

# ASD 533

## Aspirating Smoke Detector

As of production version 300418 and FW version 01.08.xx

The ASD 533 aspirating smoke detector has the task of continuously taking air samples via a sampling pipe tube network from a monitored area and feeding the samples to a smoke sensor.

The ASD 533 consists of the detector housing and a sampling pipe tube network. The sampling pipe has several sampling holes whose size is such that each hole extracts the same amount of air. The sampling pipe may be I-, U-, T-, H-, or E-shaped. The sampling pipe is symmetrically designed in principle. Asymmetrical sampling pipe tube networks can also be implemented using the "ASD PipeFlow" calculation software.



Fig. 1 ASD 533

## Description

Integrated in the detector housing is a high-performance fan which, in conjunction with the sampling pipe, ensures an uninterrupted air supply to the detector housing. Airflow monitoring detects any pipe blockages and pipe breakages in the sampling pipe.

The ASD 533 aspirating smoke detector is part of the ASD 535 product range and is available in a version for 1 sampling tube and 1 smoke sensor without smoke level indicator. The exact designation for the aspirating smoke detector is therefore **ASD 533-1**. The present document will however refer in principle to the product designation **ASD 533**.

The ASD 533 uses the **SSD 533** smoke sensor, which has an alarm sensitivity of 0.02%/m to 10%/m.

The ASD 533 aspirating smoke detector has four slots for additional modules. The following modules can be fitted:

- XLM 35      SecuriLine eXtended Module;
- SLM 35      SecuriLine Module;
- RIM 35      Relay Interface Module with 5 relays (max. 2 units);
- MCM 35      Memory Card Module

The ASD 533 can be connected to a higher level FACP via potential-free change-over contacts.

Fitting an **XLM 35** or **SLM 35** means that the ASD 533 can be ideally connected to the SecuriFire and Integral fire alarm systems via the addressable loop (with SLM also to the SecuriPro).

The **RIM 35** is available as a further installation option. 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 programmable via the „ASD Config“ configuration software.

The **MCM 35** is used for storing operating data.

The ASD 533 aspirating smoke detector can be used for:

- **Equipment monitoring:** EDP systems, electrical distributors, switch cabinets, etc.
- **Space surveillance:** EDP rooms, ultra-clean rooms, warehouses, hollow floors, protection of cultural assets, transformer stations, prison cells, etc.

The ASD 533 is also deployed in areas where conventional point detectors are normally used. Local regulations and provisions must be observed from case to case.

The response behaviour of the ASD 533 has been tested in compliance with EN 54-20, Class A, B and C.



When setting up ASD 533 fire alarm systems, it is important to take note of and observe the information and specifications in the "**Technical description ASD 533**". This includes among others:

- |                        |           |
|------------------------|-----------|
| • <b>General</b>       | Section 1 |
| • <b>Planning</b>      | Section 4 |
| • <b>Mounting</b>      | Section 5 |
| • <b>Installation</b>  | Section 6 |
| • <b>Commissioning</b> | Section 7 |

## Opening the detector housing



To actuate the **rotary snap locks** use a Phillips screwdriver (at least No. 5) to **press down firmly** towards the housing base and then **turn 90°**. The position of the lock slit shows the current status:

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

In either position the rotary snap locks **must** snap into place.

The **housing cover** (control unit) is connected to the main board by a **ribbon cable**. Make sure the ribbon cable is not damaged when the housing cover is lifted off.

## Connection

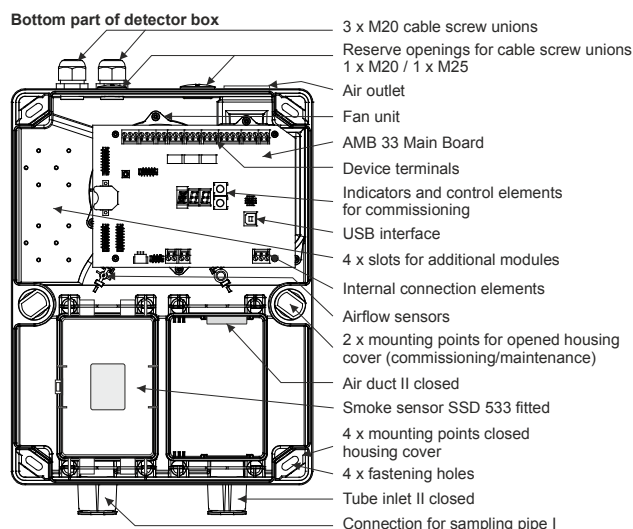


Fig. 2 View inside the ASD 533

### Device connections on the AMB 33

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

Term.	Signal
1	+10.5 to +30 VDC
2	0 V
3	+10.5 to +30 VDC
4	0 V
5	+ supply (for OC consumers)
6	Fault output, OC (all events)
7	Alarm output, OC
8	Freely programmable, OC
9	Unused
10	Rel. 1 "(NO)" Fault
11	Rel. 1 "(NC)" Contact (terminal 10/12) closed
12	Rel. 1 "COM" in idle state
13	Rel. 2 "(NO)" Alarm
14	Rel. 2 "(NC)"
15	Rel. 2 "COM"
16	Rel. 3 "(NO)"
17	Rel. 3 "(NC)" Freely programmable
18	Rel. 3 "COM"
19	Reset external + input
20	Reset external - input
21	+ F
22	DF (poss. available at a later date)
23	-
24	+ S
25	DS MFU 535, REK 535 connection
26	- (available at a later date)

