SECURITON

ASD 535

Aspirating Smoke Detector

Maintenance

Beginning with FW version 01.10.xx

Manufacturer:
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Validity

Notice

This document is valid only for the product described in technical description T 131 192, Section 1. The document contains the maintenance instructions for the ASD 535 aspirating smoke detector. Technical description T 131 192 is a component of the maintenance instructions.

In this document only the points necessary for maintenance of the ASD 535 are described. The general specifications of the ASD 535 aspirating smoke detector can be found in technical description T 131 192.

This document[1] is available in the following languages:

German	T 140 352 de
English	T 140 352 en
French	T 140 352 fr
Italian	T 140 352 it
Spanish	T 140 352 es
Finnish	T 140 352 fi
Korean	T 140 352 ko
Norwegian	T 140 352 no
Russian	T 140 352 ru
Swedish	T 140 352 sv

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Notice

The following document is applicable only to the ASD 535 aspirating smoke detector with the following production version and firmware version:

Production version	**FW version**
from 131221	from 01.10.xx

The validity of older production versions and firmware versions is guaranteed, with the exception of the new functionalities described in this edition. Additional information about the new functionalities can be found in the document history.

[1] Reference document: T 131 192, index k

Validity

Other documents

Technical description ASD 535		T 131 192	de / en / fr / it / es / ko / no / ru / sv
Data sheet ASD 535		T 131 193	de / en / fr / it / es / ko / no / ru / sv
Mounting and installation instructions for ASD 535		T 140 333	de / en / fr / it / es / ko / no / ru / sv
Application guidelines for deep-freeze warehouses		T 131 390	de / en / fr / it / ru
Application guidelines for locking systems		T 131 391	de
Technical description FidesNet		T 140 741	de / en
Material for the sampling pipe		T 131 194	multilingual (ED / FI)
Commissioning protocol		T 131 199	multilingual (EDFI)
Data sheets	XLM 35	T 140 088	de / en / fr / it / es / pt / ru / sv
	ML-SFD	T 140 822	de / en / fr / it / es / pt / ru / sv
	SLM 35	T 131 197	de / en / fr / it / ru
	RIM 35	T 131 196	de / en / fr / it / ru
	MCM 35	T 131 195	de / en / fr / it / ru
	SIM 35	T 140 011	de / en / fr / it / es / pt / ru / sv
	SMM 535	T 140 010	de / en / fr / it / es / pt / ru / sv
	OPB 911 CP	T 140 789	de / en / fr / it / es / no / sv
	REK 511	T 135 422	de / en / fr / it / es / hu / pt / ro / ru / sv / zh
	NCU 900	T 140 742	de / en
	RCU 700	T 140 743	de / en
Installation instructions for aspirating fan unit		T 131 200	multilingual (EDFI)
Integration description ASD 535 on SecuriPro		T 131 218	de / en / fr / it

Table of contents

1 General information

1.1 Purpose

The ASD 535 aspirating smoke detector performs the task of taking continuous air samples via one or two sampling pipe tube networks from a monitored sector and feeding the samples to one or two smoke sensors. Thanks to this detection method and the product's excellent properties under severe ambient conditions, the ASD 535 aspirating smoke detector is used wherever problems are to be expected owing to poorly accessible monitored areas or latent disturbance variables during operation such that optimal protection can no longer be guaranteed with conventional point detectors.

The ASD 535 aspirating smoke detector is available in the following versions:

- ASD 535-1 for 1 sampling tube without smoke level indicator, for 1 smoke sensor
- ASD 535-2 for 2 sampling tubes without smoke level indicator, for 2 smoke sensors
- ASD 535-3 for 1 sampling tube with smoke level indicator, for 1 smoke sensor
- ASD 535-4 for 2 sampling tubes with smoke level indicator, for 2 smoke sensors
- ASD 535-3 HD ① like ASD 535-3, with increased IP protection and painted printed circuit boards
- ASD 535-4 HD ① like ASD 535-4, with increased IP protection and painted printed circuit boards

① The descriptions for the ASD 535-3 and -4 versions in this document also apply to the ASD 535-3 HD and -4 HD versions.

The SSD 535 smoke sensor is used in the ASD 535 in the following versions:

- SSD 535-1 alarm sensitivity range 0.5%/m to 10%/m
- SSD 535-2 alarm sensitivity range 0.1%/m to 10%/m
- SSD 535-3 alarm sensitivity range 0.02%/m to 10%/m.

The ASD 535 aspirating smoke detector has four slots for fitting the following additional modules:

- XLM 35 SecuriLine eXtended module (only if no ML-SFD or SLM 35 fitted)
- ML-SFD M-Line module (only if no XLM 35 or SLM 35 fitted)
- SLM 35 SecuriLine module (only if no XLM 35 or ML-SFD fitted)
- RIM 35 Relay interface module with 5 relays
- MCM 35 Memory card module
- SIM 35 serial interface module (only if no UIM 35 fitted)
- UIM 35 universal interface module (only if no SIM 35 fitted)

1.2 Safety and the environment

Provided the product is deployed by trained and qualified personnel in accordance with this document, and provided the safety symbols all notices are observed, there is no danger to persons or property under normal conditions and when used properly. The product fulfils the requirements ensuring personal safety and environmental protection during operation. National and state-specific laws, regulations and directives must be observed and adhered to in all cases.

Observe these danger notices. They help prevent accidents and damage.

1.2.1 Notice and warning symbols

The following notice and warning symbols are used to draw attention to hazards and special properties.

Danger

The product may represent an immediate danger with a high level of risk to persons if the notice is not duly observed. If the danger is not avoided, death or serious injury may result.

Warning

The product may represent a possibly imminent danger with a medium level of risk to persons if the notice is not duly observed. If the danger is not avoided, death or serious injury may result.

