SECURITON	Application Information		1 / 26
Product: ASD 535 **Components:** **Topic: Networking**		AI-Number	01
		Ref.:	xy
		Date / initials	28.02.12 / Scs

1. General

This document describes the networking of ASD 535 detectors, with the hardware and software status valid on the issue date of this document. We reserve the right to implement changes, particularly where such changes are justified by technical progress. Please contact our staff if you have any questions about functions and procedures that are not included in the scope of this document. The planning of fire detection systems and the mounting, commissioning and maintenance of the products and installations installed as a result require specialist knowledge and are therefore to be carried out by trained specialists only.

The product-specific training of qualified personnel is to be provided by Securiton or by persons expressly authorised to do so by Securiton. In addition it is imperative that the country-specific regulations and guidelines for the planning, installation and use of the products be observed and complied with. Damage and consequential damage caused as a result of interventions on, or modifications to, our products and/or of improper handling are excluded from the liability. The same applies to improper storage or other outside influences.

We expressly state that the fire alarm system must be periodically serviced by approved, qualified and certified personnel in accordance with the relevant norms (e.g. DIN 14675, VDE 0833, etc.) to ensure the long-term functional and protective scope.

We assume no liability for printing errors and obvious mistakes.

Warning

In this document particularly important notices are identified using this symbol. Failure to observe or comply with such notices may result in malfunctions of the system or in material damage.

2. Function

ASD 535 networking allows up to 250 ASD 535 Aspirating Smoke Detectors to be interconnected to form a common network. The network is then used to poll, configure and visualise all the connected Aspirating Smoke Detectors from a central location. This networking capability is therefore especially well suited in cases of restricted accessibility to the ASD 535, as for instance in

• deep-freeze warehouses
• military objects or premises
• objects spread out over extensive premises

ASD 535 networking comprises the following components:

Type	Description
SIM 35	Serial Interface Module
SMM 535	Serial Master Module
REP I-7510	Repeater for RS 485 extension
ASD Config 1.5.0	Software for ASD networking

The SIM 35 (Slave) is incorporated directly into the ASD 535 Aspirating Smoke Detector and provides the RS 485 serial interface for the networking. Up to 250 ASD 535 Aspirating Smoke Detectors can be networked via the RS 485 line, each with an integrated SIM 35. The maximum line length for the network as a whole is 1,000 m; it can be extended using repeaters.

The SMM 535 (Master) is also equipped with an RS 485 interface and can be integrated into the network at any point. A PC can be connected via the existing USB interface on the SMM 35. The network is accessed centrally using the ASD Config 1.5.0 software installed on the PC and enabled with a dongle; the software itself is used to poll, configure and visualise all the connected ASD 535 detectors.

Notice

A security management system can also be used instead of a Master Module for the centralised polling and configuration. If you are interested in such a system, please contact the Securiton management systems planning department.

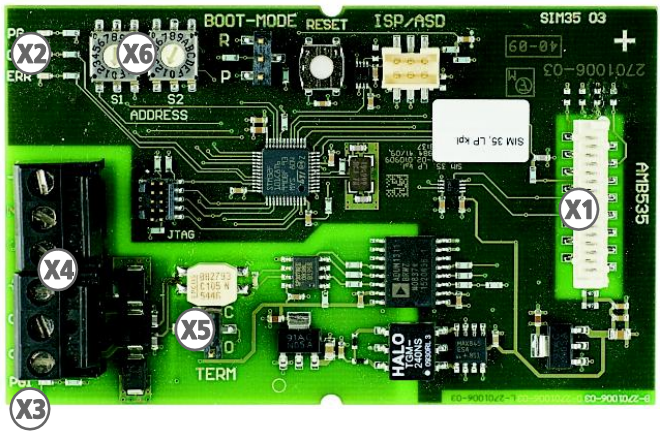
Warning

The commissioning and maintenance of the ASD 535 networking are to be carried out exclusively by trained and qualified personnel. The technical documentation must be read prior to installation and use, and the specifications must be adhered to. Non-observance may result in the loss of all guarantee and warranty claims.

3. Interfaces

3.1. Serial Interface Module SIM 35

Presentation and explanation of the solution, e.g.: Adapting a circuit, expansion, using a different module, etc.



Interfaces

X1 Connection to main control unit AMB 35 of the ASD 535 (ribbon cable)
X2 LED display (3x)
X3 LED display (1x)
X4 Connector plug RS 485
X5 Jumper for BUS termination
X6 Rotary switch for setting the network address

LED display (X2)

LED	Colour	Status	Meaning
PG	green	steady	Supply from AMB 35 in order
COM	green	flashing	Communication in progress, ASD Config is
ERR	yellow	flashing	Address in invalid range
		steady	Fault on SIM 35

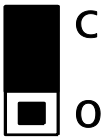
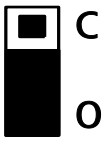
LED display (X3)

LED	Colour	Status	Meaning
PGI	green	steady	Supply voltage in order (after electrical isolation)

Connector plug RS 485 (X4)

Terminal	Designation	Function	Cable colour	
1	GND (-)	GND input	black	
2	D+	Data+ input	white	twisted
3	D-	Data- input	yellow	
4	GND (-)	GND output	black	
5	D+	Data+ output	white	twisted
6	D-	Data- output	yellow	

Jumper for BUS termination (X5)

Position	Function
	SIM 35 is first or last participant in the network
	SIM 35 is not first or last participant in the network

Rotary switch for setting the network address (X6)

Each SIM 35 must be assigned its own network address. The addresses are to be assigned in ascending order in accordance with the network topology. The network address can be set in hexadecimal code using the two rotary switches (S1 and S2).