### AMB 33 internal connections

Terminal	Signal
MOT / M-	Fan - (black wire)
MOT / T	Fan tachometer signal (white wire)
MOT / M+	Fan + (red wire)
OEM1 / AI-	Opto-isolator inputs OEM1
OEM1 / AI+	The "OEM1 / St" input can also be used for activating the day/night control (priority over triggering from third-party detector).
OEM1 / St-	
OEM1 / St+	



- In some cases actuations may **not** comply with the requirements of **EN 54-20** (use only consulting with the manufacturer).
- The OEM inputs are **not** line-monitored.

### XLM 35, SLM 35, RIM 35 terminal assignment

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

### Wiring principle



Examples of and information on the wiring principle can be found in the Technical description ASD 533, T 140 287, Sec. 6.

### Using the smoke sensor

The ASD 533 ships with the smoke sensor already fitted. The smoke sensor has to be removed from the detector housing for the installation of the ASD (release the two lock clamps); however it should be left inside its protective packaging until the definitive commissioning. The definitive installation is carried out as described below, see Fig. 3.



- Always leave the smoke sensor inside its protective packaging until it is ready to be installed definitively in the detector housing.
- Depending on the circumstances (e.g. long period of time between mounting and commissioning or if the environment is extremely dusty (construction work)), only remove the smoke sensor from its protective packaging and insert it definitively in the detector housing when commissioning the ASD 533.
- Before installing the smoke sensor check that the insect protection screens are properly fitted to the smoke sensor chamber at the air inlet and outlet.
- The smoke sensor chamber must be absolutely free of any dirt and/or dust. Remove any residue resulting from mounting the detector housing.

Check the installation position when installing the smoke sensor. The smoke sensor connector plug must face the outside of the ASD housing. The anti-twist rib on the smoke sensor case prevents an incorrect installation position.

The smoke sensor is secured inside the ASD housing using the two lock clamps. Connect the ribbon cable supplied with the smoke sensor to the smoke sensor (large ribbon cable connector) and to the AMB 33 main board (small ribbon cable connector).

Smoke sensor chamber II in the housing base cannot be used (air duct is blocked).

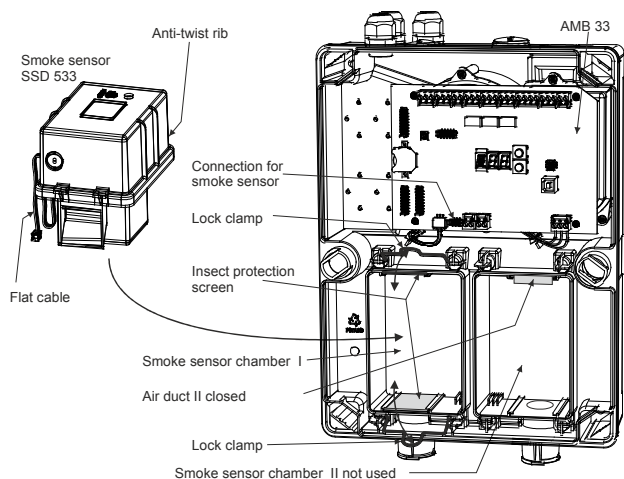


Fig. 3 Using the smoke sensor

### Displays on the control unit

Several LEDs on the control unit indicate the current status of the ASD 533.

Function / state	Operation	Alarm	Fault	Det. dusty / dirty
	green	red	yellow	yellow
System Off (no voltage)				
System inactive (reset external)	On		½ T	
Smoke sensor Off (from FACP)	On		½ T	
Idle state	On			
Pipe blockage/pipe breakage, delay running ①	On		1 T	
Pipe blockage/pipe breakage, fault triggered	On		On	
Fan tach signal missing	On		On	
Fault triggered	On		On	
Pre-signal 1	On	2 T		
Pre-signal 2	On	1 T		
Pre-signal 3	On	½ T		
Alarm	On	On		
Smoke sensor filter fault	On			2 T
Smoke sensor dusty	On			1 T
Smoke sensor dirty	On			½ T
Smoke sensor fault	On			On
Lamp test (press "Reset" 10 s)	1 T	1 T	1 T	1 T



① No fault triggered (triggers only after delay time has expired → "Fault" continuously lit).