Caution

The product may represent a possibly imminent danger with a low level of risk to persons if the notice is not duly observed. If the danger is not avoided, a minor injury may result.

Notice

If this notice is not observed, the product may malfunction, may cause property damage, or may be harmful to the environment.

1.2.2 Safety information

Read the user instructions

To ensure safe and proper use, it is absolutely necessary to read the instructions and other documentation accompanying the product before use and to keep such documentation at hand for later reference. It is imperative that the danger information in particular is observed.

Electrostatic discharge

The product includes electronic components that are sensitive to electrostatic discharge (ESD). Contact with persons or objects can cause an electrostatic discharge that damages or destroys the product. ESD bands for preventing electrostatic discharge are used for grounding persons and for equipotential bonding.

1.2.3 Disposal

Electrical and electronic devices and batteries

It is not permitted to dispose of electrical and electronic devices or batteries in the domestic rubbish. As the end user you are legally obliged to return them. Used electrical and electronic devices as well as batteries can be returned to the seller or taken to a designated recycling centre (e.g. a community collection point or dealer) at no cost.

Recycling

The product and its components including their packaging consist of recyclable material and can be disposed of for recycling purposes as described in this document.

1.3 Abbreviations and terms

The following abbreviations and terms are used in this document. The abbreviations for tube material and accessories are listed in a separate document: T 131 194.

µC	=	Microcontroller / microprocessor
a / ra / r	=	Relay contacts; a = NO (normally open), ra = COM (common), r = NC (normally closed)
ABS	=	Acrylonitrile-butadiene styrene (plastic)
ACB 35	=	Printed circuit board with smoke level indicator Advanced Control Board
AFS 35	=	Air Flow Sensor
AFU 35	=	Aspirating Fan Unit
Al	=	Alarm
AMB 35	=	ASD Main Board
ASD	=	Aspirating Smoke Detector
ASD Config	=	Configuration software for ASD 535
ASD PipeFlow	=	Calculation software for the sampling pipe, “ASD PipeFlow” beginning Version 2
BCB 35	=	Printed circuit board without smoke level indicator “Basic Control Board”
CE	=	Communauté Européenne (European Community)
DA	=	Detection area
Default	=	Preset values and adjustments
DET	=	Detector
DIN	=	Deutsche Industrie Norm (German industry standard)
DMB	=	Detector Mounting Box (third-party detectors / OEM)
DZ	=	Detection zone
EasyConfig	=	Commissioning procedure without configuration software “ASD Config”
EDP	=	Electronic data processing
EEC	=	European Economic Community
EEPROM	=	Memory component for system data and ASD configuration
EMC	=	Electromagnetic compatibility
EN 54	=	European standards for fire alarm systems (Germany = DIN, Switzerland = SN, Austria = Ö-Norm)
Ex-zone	=	Hazardous area
FACP	=	Fire alarm control panel
FAS	=	Fire alarm system
Fault	=	Fault
FidesNet	=	Fire detection systems Net (networking solution, application name)
FW	=	Firmware
Flash PROM	=	Memory component for operating software
Flush mounting / surface mounting	=	Flush mounted / surface mounted

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Continuation:

GND	=	Supply ground (minus pin)
H-Al	=	Main alarm
HD	=	Heavy Duty (heavy-duty use)
HF	=	High frequency
HW	=	Hardware
Hz	=	Heating control
IEC	=	International Electrotechnical Commission
Initial reset	=	First start-up when commissioning
IPS 35	=	Insect Protection Screen
LED	=	Light-emitting diode (indicator)
LS	=	Airflow
LS-Ü	=	Airflow monitoring
Manufacturer	=	Securiton
MCM 35	=	Memory Card Module
ML-SFD	=	M-Line-Special Fire Detector
NCU	=	Network communication unit to the FidesNet “Network Communication Unit” (FidesPort)
NCU Config	=	Web application for configuring the FidesNet
OC	=	Open collector output
OPB	=	Overvoltage Protection Board
PA	=	Polyamide (plastic)
PC	=	Personal computer
PC	=	Polycarbonate (plastic)
PE	=	Polyethylene (plastic)
Pin	=	Terminal pin
PMR 81	=	Semi-conductor relay
Port	=	Input or output component
PVC	=	Polyvinyl chloride (plastic)
RAM	=	Memory component
RCU	=	FidesNet remote control unit “Remote Control Unit” (FidesControl)
RIM 35	=	Relay Interface Module
RoHS	=	Restriction of Certain Hazardous Substances (environmentally friendly manufacturing processes)
SecuriFire	=	Fire alarm system
SecuriLine	=	Fire detector addressable loop
SecuriPro	=	Fire alarm system
SIM 35	=	Serial Interface Module
SLM 35	=	SecuriLine module
SMM 535		Serial Master Module
SSD 535	=	Smoke sensor
St	=	Fault
St-LS	=	Airflow fault
SW	=	Software
Te.	=	Terminal
UIM 35	=	universal interface module (RS-485)
UMS 35	=	universal module support
Update / Release	=	Renewal / update of the operating Firmware
V-Al	=	Pre-alarm
VDC	=	Direct current voltage
VdS	=	Verband der Schadenversicherer (Association of Indemnity Insurers, Germany)
VKF	=	Vereinigung Kantonaler Feuerversicherungen (cantonal fire insurance union, Switzerland)
VS	=	Pre-signal
Watchdog	=	Monitoring of the microcontroller
XLM 35	=	SecuriLine eXtended module

1.4 Opening and closing the detector housing

Notices about opening and closing

- To open the detector housing, use a **flat-blade screwdriver no. 5** (8 mm). Smaller flat-blade screwdrivers may damage the material of the rotary snap locks.
- To use the **rotary snap locks**, **press** **firmly** with the screwdriver toward the housing base and then **turn** 90°. The position of the lock slit shows the current state (see **Fig. 1**):
  ⇒ 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.