Adr	S1	S2
1	0	1
2	0	2
3	0	3
4	0	4
5	0	5
6	0	6
7	0	7
8	0	8
9	0	9
10	0	A
11	0	B
12	0	C
13	0	D
14	0	E
15	0	F
16	1	0
17	1	1
18	1	2
19	1	3
20	1	4
21	1	5
22	1	6
23	1	7
24	1	8
25	1	9
26	1	A
27	1	B
28	1	C
29	1	D
30	1	E
31	1	F

Adr	S1	S2
32	2	0
33	2	1
34	2	2
35	2	3
36	2	4
37	2	5
38	2	6
39	2	7
40	2	8
41	2	9
42	2	A
43	2	B
44	2	C
45	2	D
46	2	E
47	2	F
48	3	0
49	3	1
50	3	2
51	3	3
52	3	4
53	3	5
54	3	6
55	3	7
56	3	8
57	3	9
58	3	A
59	3	B
60	3	C
61	3	D
62	3	E
63	3	F

Adr	S1	S2
64	4	0
65	4	1
66	4	2
67	4	3
68	4	4
69	4	5
70	4	6
71	4	7
72	4	8
73	4	9
74	4	A
75	4	B
76	4	C
77	4	D
78	4	E
79	4	F
80	5	0
81	5	1
82	5	2
83	5	3
84	5	4
85	5	5
86	5	6
87	5	7
88	5	8
89	5	9
90	5	A
91	5	B
92	5	C
93	5	D
94	5	E
95	5	F

Adr	S1	S2
96	6	0
97	6	1
98	6	2
99	6	3
100	6	4
101	6	5
102	6	6
103	6	7
104	6	8
105	6	9
106	6	A
107	6	B
108	6	C
109	6	D
110	6	E
111	6	F
112	7	0
113	7	1
114	7	2
115	7	3
116	7	4
117	7	5
118	7	6
119	7	7
120	7	8
121	7	9
122	7	A
123	7	B
124	7	C
125	7	D
126	7	E
127	7	F

Adr	S1	S2
128	8	0
129	8	1
130	8	2
131	8	3
132	8	4
133	8	5
134	8	6
135	8	7
136	8	8
137	8	9
138	8	A
139	8	B
140	8	C
141	8	D
142	8	E
143	8	F
144	9	0
145	9	1
146	9	2
147	9	3
148	9	4
149	9	5
150	9	6
151	9	7
152	9	8
153	9	9
154	9	A
155	9	B
156	9	C
157	9	D
158	9	E
159	9	F

Adr	S1	S2
160	A	0
161	A	1
162	A	2
163	A	3
164	A	4
165	A	5
166	A	6
167	A	7
168	A	8
169	A	9
170	A	A
171	A	B
172	A	C
173	A	D
174	A	E
175	A	F
176	B	0
177	B	1
178	B	2
179	B	3
180	B	4
181	B	5
182	B	6
183	B	7
184	B	8
185	B	9
186	B	A
187	B	B
188	B	C
189	B	D
190	B	E
191	B	F

Adr	S1	S2
192	C	0
193	C	1
194	C	2
195	C	3
196	C	4
197	C	5
198	C	6
199	C	7
200	C	8
201	C	9
202	C	A
203	C	B
204	C	C
205	C	D
206	C	E
207	C	F
208	D	0
209	D	1
210	D	2
211	D	3
212	D	4
213	D	5
214	D	6
215	D	7
216	D	8
217	D	9
218	D	A
219	D	B
220	D	C
221	D	D
222	D	E
223	D	F

Adr	S1	S2
224	E	0
225	E	1
226	E	2
227	E	3
228	E	4
229	E	5
230	E	6
231	E	7
232	E	8
233	E	9
234	E	A
235	E	B
236	E	C
237	E	D
238	E	E
239	E	F
240	F	0
241	F	1
242	F	2
243	F	3
244	F	4
245	F	5
246	F	6
247	F	7
248	F	8
249	F	9
250	F	A

3.2. Serial Master Module SMM 535

Interfaces

X1 LED display, inner (1x)
X2 LED displays, outer (2x)
X3 Connector plug RS 485
X4 Jumper for BUS termination
X5 USB interface (for connector type B for connecting a PC, max. distance 5 m)