T = flashing display; ½ s cycle / 1 s cycle / 2 s cycle

### Displays on the Main Board AMB 33

The AMB 33 has a 3-digit segment display enabling the following outputs and displays:

- flashing, point and **AL** = auto-learning running;
- flashing, point and **Fr** = filter replacement is running;
- flashing point and continuously lit point = day/night control active;
- switch position **E** = event memory **E01** to **E99**;
- switch position **F** = firmware version;
- press "UP" key = set configuration **A11** to **X03**;
- switch position **V** = airflow values (airflow rate);
- flashing **000** = invalid entry;
- flashing **U - -** = initial reset is running;
- flashing **IA1**, **IF1**, **IP1**, **IE1** = test trigger is activated.

### Programming

The ASD 533 has switch positions, which are configured with permanently assigned parameters:

- Normative system limits according to EN 54-20, Class A to C, positions **A11** to **C31**;
- Non-normative system limits, positions **W01** to **W44**;
- Configurable positions for settings after using "ASD PipeFlow" and/or "ASD Config" or SecuriPro, SecuriFire or Integral FACP (SLM 35 / XLM 35), **X01** to **X03**.



The parameters are saved at the factory with values for compliance with EN 54-20. Changing the parameters may result in non-compliance with EN 54-20. Re-programming on the ASD 533 using "ASD Config" may be carried out only by the manufacturer or by persons under the supervision of and trained by the manufacturer.

### Switch positions on the Main Board AMB 33

Pos.	Range / Display	Purpose
<b>A</b>	<b>A11</b>	acc. to EN 54-20, Class A
<b>b</b>	<b>b11 / b21</b>	acc. to EN 54-20, Class B
<b>C</b>	<b>C11 / C21 / C31</b>	acc. to EN 54-20, Class C
<b>d</b>	Polling ( <b>RE</b> ) Setting ( <b>SE</b> ) ⚡ <b>on / T / R / oFF</b>	<b>on</b> = On / <b>oFF</b> = Off <b>T</b> = filter service life <b>R</b> = filter replacement <b>ch1</b> = channel I
<b>E</b>	<b>E01</b> to <b>E99</b> ⚡ <b>G00</b> to <b>G99</b>	Event memory <b>E01</b> – <b>E99</b> ⚡ Event group <b>G00</b> – <b>G99</b>
<b>F</b>	<b>F00</b> to <b>F99</b> (3 x)	Displays firmware version
<b>I</b>	<b>IA1</b> <b>IF1</b> <b>IP1</b> <b>IE1</b>	Trigger; Test alarm ( <b>IA1</b> ) Test fault ( <b>IF1</b> ) Test pre-signal ( <b>IP1</b> ) Test alarm 2 ( <b>IE1</b> )
<b>o</b>	<b>o00</b>	Logs off additional modules (optional modules)
<b>T</b>	<b>Y10</b> to <b>Y99</b> / <b>M01</b> to <b>M12</b> <b>d01</b> to <b>d31</b> / <b>H00</b> to <b>H23</b> <b>M00</b> to <b>M59</b>	Polling ( <b>RE</b> ) and setting ( <b>SE</b> ) the date and time
<b>U</b>	<b>U01</b>	Executes initial reset
<b>V</b>	<b>V01</b> , from <b>000</b> to <b>255</b>	Airflow rate output in %
<b>W</b>	<b>W01</b> to <b>W44</b>	non-normative
<b>X</b>	<b>X01</b> to <b>X03</b>	configurable



The table only lists the available switch positions. For information on the input procedure please refer to the Technical description, T 140 287, Sec. 8.3.

# Data sheet

## System limits without “ASD PipeFlow” calculation

The system limits apply to the planning without using 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 positions **A11** to **C31**;
- **Non-normative system limits**, Switch positions **W01** to **W44**.

## Normative system limits

Stored under switch positions **A11** to **C31** are values which are necessary in terms of alarm response sensitivity and airflow monitoring for compliance with EN 54-20 Class A to C. The switch position designation is deciphered as follows:

- First digit Response class **A, b, C** compliant to EN 54-20;
- Second digit System limit **1, 2, 3** (pipe topology);
- Third digit Number of tube networks **1**, (**only 1 possible**).

Example: **b21** Response class **b** / system limit **2** / **1** sampling pipe tube network.

## Non-normative system limits

Switch positions **W01** to **W44** contain system limits which fulfil only the alarm response sensitivity compliant with EN 54-20 Class A to C, but not the normative limits with regard to airflow monitoring. As they are identical with the system limits **A11** to **C31** in terms of tube topology (tube network length, number of sampling holes), the switch positions **W01** to **W44** are also included in the tables below. For more details of switch positions **W01** to **W44** with regard to airflow monitoring, please refer to the Technical description, T 131 192, Chap. 4.4.4.4.