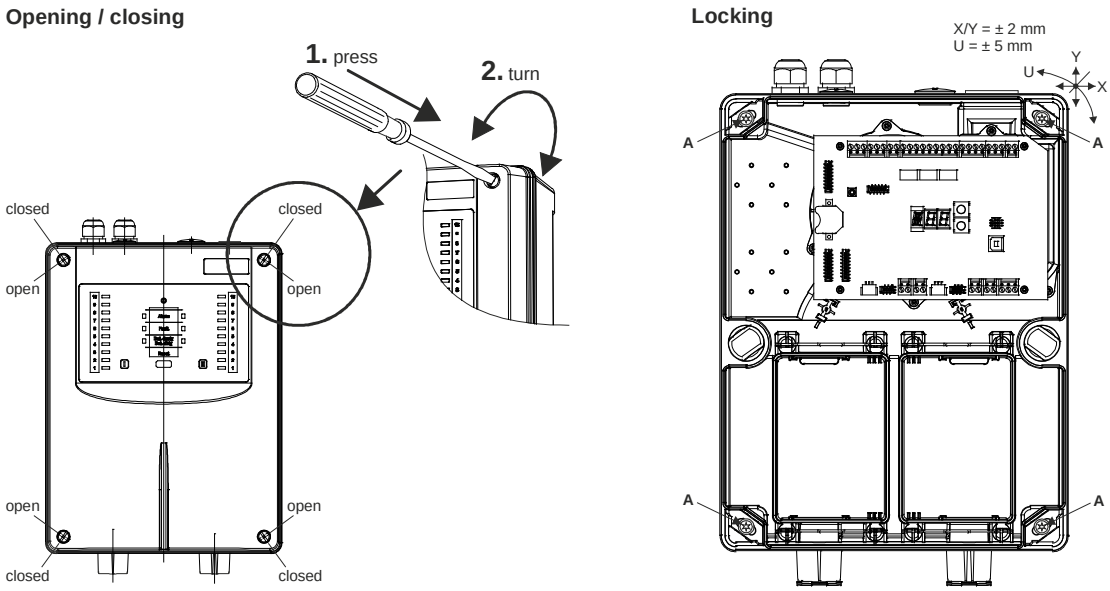

Fig. 1 Opening, closing and fastening the detector housing

To prevent the housing cover from hanging loosely on the flat cable connection to the AMB 35, it is fastened with the top rotary quick-release locks to the middle mounting points (**Fig. 2**).

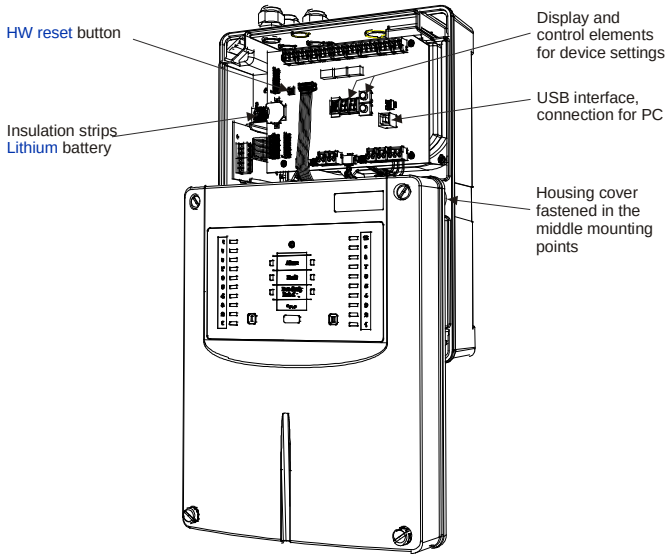

Fig. 2 Opened detector housing for commissioning

1.5 Removing and mounting the smoke sensors

The installation position of the smoke sensors depends on the particular smoke sensor chamber (I or II). The installation position is always such that 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 flat cable delivered with the smoke sensor is connected to the smoke sensor (big flat cable connecter) and to the AMB 35 Main Board (small flat cable connector).

The insect protection screens and lock clamps are not fitted to smoke sensor chamber II on the ASD 535-1 and -3 (only one smoke sensor). Instead of using the insect protection screens, the air channels are closed. Smoke sensor chamber II remains open for operation.