LED display, inner (X1)

LED	Colour	Status	Meaning
PGI	green	steady	Supply voltage from PC (USB) in order (after electrical isolation)

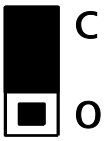
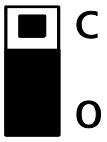
LED display, outer (X)

LED	Colour	Status	Meaning
Fault	No display as not fitted		
COM	green	flashing	Communication in progress, ASD Config is
Power	green	steady	Supply from PC (USB) in order

Connector plug RS 485 (X3)

Terminal	Designation	Function	Cable colour	
1	GND (-)	GND input / output	black	
2	D+	Data+ input / output	white	twisted
3	D-	Data- input / output	yellow	

Jumper for BUS termination (X4)

Position	Function
	SMM 35 is first or last participant in the network
	SMM 35 is **not** first or last participant in the network

3.3. Repeater REP I-7510

Interfaces

X1 Connector plug RS 485 and power supply
X2 Connector plug RS 485
X3 LED display
(red operation and communication display)

Connector plug RS 485 and power supply (X1)

Terminal	Designation	Function	Cable colour	
1	Data+	Data+ input	white	twisted
2	Data-	Data- input	yellow	
3-8	Not assigned			
9	(R)+Vs	24V (+)	red	
10	(B) GND	GND (-)	black	

Connector plug RS 485 (X2)

Terminal	Designation	Function	Cable colour	
11	Data+	Data+ input	white	twisted
12	Data-	Data- input	yellow	
13-20	Not assigned			

4. Technical data

Network	
Number of networkable ASD 535	max. 250
Number of Master Modules	max. 26 (only 1 active at any given time)
Total line length of network	max. 1,000 m
Number of repeaters in the network	max. 5
Total line length of network with repeaters	max. 8,500 m
Transmission rate in the network	max. 57.6 kbit/s
Response time in the network (latency) without repeater	< 1 s with max. 50 ASD / < 5 s with max. 250 ASD
Cable type	J-Y(St)Y 2x2x0.8 mm²
SIM 35	
Operating voltage from AMB 35	5 V DC
Power consumption	max. 20 mA
Protection type	IP 33
Permissible ambient temperature	-30 °C to +60 °C
Dimensions (H x W x D)	58 x 95 x 17 mm
Connection	Screw terminals, max. 2.5 mm²
Weight (with module holder)	approx. 55 g
SMM 535	
Operating voltage from PC USB	5 V DC
Power consumption from PC USB	max. 100 mA
Permissible ambient temperature	-30 °C to +60 °C
Dimensions (H x W x D)	89 x 82 x 55 mm
Housing	PC, RAL 7035
Connection	Screw terminals, max. 1.5 mm²
Weight	approx. 165 g
REP I-7510	
Operating voltage	10 to 30 V DC
Power consumption	max. 80 mA10 to 30 V DC)
Transmission rate (adjusted automatically)	max. 115.2 kbit/s
Input-side insulation	max. 3,000 V DC
Permissible ambient temperature	DC-25 °C to +75 °C
Dimensions (H x W x D)	122 x 72 x 35 mm
Housing	PC
Connection	Screw terminals, max. 1.5 mm²
Weight	approx. 115 g

5. Planning

ASD 535 networking is an additional feature to the ASD 535 Aspirating Smoke Detector that is not regulated by a norm or standard. This Section describes the standard planning procedures; if any aspect is unclear or if special applications are involved, the Securiton planning department is to be consulted as a matter of principle.