Switch positions **W01** to **W44** are to be used only after prior consultation with the manufacturer. The airflow monitoring values stored under those switch positions are not tested in accordance with EN. For more information on using the table of system limits, please refer to the Technical description T 131 192, Sec. 4.4.4.3 and 4.4.4.4.

## Table of system limits for planning without “ASD PipeFlow” calculation

### Compliant with EN 54-20, Class A (highly sensitive)

Shape	System limit	Switch position compliant with EN 54-20	Switch position non-norm compliant	Alarm threshold (%/m)	Distance from ASD to last T-piece/cross	Max. distance from ASD to furthest sampling hole	Number of sampling holes per sampling branch	Max. total length of sampling pipe
I	1	A11	W01 – W04	0.03	---	50 m	1 – 7	50 m
U / T	1	A11	W01 – W04	0.03	1 – 20 m	40 m	1 – 4	80 m
H	1	A11	W01 – W04	0.03	1 – 20 m	40 m	1 – 2	160 m
E	1	A11	W01 – W04	0.03	1 – 20 m	40 m	1 – 3	120 m

### Compliant with EN 54-20, Class B (sensitive)

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

### Compliant with EN 54-20, Class C (standard)

I	1	C11	W25 – W28	0.8	---	40 m	1 – 5	40 m
	2	C21	W33 – W36	0.35	---	70 m	3 – 9	70 m
	3	C31	W41 – W44	0.13	---	80 m	7 – 12	80 m
U / T	1	C11	W25 – W28	0.8	1 – 20 m	30 m	1 – 3	60 m
	2	C21	W33 – W36	0.35	1 – 20 m	60 m	3 – 5	120 m
	3	C31	W41 – W44	0.13	1 – 20 m	70 m	5 – 8	140 m
H	1	C11	W25 – W28	0.8	1 – 25 m	35 m	1 – 2	140 m
	2	C21	W33 – W36	0.35	1 – 25 m	45 m	2 – 3	180 m
	3	C31	W41 – W44	0.13	1 – 25 m	50 m	3 – 4	200 m
E	1	C11	W25 – W28	0.8	1 – 20 m	30 m	1 – 2	90 m
	2	C21	W33 – W36	0.35	1 – 20 m	50 m	2 – 3	150 m
	3	C31	W41 – W44	0.13	1 – 20 m	55 m	3 – 5	165 m

### Sampling holes for planning with “ASD PipeFlow” calculation

The tables below show the corresponding hole diameters for the numbers in **Fig. 4** depending on the number of sampling holes per sampling branch.

I-shaped sampling pipe												
Number of sampling holes in the sampling branch	Hole diameter in mm for the sampling hole number as of ASD											
	1	2	3	4	5	6	7	8	9	10	11	12
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

U/T-shaped sampling pipes								
Number of sampling holes per sampling branch	Hole diameter in mm for the sampling hole number as of ASD							
	1	2	3	4	5	6	7	8
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

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

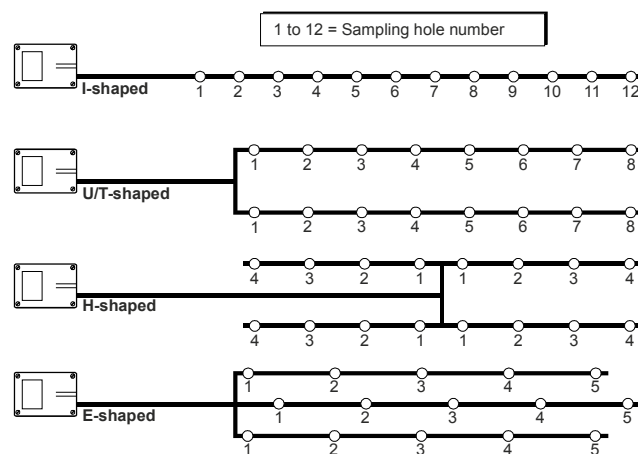


Fig. 4 Size of sampling holes

# Data sheet

## Configuration options, Table A:

The criteria below can be set separately with the day/night control activated. Configuration changes are saved on **X01** to **X03**.