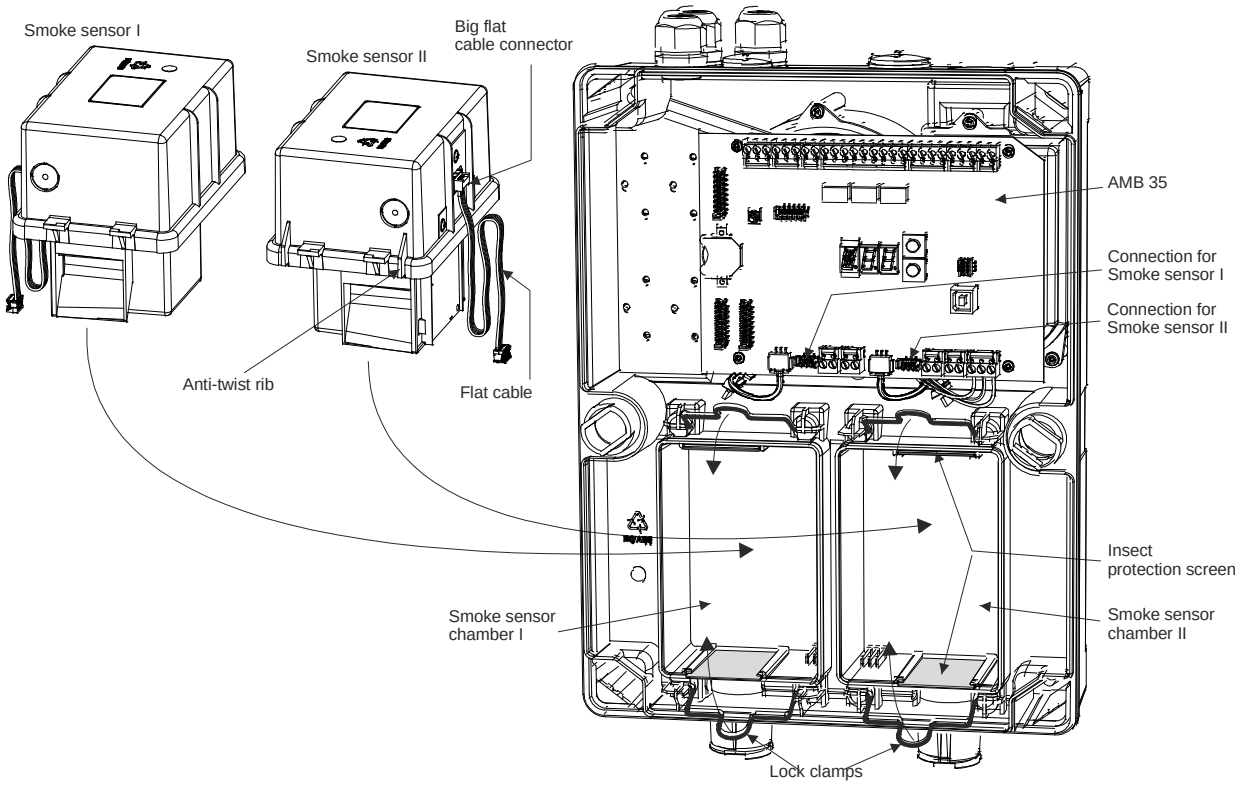

Fig. 3 Removing and mounting the smoke sensors

2 Maintenance and service

2.1 General information

Notices

- Maintenance and service work on fire alarm systems are subject in part to country-specific laws and directives.
- Maintenance and service work may be performed only by persons trained and authorised by the manufacturer of the ASD 535.
- Depending on deployment, the ASD 535 must be serviced at least once a year by the manufacturer or by personnel who have been authorised and trained by the manufacturer. If required (e.g. significant dirt hazard), the service interval is reduced to guarantee functional reliability. If filter boxes and/or filter units are used, the service life of the filter inserts play a role in the service interval. Depending on the level of dust and dirty in the object, filter service may vary greatly. The optimal filter service life is determined on site. The optimal filter service life is determined on site. When using the filter monitoring, the filter service life is set to 6 months by default, but it can be parameterised from 1 to 24 months.
- When using a DFU 911 dust filter unit, refer to Data Sheet T 140 705 for the application-specific specifications of the filter service life.

The operator is obligated to conclude a service agreement with the manufacturer or with an installer authorised by the manufacturer if the operator does not have the required service personnel trained by the manufacturer.

The legally prescribed national directives (DIN VDE 0833-1, VKF) concerning maintenance must be observed.

Servicing, maintenance or inspection work on the ASD 535 may be necessary after an event (fire, fault).

If a detector housing has to be replaced due to a defect, the new ASD 535 has to undergo first-time commissioning (initial reset required). When replacing an ASD 535, all customer-specific configurations have to be carried out again.

When performing maintenance work and performance checks, the relevant information in the following Sec. 2.3 must be observed.

If filter-boxes or dust filter units are installed in applications with a high level of soiling risk, a “simplified” maintenance can be performed on the filter-boxes or dust filter boxes as described in Sec. 2.3.1.

2.2 Cleaning

The detector housing is cleaned with a **non-aggressive** cleaning agent (e.g. soap and water or similar).

In the sampling pipe tube network, it is normally only necessary to clean the sampling holes. In applications where dirt is a major issue, it may be necessary to clean inside the sampling pipe (blow out with compressed air or nitrogen). Only **non-aggressive** cleaning agents may be used when cleaning the sampling pipe (e.g. soap and water or similar).

Notice

Aggressive cleaning agents (such as solvents, pure petrol or other alcohol-containing agents) must not be used for cleaning.

2.3 Maintenance checks, performance checks

Notice

To prevent triggering fire incident controls, remote alerting and extinguishing areas when maintenance work is performed, it is **absolutely** necessary that they are blocked or switched off beforehand.

Perform the following measures for performance and maintenance checks:

1. Block or switch off fire incident control and remote alerting on superordinate FACPs.

2. Check that the supply voltage on the FACP is set in compliance with maintenance instructions for the control unit.

3. Check the sampling pipe inlet and pipe plugs of the unused inlet opening on the detector housing (ASD 535-1 and -3) for correct seating.

4. Check the air outlet for dirt and clean if necessary.

5. If the ASD 535 is deployed for equipment monitoring and plug-in transitions from rigid to flexible pipe are present, check that the transitions are properly seated (sealed).

6. Open the cover of the detector housing and fasten it in the middle mounting position of the housing base. **Caution**: flat cable connection (see Sec. 1.4). Carry out the following measurements:

- Measure operating voltage on terminals 1 **(+)**, 2 **(-)** ➔ target value = 12.3 to 13.8 VDC (in 12 VDC operation) or 21.6 to 27.6 VDC (in 24 VDC operation).
- Read out airflow value for each sampling pipe in switch setting ***V*** and compare with commissioning protocol. If there is a difference of more than half of the set sensitivity (see examples ① and ②), the sampling pipe must be checked as follows:
  - An **increase** in the value (greater than 100%) tends to indicate **pipe breakage** ➔ check the sampling pipe for leaks (junctions, fittings, etc.)
  - A **decrease** in the value (less than 100%) tends to indicate **pipe blockage** ➔ check the sampling pipe for pipe blockage, clean as described in **point 9** resp. **point 10**.