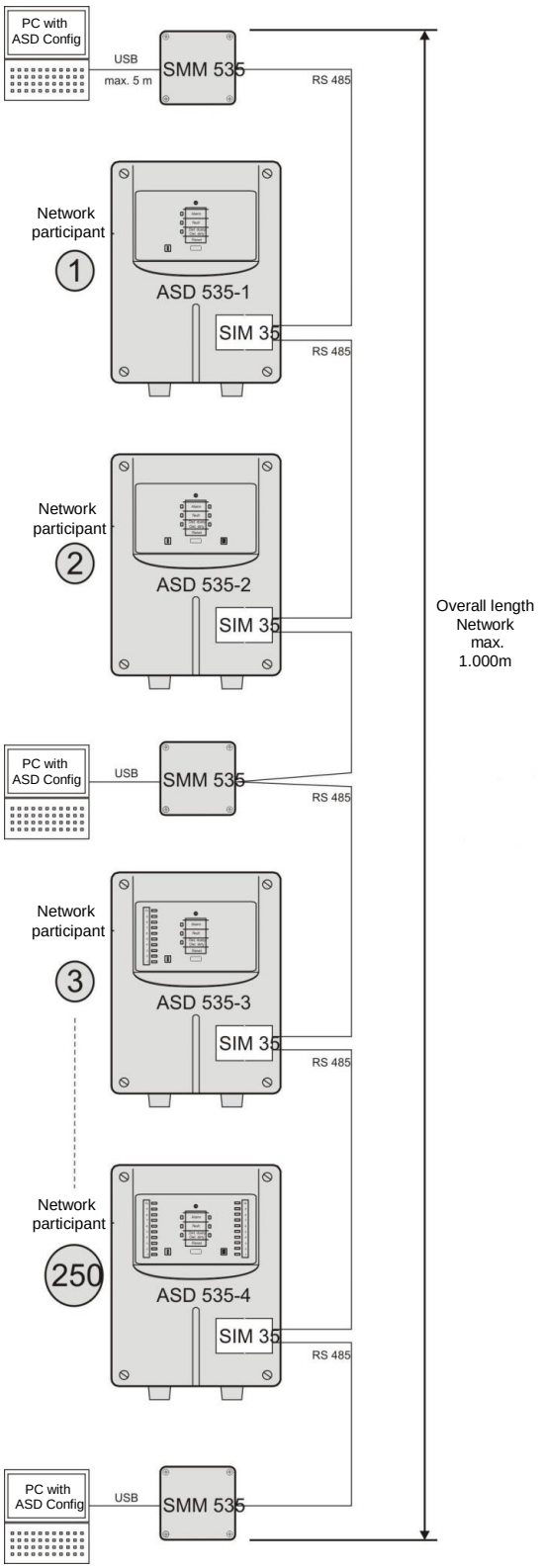
5.1. Standard network

In a standard network up to 250 ASD 535 Aspirating Smoke Detectors can be networked with one another in any combination (type ASD 535-1 to ASD 535-4).

Integrated into each Aspirating Smoke Detector in the network is an SIM 35 Serial Interface Module; a corresponding network participant address is assigned for identification purposes.
SMM 535 Serial Master Modules can be integrated at any point in the network. Several SMM 535 are possible with each network; in the case of objects spread over extensive premises they can be used as access points distributed in the object. It is important to note that **only one PC** is able to access an SMM 535 via the USB interface **at any one time**.

SIM 35 and SMM 535 are connected via the RS 485 interface; the total line length of the network must not exceed 1,000 m.

Screened fire detector cables (e.g. J-Y(ST)Y 2x2x0.8 mm²) are to be used to prevent interference from outside factors whenever possible and ensure flawless digital communications between the network participants.



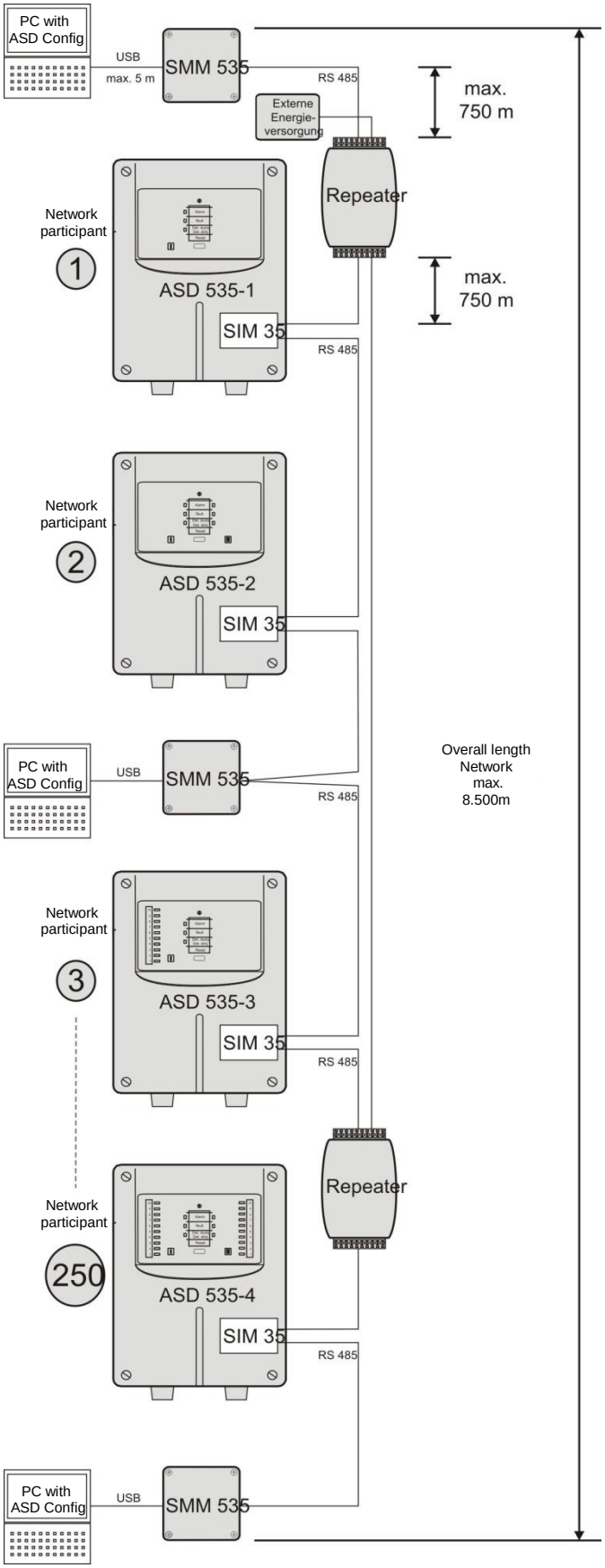
5.2. Network with repeater

If the total line length of 1,000 m with a standard network is insufficient, the line length can be extended using repeaters interconnected between the individual network participants.