Sector • Parameter	Default Setting	Area	Resolution / Levels	Saving after change
<b>Alarm 2</b>				
• Alarm 2 On / Off	Off	Off / On		<b>X01 – X03</b>
• Sensitivity (always at least 20% above alarm)	1%/m	– 10%/m	0.0002%/m	<b>X01 – X03</b>
• Alarm 2 delay	2 s	0 s – 60 s	1 s	<b>X01 – X03</b>
• Alarm 2 latching	On	On / Off		<b>X01 – X03</b>
• Hold time for area switchover (AI 2 to AI)	20	10 – 250	1 s	<b>X01 – X03</b>
<b>Alarm (EN 54-20)</b>				
• Alarm threshold	<b>C11</b>	0.02 – 10%/m	0.0002%/m	<b>X01 – X03</b>
• Smoke level value averaging (number)	4	1 – 10	1	<b>X01 – X03</b>
• Alarm delay	2 s	0 s – 60 s	1 s	<b>X01 – X03</b>
• Alarm cascading	Off	Off / On		<b>X01 – X03</b>
• Alarm latching	On	On / Off		<b>X01 – X03</b>
<b>Pre-signal</b>				
• Pre-signal 1 On / Off	On	On / Off		<b>X01 – X03</b>
• Pre-signal 2 On / Off	On	On / Off		<b>X01 – X03</b>
• Pre-signal 3 On / Off	On	On / Off		<b>X01 – X03</b>
• Pre-signal 1 (100% = alarm threshold)	30%	10 – 90%	10%	<b>X01 – X03</b>
• Pre-signal 2 (100% = alarm threshold)	50%	VS 1 + 10 – 90%	10%	<b>X01 – X03</b>
• Pre-signal 3 (100% = alarm threshold)	70%	VS 2 + 10 – 90%	10%	<b>X01 – X03</b>
• Pre-signal delay (VS 1 – VS 3)	2 s	0 s – 60 s	1 s	<b>X01 – X03</b>
• Pre-signal latching	Off	Off / On		<b>X01 – X03</b>
<b>Smoke sensor dust/soiling</b>				
• Smoke sensor dust On / Off	On	On / Off		<b>X01 – X03</b>
• Smoke sensor soiling On / Off	On	On / Off		<b>X01 – X03</b>
• Dust threshold (% of AI)	50%	5 – 60%	5%	<b>X01 – X03</b>
• Soiling threshold (% of AI)	75%	65 – 100%	5%	<b>X01 – X03</b>
• Dust latching	On	On / Off		<b>X01 – X03</b>
• Soiling latching	On	On / Off		<b>X01 – X03</b>
• Smoke sensor fault delay	30 s	0 s – 60 s	1 s	<b>X01 – X03</b>
<b>Airflow monitoring</b>				
• LS-Ü pipe blockage On / Off	On	On / Off		<b>X01 – X03</b>
• LS-Ü pipe breakage On / Off	On	On / Off		<b>X01 – X03</b>
• LS-Ü sensitivity (applies to <b>A01</b> to <b>C31</b> ) ①	±20% ①	±1 – ±70%	± 1%	<b>X01 – X03</b>
• LS-Ü value averaging (number)	20	1 – 30	1	<b>X01 – X03</b>
• LS-Ü delay (applies to <b>A01</b> to <b>C31</b> ) ①	300 s ①	10 s – 3600 s	1 s	<b>X01 – X03</b>



① Stored under switch positions **W01** to **W44** are increased values which are **not** tested for EN compliance (see Technical description, T 131 192, Sec. 4.4.4.4).

## Configuration options, Table B:

The following criteria apply to the entire ASD 533. Configuration changes are stored in connection with the adjustments from Table A, likewise on one of the user configurable switch positions **X01** to **X03**.

Sector • Parameter	Default Setting	Area	Resolution / Levels	Saving after change
<b>Autolearning</b>				
• Autolearning On / Off	Off	On		<b>X01 – X03</b>
• Autolearning duration	3 days	1 min to 14 days	min, h, days	<b>X01 – X03</b>
• Autolearning factor (of measured AI threshold)	1.5	1.1 – 10 x		<b>X01 – X03</b>
<b>Day/night control / weekday control</b>				
• Day/night control On / Off	Off	Off / clock / FACP / input "OEM1 / St"		<b>X01 – X03</b>
• Day start time (only with "Clock")	06:00	00:00 – 24:00	1 min	<b>X01 – X03</b>
• Night start time (only with "Clock")	20:00	00:00 – 24:00	1 min	<b>X01 – X03</b>
• Weekday control (only with "Clock")	On	Mon to Sun	Days	<b>X01 – X03</b>
<b>General faults</b>				
• Lithium battery / clock fault	On	On / Off		<b>X01 – X03</b>
<b>Deactivate / switch off sensor</b>				
• Smoke sensor I	On	On / deactivated		<b>X01 – X03</b>

**Configuration options, Table C:**

Independent configurations. These configurations can be changed independently of the switch position on the ASD 533.