① Configured LS-Ü sensitivity = ±20% (standard), half of that = ±10%. The sampling pipe should be checked if the value is below 90% or above 110%.

② Configured LS-Ü sensitivity = ±50% (non-compliant with EN 54-20), half of that = ±25%. The sampling pipe should be checked if the value is below 75% or above 125%.

7. Deactivate the ASD (pull off terminal block 1/2 and if necessary 3/4 on the AMB 35), carefully undo the flat cable connection to the control unit and completely remove the cover of the detector housing. After disconnecting the flat cable connections to the smoke sensors, carefully remove them from the ASD.

8. Use a soft, dry brush to clean the inside of the smoke sensor chamber and the insect protection screen. Oil-free compressed air or nitrogen can also be used for cleaning.

Notice

Do not blow out the smoke sensors with compressed air or open them. Improper handling can have an affect the response characteristics. Cleaning dirty smoke sensors may be performed only by the manufacturer. The smoke sensors are monitored for dust and dirt; their states are displayed on the control unit. If necessary, the smoke sensors have to be replaced.

After cleaning the smoke sensor chambers, re-mount the smoke sensors in the ASD.

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Continuation:

9. If cleaning the sampling pipe is required as per **point 6**, carry out the following measures (perhaps also **point 10**):

- Clean all sampling holes in the entire sampling pipe tube network. Tobacco pipe cleaners can be used, for example.
- If the sampling holes are not accessible, the entire sampling pipe tube network can be blown out from the detector housing with oil-free compressed air or nitrogen. This is performed via the manual ball-cock or from the loosened fitting (pipe connection) of the last accessory part in the direction of the sampling pipe tube network.

Notice

Blowing out from inside the smoke sensor chamber (through the fan) can damage the fan and is therefore not permitted.

- If present, open the accessory parts (water retaining box, dust filter unit, detector boxes) and clean with a soft dry brush. Oil-free compressed air or nitrogen can also be used for cleaning. Replace the filter element in the dust filter unit (see also Data Sheet T 140 705). When finished, close the accessory parts again.
- After cleaning the sampling pipe, re-connect to the ASD 535.

10. In applications where dirt is a major issue, it may be necessary to clean the air flow sensors. For this purpose (see Sec. 2.4.3) take them out of the holder and clean with a soft, dry brush ➔ **Caution: Do not clean or touch the sensor surface with your fingers.** Afterwards, re-mount the air flow sensors according to Sec. 2.4.3 ➔ ensure they are properly seated in the holder.

11. Connect the flat cable connection to the control unit and fasten the cover of the detector housing to the middle mounting positions of the housing base. Switch on the ASD again and wait until the fan reaches the optimal speed (at least 5 min).

12. Check the fault and alarm triggering and the correct alarm triggering on the FACP. Enter the performed tests in the commissioning protocol.

13. Read out the airflow values ***V*** again. If the values in **point 6** are still outside the tolerance range, it is necessary to carry out a new adjustment of the airflow monitoring (initial reset, see also section “Planning” in T 131 192).

Notices

- Following cleaning work on the sampling holes, an initial reset is normally not necessary (cleaning restores the commissioning state). If an initial reset is nevertheless necessary after the work in **point 13**), it may be performed **only** if it is certain that all possible measures for cleaning the sampling pipe have been previously carried out (including new filter element).
- If an initial reset is carried out with blocked sampling holes, there is the danger that insufficient air samples or no air samples will be aspirated and hence the ASD 535 can no longer trigger an alarm.

14. If, as a result of servicing checks, maintenance or repair work is carried out on the ASD 535 (including sampling pipe), a new initial reset may be necessary.

15. All performed measurements and tests are to be entered in the commissioning protocol and signed. Place the filled out commissioning protocol in the ASD. If required, a copy can be made and stored in the installation dossier.

16. After completion of the servicing check, close the detector housing.

2.3.1 Filter replacement on dust filter units

If a “Filter fault (service life exceeded)” fault trigger occurs when filter monitoring is activated and after expiry of the configured filter service life, the filter element in a dust filter unit must be replaced. When the expired filter service life (read out via *Easy-Config* switch position ***d*** > ***RE***) is periodically checked, the replacement can take place before the fault is triggered.

To replace the filter element, the “Filter replacement” function must be activated on the ASD (via the “Reset” key, *EasyConfig* or “ASD Config”). When filter replacement is activated, the aspirating smoke detector 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. 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. The “Filter service life” monitoring is restarted at 0.

2.4 Replacing units

Notice

Replacing defective units such as the AMB 35, smoke sensors, airflow sensors, and fans may be performed only if there is no voltage supply (terminal block 1/2 and if necessary 3/4 pulled out on the AMB 35).

2.4.1 Replacing the smoke sensors

The replacement of a smoke sensor is necessary if it is defective or if there is a dirty message.

Proceed according to Sec. 1.5 when replacing a smoke sensor. It is important to ensure that the new smoke sensor has the same alarm sensitivity range as the old one (SSD 535-1, -2, -3).

2.4.2 Replacing the aspirating fan unit

To replace the AFU 35 aspirating fan unit, the AMB 35 Main Board must be removed. This is done by carefully removing all internal cable connections. Remove the three connection wires from the terminals. It is not necessary to pull out plug-in terminals 1 to 26. After removing the fastening screws of the AMB 35 with a **Torx T10 screwdriver**, the AMB 35 can be lifted up toward the cable entries and the fastening screws of the aspirating fan unit are accessible. To remove the aspirating fan unit, remove the five screws **A** with a **Torx T15 screwdriver** (see **Fig. 4**).