Five is the maximum number of repeaters that can be connected throughout the network. The line length from the repeater to each network participant must not exceed 750 m on either side; the total line length of the network including repeaters must not exceed 8,500 m.

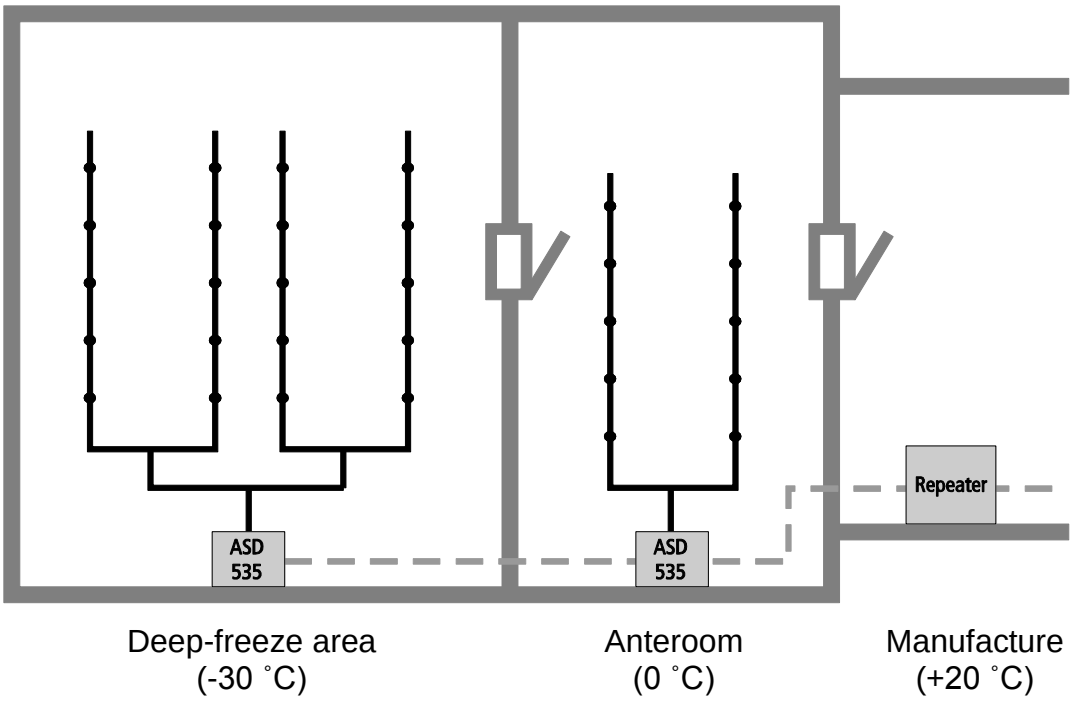
The repeaters are powered from a separate energy supply.

The repeater specified by Securiton has been specially tested for network use. A faultless operation cannot be guaranteed if other repeaters are used.



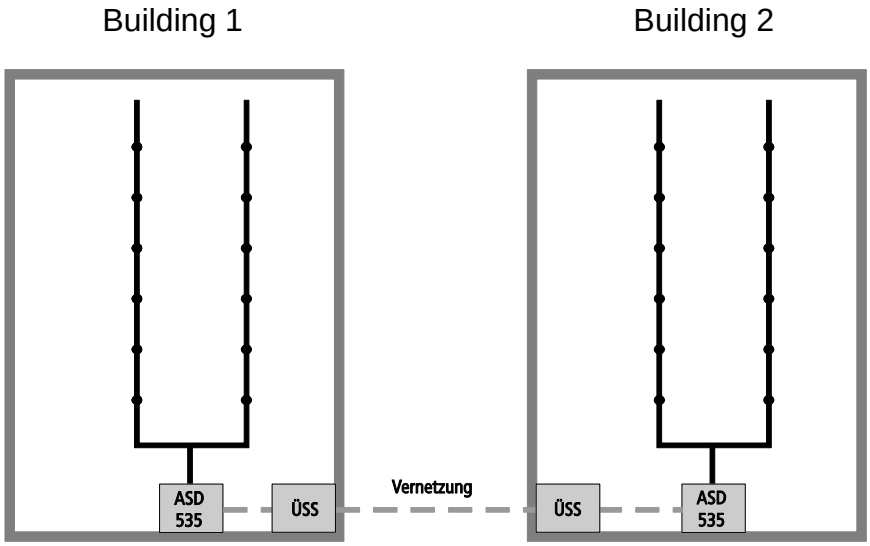
Networking in deep-freeze areas

When networking Aspirating Smoke Detectors in deep-freeze areas (up to -30 °C) make sure that any repeaters deployed are designed for these temperature ranges. The repeater provided by Securiton has a temperature range of -25 °C to +75 °C and is therefore to be installed outside the deep-freeze area if ambient temperatures inside are around -30 °C.