Sector	Default Setting	Selection
• Parameter		
Time		
• Year, month, day, hour, minute	---	minutes – year
Relay / OC output / reset key / various		
• Relay 3 and OC output 3, AMB 33	freely programmable	in accordance with “ <b>Configuration options relay allocation</b> ”
• Relay 1, 1 <sup>st</sup> RIM 35	Pre-signal 1	
• Relay 2, 1 <sup>st</sup> RIM 35	Pre-signal 2	
• Relay 3, 1 <sup>st</sup> RIM 35	Pre-signal 3	
• Relay 4, 1 <sup>st</sup> RIM 35	Smoke sensor dirty	
• Relay 5, 1 <sup>st</sup> RIM 35	Pipe blockage sampling pipe	
• Relay 1, 2 <sup>nd</sup> RIM 35	freely programmable	
• Relay 2, 2 <sup>nd</sup> RIM 35		
• Relay 3, 2 <sup>nd</sup> RIM 35		
• Relay 4, 2 <sup>nd</sup> RIM 35		
• Relay 5, 2 <sup>nd</sup> RIM 35		
• Reset key On / Off	On	On / Off
• Heating control, subsequent heating time	2 min	1 – 60 min
• MCM setting, recording interval	1 s	1 – 120 s
• MCM smoke peak value memory	Off	Off / On
• Carry out new initial reset	---	On / Off
• Smoke sensor mode of operation (smoke sensor I)	SSD/DMB	SSD/DMB or OEM inputs (individual or in combination) Switched off
• Isolate smoke sensor (smoke sensor I)	Normal operation	Isolate / normal operation
• Filter monitoring (smoke sensor I)	Off	Off / On
• Filter service life	6 months	1 – 24 months
• Read out operation time	---	months / days
• Filter replacement	---	start / finish

**Relay allocation configuration options:**

The following criteria can be programmed on a maximum of 11 relays (1 AMB 33 unit with ASD 533-1 and ASD 535-3, 5 units with 1<sup>st</sup> RIM 35, 5 units with 2<sup>nd</sup> RIM 35):

Smoke sensor / LS-Ü	General
Smoke sensor alarm	Fan fault
Pre-signal 1	Operating voltage fault
Pre-signal 2	Initial reset fault
Pre-signal 3	Lithium battery / clock fault
Smoke sensor dusty	
Smoke sensor soiled	
Smoke sensor fault	
Pipe blockage sampling pipe	
Pipe breakage sampling pipe	
Heating control	
Alarm 2	

The criteria can also be allocated using the OR function (e.g. smoke sensor dust or soiling together on one relay).



## Commissioning

When commissioning the ASD 533, it is necessary to perform an initial reset to automatically adjusting the airflow monitoring on the connected sampling pipe.

If the ASD 533 is operated without "ASD PipeFlow" calculation, the commissioning can be carried out directly on the ASD 533 using the **"EasyConfig"** process.

For projects in which the ASD PipeFlow calculation software was used or in which customer-specific adjustments to the device configuration are required, use the **"ASD Config"** configuration software.

### Startup



Before the ASD 533 is switched on, make sure all the precautions required for its operation have been taken (see also T 140 287, Sec. 7.1).

- Sampling pipe correctly laid and connected;
- Smoke sensor removed from protective packaging, mounted and connected;
- Isolation strip on the lithium battery (AMB 33) removed.

### Startup sequence and procedure:

1. Switch on supply voltage (FACP); the next procedure can be carried out while the fan is ramping up to its definitive speed (takes about 100 s). **The system is immediately armed for alarm.**
2. **"EasyConfig"**: Select the required switch position for operation in accordance with the **"Table of system limits"** (e.g. **"b21"**) → see also under **"Re-programming"**.  
- or:  
**"ASD Config"**: after making adjustments to the configuration (alarm threshold acc. to ASD PipeFlow, other criteria acc. to Tables A and B) select switch position **"X01"**, **"X02"** or **"X03"**.
3. Set date and time via AMB 33 on "EasyConfig" or from "ASD Config" (adopt settings from PC).
4. After a **minimum waiting time of 5 min** after switch-on, carry out an initial reset (possible only via AMB 33) → see also under **"Initial reset"**.
5. The ASD 533 is now ready for operation.

### Re-programming

Example: Response grade B, system limit 2, switch position required **b21**.

Measure	Display	Procedure Remarks
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Switch positions **W01** to **W44** are to be used only after prior consultation with the manufacturer. The airflow monitoring values stored under those switch positions are **not** tested in accordance with EN.