Notices

- Screws **B** on the aspirating fan unit must not be removed.
- When connecting the new aspirating fan unit, pay attention to the wire colours (see **Fig. 4**).
- After replacing the aspirating fan unit, a new initial reset is imperative (see section “Planning” in T 131 192).

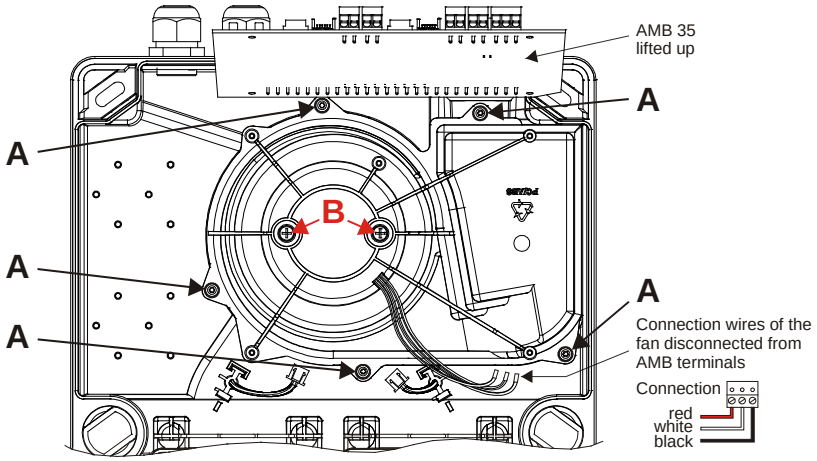

Fig. 4 Removing the aspirating fan unit

2.4.3 Replacing the airflow sensor

Notices

- When removing and mounting the airflow sensor, make sure that the sensor element is not damaged (i.e. does not break). Do not pull on the connection wires.
- After replacing an airflow sensor (new sensor), a new initial reset is imperative.

Undo connector **A** of the airflow sensor on the AMB 35. To remove an airflow sensor, lock tab **B** must be lightly pressed toward the smoke sensor chamber. The airflow sensor can then be carefully pulled out of the holder by grip tab **C** with thumb and index finger ➔ **Caution: do not pull on the connection wires of the airflow sensor.** Installing the new airflow sensor is performed in the reverse sequence. It is important to note the installation position (anti-twist safeguard) and ensure that the airflow sensor is correctly seated in its holder. To do this, press the airflow sensor on grip tab **C** toward the housing base until the lock tab snaps over the airflow sensor ➔ **Caution: do not press on the connection wires of the airflow sensor.**

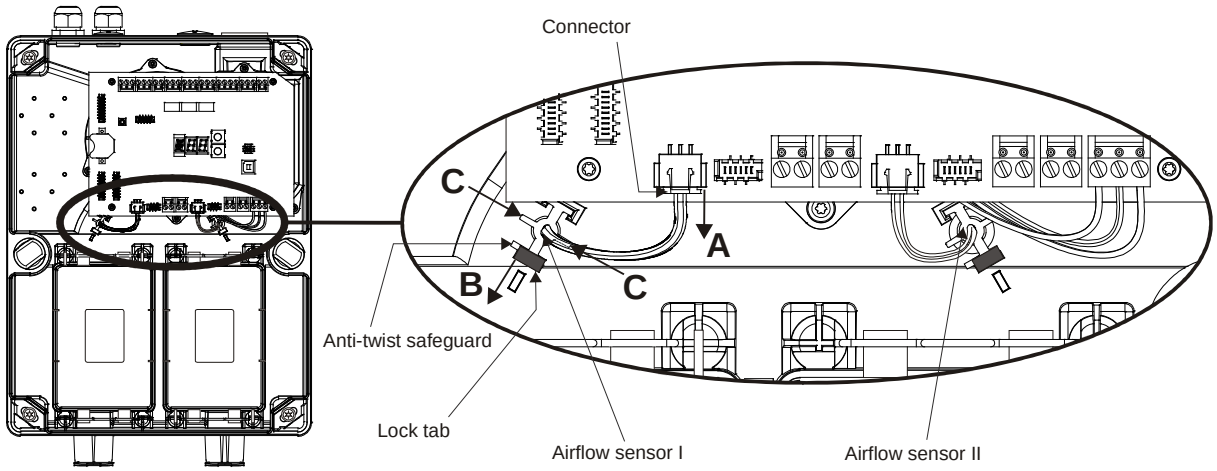

Fig. 5 Removing the airflow sensors

2.4.4 Replacing the AMB 35 Main Board

To replace the AMB 35 Main Board, all plug-in terminals with installation wires have to be disconnected. Likewise, all internal cable connections (flat cable connectors) must be carefully pulled out. After removing the 4 fastening screws of the AMB 35 with a **Torx T10 screwdriver**, the AMB 35 can be replaced. Installation of the new AMB 35 is performed in the reverse sequence.

Notices

- When connecting the new AMB 35, pay attention to the terminal and flat cable connector assignments.
- After replacing the AMB 35 a new initial reset is imperative. In addition, all customer-specific configurations and project-specific settings from the “ASD PipeFlow” configuration software must be carried out again. Proceed according to section “Planning” in T 131 192.

2.4.5 Replacing printed circuit boards BCB 35 and ACB 35

To replace printed circuit boards BCB 35 and ACB 35 of the display field, the flat cable connection on the BCB 35 / ACB 35 must be carefully removed. After removing the four fastening screws of the BCB 35 / ACB 35 with a **Torx T10 screwdriver**, replacement can take place. Installation is in the reverse order.