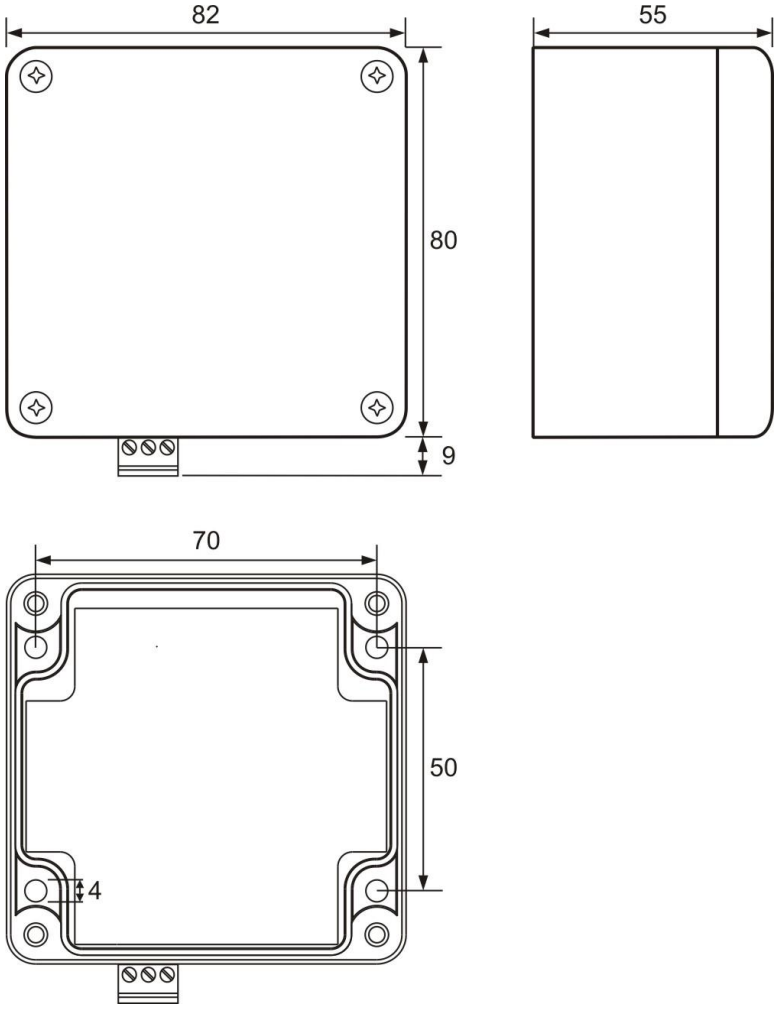
5.3. Networking across several buildings

When networking Aspirating Smoke Detectors located in different buildings, make sure the network is protected by an appropriate overvoltage protection at both the building outlet and the building inlet. The modules provided by Securiton have been specially tested for network use. A faultless operation cannot be guaranteed if other modules are used.