1. Press the "UP" key	flashing <b>C31</b>	• Displays the default setting
2. Press "UP" key twice until display shows <b>b</b>	in succession <b>A / b</b>	• Displays the switch position group <b>b</b>
3. Press the "OK" key	<b>b11</b>	• Displays the smallest possible position in group <b>b</b>
4. Press the "UP" key until display shows <b>b21</b>	alternatively <b>b11 / b21</b>	• Displays the possible positions in group <b>b</b>
5. Press the "OK" key	flashing <b>b - -</b> (approx. 4 x)	• New setting is programmed
6. Check: Press the "UP" key	flashing <b>b21</b>	• Displays the new setting

### Initial reset

Measure	Display	Procedure Remarks
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Before carrying out an initial reset – i.e. after switching on the ASD 533 – make sure you observe a **waiting time of at least 5 min.**

1. Press the "UP" key	flashing <b>C31</b> or others	• Displays the default setting or the installation-specific switch position
2. Press the "UP" key several times until display shows <b>U</b>	in succession <b>A</b> to <b>U</b>	• Displays the switch position group <b>U</b>
3. Press the "OK" key	<b>U01</b>	• Displays initial reset On
4. Press the "OK" key again	flashing <b>U - -</b> (5 to max. 120 s)	• Initial reset in progress
5. Wait	flashing point (watchdog indicator)	• Initial reset completed

### Filter replacement

When filter monitoring is activated and after expiry of the configured filter service life, a "Filter fault (service life exceeded)" fault is triggered. To remedy, the filter element in a filter-box or dust filter unit must be replaced. When the expired filter service life (read out via *EasyConfig* switch position **d > RE**) is periodically checked, the replacement can take place before the fault is triggered.



For an activated filter replacement the ASD is set to the **"isolate"** state. This insures that during the replacement work falling dust particles from the filter element do not cause a false alarm.

When the ASD 533 housing is closed, the "Start filter replacement" function can be activated by means of the **"Reset" key** (provided the filter monitoring is activated). To do so, press the key **longer than 15 s** (attention: lamp test after 10 s). After 15 s the filter replacement is started and indicated by switching to the "Isolate" state (Fault and LED "Fault"). When the "Reset" key is deactivated (via ASD Config), the "Start filter replacement" function is not accessible.

After the filter has been replaced, the "Filter replacement" procedure is completed by pressing the **"Reset" key** on the ASD. This cancels the "Isolate" state and resets the fault on the ASD. "Filter service life" monitoring is restarted at 0.

The filter replacement can also be started via *EasyConfig* switch position **d > SE**. For information please refer to Technical Description T 140 287, Section 7.8.

### Measurements / commissioning protocol

Carry out the following measurements:

- Measure voltage at terminals 1 (+), 2 (-) (also terminals 3 and 4 in the case of a redundant voltage supply) → target value = 12.3 to 13.8 (in 12 VDC operation) and 21.6 to 27.6 VDC (in 24 VDC operation)
- Airflow value in switch positions **V** (see also Technical description, T 140 287, Sec. 7.6.1).

The commissioning protocol is like a personal history of the ASD 533 and should therefore be filled out conscientiously and completely and stored in the ASD 533. If required, a copy can be made and stored in the installation dossier.



## Checking fault and alarm release

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

Check airflow monitoring	Tape over the sampling holes (adhesive tape); the number depends on the pipe configuration.	<ul style="list-style-type: none"> <li>As soon as the resulting change in airflow rate exceeds <math>\pm 20\%</math> (which can also be checked using switch position V), the "Fault" LED begins to flash.</li> <li>Once the LS-Ü delay (300 s) has elapsed, the ASD triggers a fault → fault on FACP ①.</li> </ul>
Check alarm release	Impose smoke at the maintenance sampling hole or sampling hole.	<ul style="list-style-type: none"> <li>ASD triggers an alarm → alarm on FACP; check for correct alarm transmission (zone/range release) on the FACP ①.</li> <li>Any pre-signals will also release.</li> </ul>

① Reset the ASD 533 between each check (please note: resetting the ASD does not reset the FACP).

Alternatively, this control can also be performed using the "Test trigger" function from *EasyConfig* switch position I.

## Article numbers and spare parts

Short designation	Article number
Aspirating smoke detector ASD 533-1	11-2000001-01-XX
Replacement smoke sensor SSD 533	11-2200006-01-XX
SecuriLine 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 (industrial version)	11-4000007-01-XX
USB cable, 4.5 m	4301248
Main board AMB 33-1	11-2200004-01-XX
BCB 35 (without smoke level indicator)	4301220.0101
Aspirating fan unit AFU 35, complete	4000299
Airflow sensor AFS 35	4000300
Insect protection screen IPS 35 (set of 2)	11-2300012-01-XX
Lithium battery	11-4000002-01-XX
Cable screw union M20 (set of 10)	11-4000003-01-XX
M25 (set of 10)	11-4000004-01-XX
Universal module support UMS 35	4301252.0101
Technical description ASD 533	T 140 287
Material for the sampling pipe	T 131 194
Commissioning protocol	T 140 299
Data sheets	
XLM 35	T 140 088
SLM 35	T 131 197
RIM 35	T 131 196
MCM 35	T 131 195
AFU 35 installation instructions	T 131 200