2.5 Disposal

The ASD 535 aspirating smoke detector and its packaging consist of recyclable material that can be disposed of as described in Sec. 2.5.1.

2.5.1 Deployed materials

Recycling

All materials used in the ASD 535 and all technologies used in manufacturing are ecologically and environmentally friendly in compliance with ISO 14000.

All waste resulting from assembly (packaging and plastic parts) can be recycled and should be disposed of accordingly.

No longer used devices, sampling pipes and parts should be disposed of in an environmentally-friendly manner.

The manufacturer of the ASD 535 is obligated to take back defective or no longer used devices and sampling pipes and will dispose of them in an environmentally-friendly manner. For this purpose the manufacturer maintains a monitored and approved disposal system. This service is available worldwide at cost price.

Materials used in the ASD 535:

Detector housing	PC / ABS
Smoke sensor SSD 535	Lexan (PC)
Fan housing / fan wheel	PBTP / PA6
Fan electric motor	PU / Cu / barium ferrite powder
Circuit boards, general	Epoxy resin hard paper
Soldering process	Environmentally-friendly manufacturing compliant with RoHS
Foil on control unit	PE
Sampling tubes	ABS / PA
Fittings	ABS / PA
Pipe clamps	PA
ABS glue	ABS / solvent MEK (methyl, ethyl, ketone)

Notice with PVC plastics

Because PVC plastics when burned produce poisonous, corrosive and environmentally damaging combustion products, the use of PVC is not permitted in many applications. The relevant construction regulations must be observed.

Ecology:

PVC plastics cannot be produced and disposed of without taking into consideration the environmental impact. Recycling PVC is only possible to a limited degree. Please refer to preceding danger information.

Sampling tubes	PVC, see danger information above
Fittings	PVC, see danger information above
PVC glue	PVC / solvent tetrahydrofurane, cyclohexanone

3 Article numbers and replacement parts

3.1 Detector housing and accessories

Designation	Article no.
ASD 535-1 without smoke level indicator, for 1 smoke sensor (without smoke sensor)	11-2000015-01-XX
ASD 535-2 without smoke level indicator, for 2 smoke sensors (without smoke sensor)	11-2000016-01-XX
ASD 535-3 with smoke level indicator, for 1 smoke sensor (without smoke sensor)	11-2000017-01-XX
ASD 535-4 with smoke level indicator, for 2 smoke sensors (without smoke sensor)	11-2000018-01-XX
ASD 535-3 HD with smoke level indicator, for 1 smoke sensor (without smoke sensor)	11-2000036-01-XX
ASD 535-4 HD with smoke level indicator, for 2 smoke sensors (without smoke sensor)	11-2000037-01-XX
Smoke sensor SSD 535-1; sensitivity: alarm 0.5 %/m – 10 %/m, pre-signals 0.05 %/m – 9 %/m	11-2000008-01-XX
Smoke sensor SSD 535-2; sensitivity: alarm 0.1 %/m – 10 %/m, pre-signals 0.01 %/m – 9 %/m	11-2000009-01-XX
Smoke sensor SSD 535-3; sensitivity: alarm 0.02 %/m – 10 %/m, pre-signals 0.002 %/m – 9 %/m	11-2000010-01-XX
Smoke sensor SSD 535-1 CP (painted); sensitivity: alarm 0.5 %/m – 10 %/m, pre-signals 0.05 %/m – 9 %/m	11-2000011-01-XX
Smoke sensor SSD 535-2 CP (painted); sensitivity: alarm 0.1 %/m – 10 %/m, pre-signals 0.01 %/m – 9 %/m	11-2000012-01-XX
Smoke sensor SSD 535-3 CP (painted); sensitivity: alarm 0.02 %/m – 10 %/m, pre-signals 0.002 %/m – 9 %/m	11-2000013-01-XX
SecuriLine eXtended module XLM 35 including mounting set	11-2200003-01-XX
M-Line module ML-SFD including mounting set	11-2200015-01-XX
SecuriLine module SLM 35 including mounting set	4000286.0101
Relay Interface Module RIM 35 including mounting set	11-2200031-01-XX
Memory Card Module MCM 35 with SD memory card (industrial version) including mounting set	4000285.0101
SD memory card (industrial version)	11-4000007-01-XX
Serial Interface Module SIM 35, including mounting set	11-2200000-01-XX
Serial Master Module SMM 535	11-2200001-01-XX
USB cable, 4.5 m	4301248
Overvoltage Protection Board OPB 911 CP	11-2200038-01-XX
Printed circuit board Main Board AMB 35-1 (for ASD 535-1 / -3)	11-2200016-01-XX
Printed circuit board Main Board AMB 35-2 (for ASD 535-2 / -4)	11-2200017-01-XX
Printed circuit board Main Board AMB 35-1 CP (painted, for ASD 535-3 HD)	11-2200021-01-XX
Printed circuit board Main Board AMB 35-2 CP (painted, for ASD 535-4 HD)	11-2200022-01-XX
Printed circuit board without smoke level indicator BCB 35	4301220.0101
Printed circuit board with smoke level indicator ACB 35	4301221.0101
Printed circuit board with smoke level indicator ACB 35 CP (painted, for ASD 535-x HD)	11-2200020-01-XX
Aspirating fan unit AFU 35, complete	4000299
Airflow sensor AFS 35	4000300
Insect Protection Screen IPS 35 (set of 2)	11-2300012-01-XX
Latch plate 2nd channel (set of 50)	11-2300009-01-XX
Lithium battery	11-4000002-01-XX
Cable screw union M20 (set of 10)	11-4000003-01-XX
Cable screw union M25 (set of 10)	11-4000004-01-XX
Adapters for US cable screw unions AD US M-Inch	11-2300029-01-XX
Universal Module Support UMS 35	4301252.0101

3.2 Sampling pipe and accessories

The article numbers of all available parts of the sampling pipe (tubes, fittings, etc.) are listed in a separate document (T 131 194).