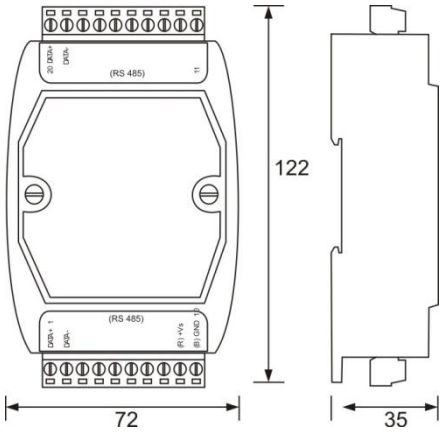


6. Dimensioned drawing

SMM 535

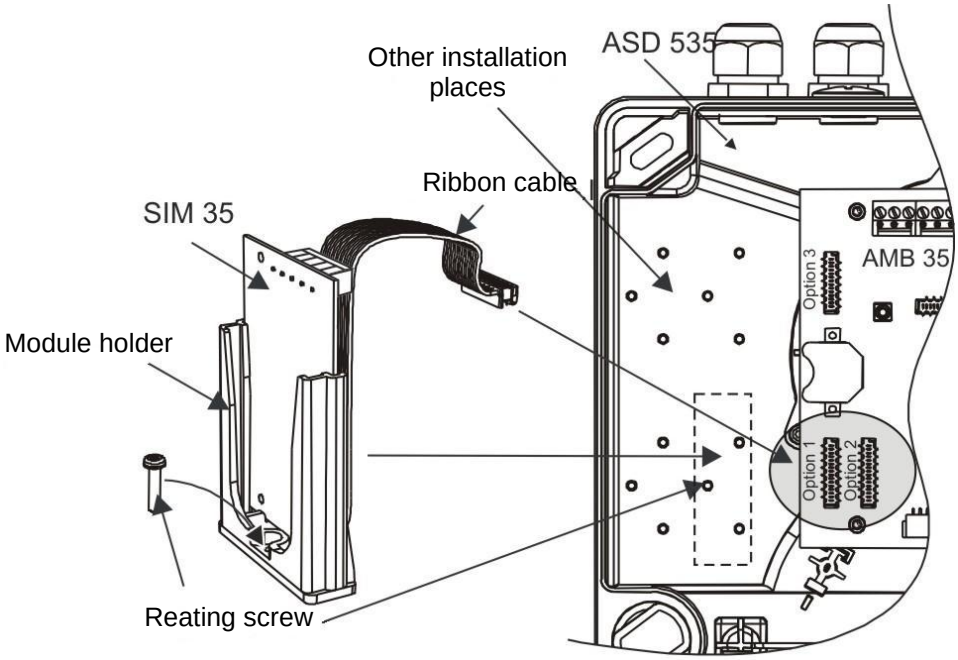


REP I-7510



7. Mounting

The SIM 35 is an optional expansion module for the ASD 535 and can be fitted directly to one of the four slots on the detector housing. The SIM 35 ships complete with a mounting set comprising a module holder, a retaining screw and a connecting cable (ribbon cable). The SIM 35 is connected to the base plate of the ASD 535 using the ribbon cable, either at plug-in Option 1 or Option 2. Only one SIM 35 can be used on each ASD 535. The SIM 35 ensures the electrical isolation between the RS 485 interface and the ASD main control unit AMB 35.



When retrofitting the SIM 35 to existing ASD 535 detectors, de-energise the ASD 535 first, then mount the SIM 35, then reconnect the ASD 535. Once the ASD 535 is energised, the SIM 35 is automatically detected and is, from that moment onwards, monitored by the ASD 535. Fitting the SIM 35 has no influence whatsoever on the existing configuration of the ASD 535.

The SMM 535 ensures the electrical isolation between the RS 485 interface and the USB interface. It is secured to the mounting surface by four screws and should be sited at central locations within the network.

The REP I-7510 repeater has a standard top-hat rail connection and is fitted into a corresponding top-hat rail housing (e.g. GEH EXB set) or a top-hat rail cabinet (e.g. B6-CTR-2).

Warning

Before the ASD Config 1.5.0 software can be used, all the ASD 535s previously fitted to the network must be updated to firmware 01.05.00. The corresponding firmware file is contained in the ASD Config 1.5.0 software. Instructions on updating the firmware of the ASD 535 can be found in the ASD 535 Technical Documentation (7002570) or the ASD Config Help.

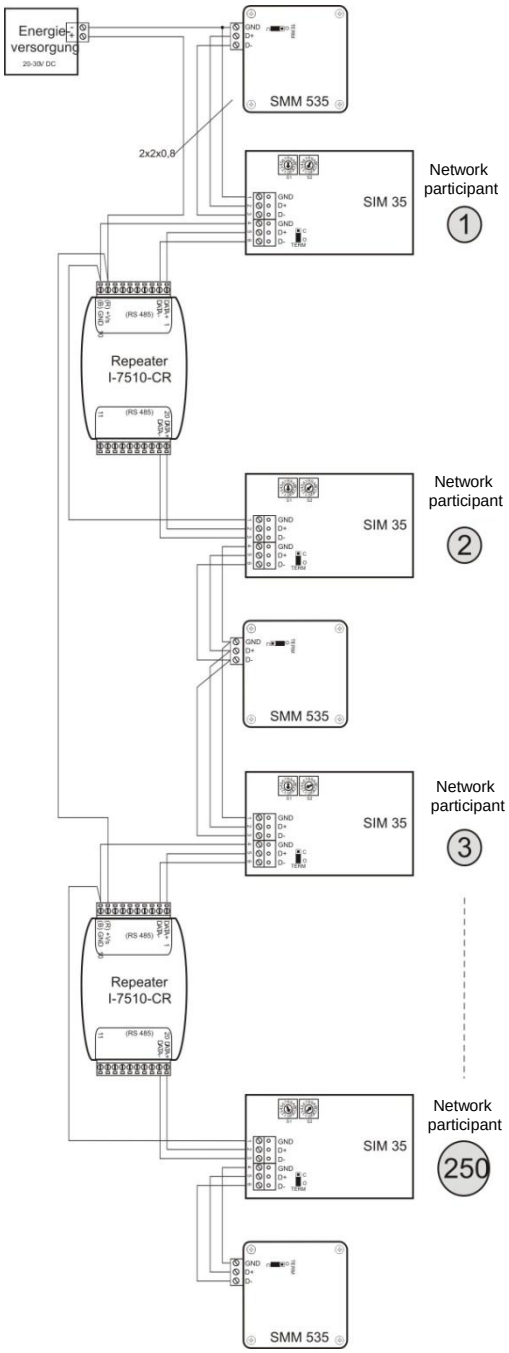
8. Connection

The following settings must also be made as part of the procedure for connecting the RS 485 line.

