	see T 131 192, section 4.2.1		
Sampling pipe Ø, typical (inner/outer)	Ø 20 / 25 mm		
Max. number of sampling holes	see T 131 192, section 4.2.1		
Sampling hole diameter	Ø 2 / 2.5 / 3 / 3.5 / 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7 mm		
Response range	EN 54-20, Class A, B, C		
Protection type acc. to IEC 529 / EN 60529 (1991)	54		IP
Ambient conditions acc. to IEC 721-3-3 / EN 60721-3-3 (1995)	3K5 / 3Z1		Class
Extended ambient conditions:			
• Detector housing temperature range	-30 – +60		°C
• Temperature range of detector housing to Australian Standard AS 1603.8	-30 – +55		°C
• Sampling pipe temperature range	-30 – +60 ③		°C
• Temperature range of sampling pipe to Australian Standard AS 1603.8	-30 – +55		°C
• Max. approved temperature fluctuation in detector housing and sampling pipe operation	20 ③		°C
• Max. permitted storage temperature of detector housing (without condensation)	-30 – +70		°C
• Ambient pressure difference of detector housing to sampling pipe (sampling holes)	Must be identical		
• Detector housing humidity ambient condition (transient without condensation)	95 ③		% rel. hum.
• Humidity ambient temperature (continuous)	70 ③		% rel. hum.
Max. loading capacity relay contact	50		VDC
	1		A
	30		W
Max. loading capacity per open collector module (electrical strength 30 VDC)	100		mA
Plug-in terminals	2.5 mm ²		
Cable entry for cable Ø	Ø 5 – 12 (M20) / Ø 9 – 18 (M25) mm		
Noise level (at fan speed level III)	43		dB (A)
Housing material	ABS blend, UL 94-V0		
Housing colour	Grey 280 70 05 / anthracite violet 300 20 05		RAL
Approvals	EN 54-20 / FM 3230-3250 / NFPA 72		
Dimensions (W x H x D)	265 x 397 x 146 mm		
Weight (ASD 535-4, incl. expansion modules)	max. 3.850 g		



- ① Current consumption at maximum permitted voltage drop in the electrical installation (guideline value for calculating the conductor cross-section).
- ② May cause an immediate actuation of the protection circuit in power supplies with overload protection circuits (primarily in devices with no emergency power supply and output current of < 1.5 A).
- ③ Lower or higher temperature ranges are possible after consulting with the manufacturer. The manufacturer must be consulted if deployment is to be in the condensation range.

Changes to Index e on pages: 1, 6, 10