4 Technical data

Type				ASD 535	
Supply voltage range				10.5 to 30 (**UL/FM = 12.4 to 27**)	VDC
Max. power 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. 340	approx. 260	mA
	Alarm I	approx. 660	approx. 390	approx. 295	mA
ASD 535-2	Idle/fault	approx. 645	approx. 380	approx. 290	mA
	Alarm I + II	approx. 745	approx. 450	approx. 350	mA
ASD 535-3 / -3 HD	Idle/fault	approx. 575	approx. 340	approx. 260	mA
	Alarm I	approx. 695	approx. 405	approx. 310	mA
ASD 535-4 / -4 HD	Idle/fault	approx. 645	approx. 380	approx. 290	mA
	Alarm I + II	approx. 820	approx. 490	approx. 385	mA
additionally with 1 RIM 35 units (all relays triggered)		approx. 15	approx. 10	approx. 7	mA
additionally with 2 RIM 35 units (all relays triggered)		approx. 30	approx. 20	approx. 14	mA
additionally with XLM 35 / ML-SFD / 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 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 mx	
Sampling pipe length				see T 131 192	
Sampling pipe Ø, typical (inner/outer)				Ø 20 / 25	mm
Max. number of sampling holes				see T 131 192	
Sampling hole diameter			Ø 2 / 2.5 / 3 / 3.5 / 4 / 4.5 / 5 / 5.5 / 6 / 6.5 / 7		mm
Response range (smoke sensor sensitivity see Sec. 3.1)				EN 54-20, class A, B, C	
Protection type acc. to IEC 60529 / EN 60529				54 (**for ASD 535-x HD = 66** ③)	IP
Ambient conditions acc. to IEC 60721-3-3 / EN 60721-3-3				3K5 / 3Z1	class
• Extended ambient conditions:					
• Detector housing temperature range				–30 – +60 (**UL max. +40**)	°C
• Temperature range of detector housing to Australian Standard AS 1603.8				–30 – +55	°C
• Sampling pipe temperature range				–30 – +60 ④	°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 ④	°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 ④	% rel. hum.
• Detector housing and sampling pipe humidity ambient condition (continuous)				70 ④	% rel. hum.
Max. loading capacity relay contact				50 VDC (**UL max. 30**) / 1 A / 30 W	
Max. loading capacity per open collector output (electrical 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 for fan speed level I / II / III / IV / V				34 / 36 / 39 / 40 / 41	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 / EN 54-27 / FM 3230 – 3250 / UL 268 7th Ed / UL 268A 4th Ed / ULC-S529 4th Ed		
VdS approval				G 208154	
Dimensions	ASD 535-x (W x H x D)			265 x 397 x 148	mm
Weight	ASD 535-x (incl. SSD 535-x)			3,555	g

Notices

① Power 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 For protection type IP 66 an air re-circulation conduit is imperative.

④ 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.

5 List of figures

Document history

First issue **Date 31.07.2012**

Index “a” Date 24.06.2014

Most important changes compared with previous issue:

Section / Fig.	New (n) / changed (c) / deleted (d)		What / Reason
3.1	n	New accessory: AD US M-Inch	New UL use
4	n	Note about UL use concerning supply voltage range, temperature range, relay contact, approvals	New UL use

Index “b” Date 16.01.2016

Most important changes compared with the previous issue:

Section / Fig.	New (n) / changed (c) / deleted (d)		What / Reason
Imprint	c	Footnote [1] Notice about reference document T 131 192, Index g	Correction
3.1	c	Cable screw union in set of 10, industrial SD memory cards	Correction

Index “c” Date 31.10.2016

Most important changes compared with the previous issue:

Section / Fig.	New (n) / changed (c) / deleted (d)		What / Reason
2.1 / 2.3	c	Maintenance on dust filter units	Extension
2.3.1		new section	Extension

Index “d” Date 30.04.2018

Most important changes compared with the previous issue:

Section / Fig.	New (n) / changed (c) / deleted (d)		What / Reason
3.1	c	Article number for AMB 35-x corrected	Correction
4	c	“Sound pressure level” instead of “noise level“, value specification corrected	Correction

Index “e” Date 20.06.2019

Most important changes compared with the previous issue:

Section / Fig.	New (n) / changed (c) / deleted (d)		What / Reason
1.1 / 1.3 / 3.1 / 4	n	Addition of the device variant ASD 535-x HD	Addition
1.3	n	Addition of the OPB 911 CP Overvoltage Protection Board	Addition
2.1 / 2.3, point 9	n	Notice about filter service lives in DFU 911 data sheet	Addition
3.1	c	Correction of the article numbers (changeover to 13-digit UB article numbers)	Logistics
4	c	RIM current consumption (all relays triggered)	Addition
	c	Name of standard for protection type/ambient conditions	Correction

Document history

Index “f” Date 13.12.2021

Most important changes compared with the previous issue:

Section / Fig.	New (n) / changed (c) / deleted (d)		What / Reason
1.1 / 1.3 / 3.1 / 4	c	Inclusion of ML-SFD additional module	Extension
1.1 / 1.3	c	Inclusion of UIM additional module	Extension
1.3	c	Notice about FidesNet	Addition
2.3 / 2.3.1	c	Filter FBL, FBX, DFU 535 omitted	Correction
2.5.1	c	“Clamp” omitted (pipe clamp)	Correction
3.1	n	new Art. number RIM 35, latch plate mounting	Addition
4	c	Addition of the VdS G number	Addition