## Dimensioned drawing

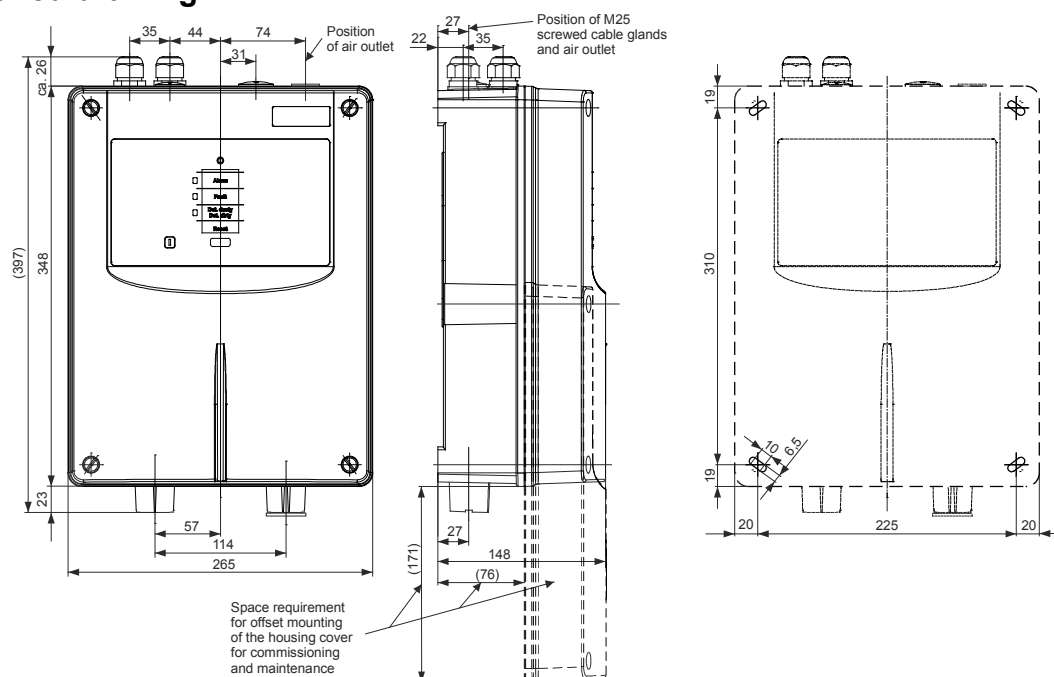


Fig. 5 Detector housing dimensioned drawing

# Data sheet

## Technical data

Type	ASD 533-1				
Supply voltage range	10.5 to 30			VDC	
Maximum power consumption, measured at →	in 12 VDC operation	in 24 VDC operation	Typical		
	10.5 VDC ①	18 VDC ①	24 VDC		
ASD 533-1	Quiescent/fault	approx. 265	approx. 160	approx. 130	mA
	Alarm	approx. 340	approx. 210	approx. 160	mA
	additionally with 1 RIM 35 unit	approx. 15	approx. 10	approx. 7	mA
	additionally with 2 RIM 35 units	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
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 140 287, Sec. 4.2.1				
Sampling pipe diam., typical (inner/outer)	Ø 20 / 25				mm
Max. number of sampling holes	see T 140 287, Sec. 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 (Sensitivity: Alarm 0,02 %/m – 10 %/m, pre-signals 0,002 %/m – 9 %/m)	EN 54-20, Class A, B, C				
Protection type acc. to IEC 529 / EN 60529	54				IP
Ambient conditions acc. to IEC 721-3-3 / EN 60721-3-3	3K5 / 3Z1				class
Extended ambient conditions:					
• Detector housing temperature range	–20 – +60				°C
• Sampling pipe temperature range	–20 – +60 ③				°C
• Max. permissible temperature fluctuation in detector housing and sampling pipe operation	20 ③				°C
• Max. permissible storage temperature for detector housing (without condensation)	–20 – +70				°C
• Ambient pressure difference between detector housing and sampling pipe (sampling holes)	must be identical				
• Humidity ambient condition for detector housing (transient without condensation)	95 ③				% rel. hum.
• Humidity ambient condition detector housing and sampling pipe (continuous)	70 ③				% rel. hum.
Max. loading capacity, relay contact	50				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
Sound pressure level	34				dB (A) / 1 m
Housing material	ABS blend, UL 94-V0				
colour	grey 280 70 05 / anthracite violet 300 20 05				RAL
Approvals	EN 54-20				
Dimensions (W x H x D)	265 x 397 x 148				mm
Weight	3,255				g



- ① Power consumption at maximum permitted voltage drop in the electrical installation (guideline value for calculating the conductor cross-section).
- ② May cause the protective circuit to actuate 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. The manufacturer must be consulted if used in the condensation range.

Changes to index d on pages: 3, 6, 6, 7, 7, 8, 10