• Set the network addresses on all SIM 35s (see Section 3)

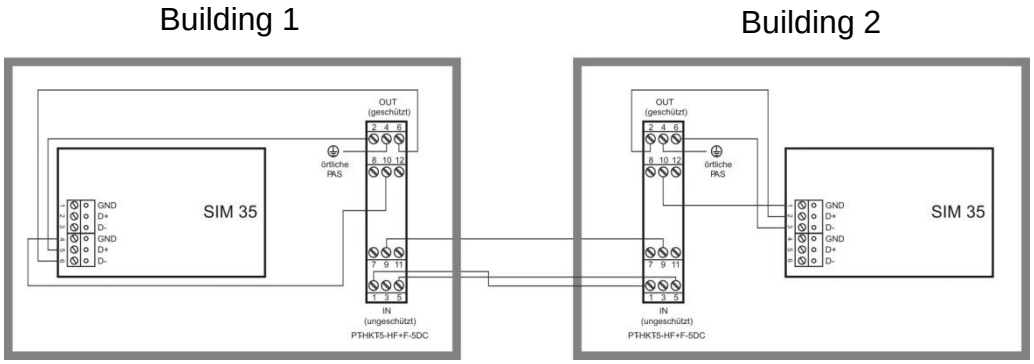
• Place the SIM 35 and SMM 535 jumpers in the correct position depending on the network position (see Section 3)

• After successful connection the green LEDs PG and PGI (SIM 35), PGI (SMM 35) and the red repeater LED are lit

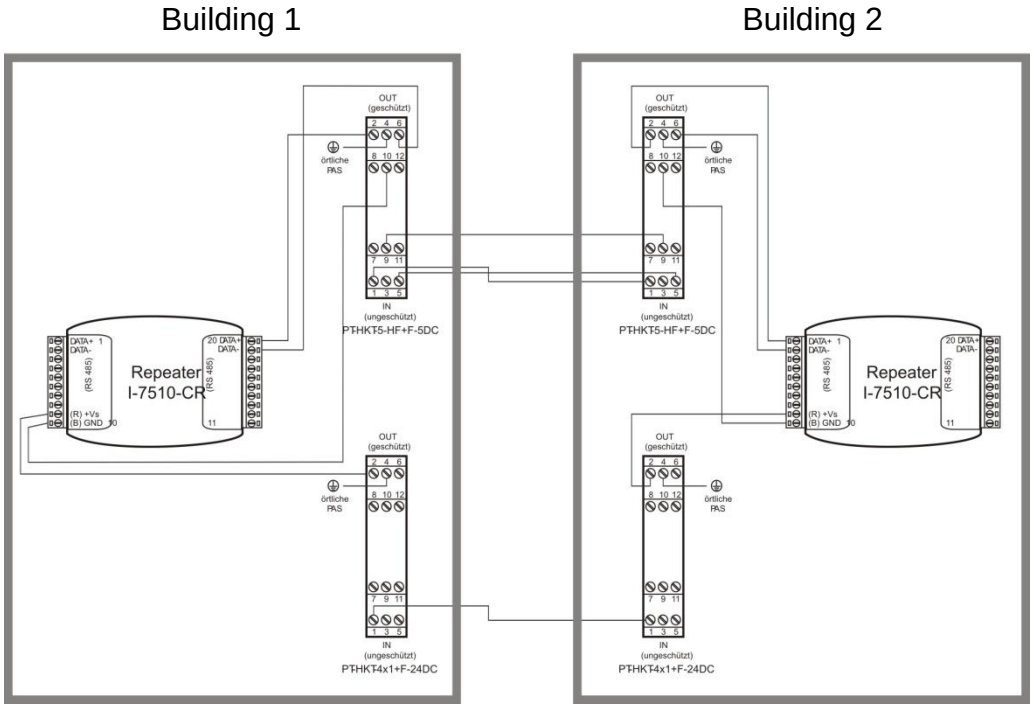


8.1. Connecting the overvoltage protection

Connection for a standard network



Connection for a network with repeaters (with repeaters on either side at the building transfer point)



The overvoltage protection modules have a standard top-hat rail connection and are fitted into a corresponding top-hat rail housing (e.g. GEH EXB set) or a top-hat rail cabinet (e.g. B6-CTR-2).

9. Operation

9.1. ASD Config 1.5.0

Version 1.5.0 of the ASD Config software provides a graphical user interface, which is used to visualise the network and to poll and configure all the ASD 535s connected in the network.
Access to the software is possible only via a special ASD Config dongle; an existing basic dongle can be expanded with the ASD Config functionality. A separate ASD Config dongle is available as an alternative.

Warning

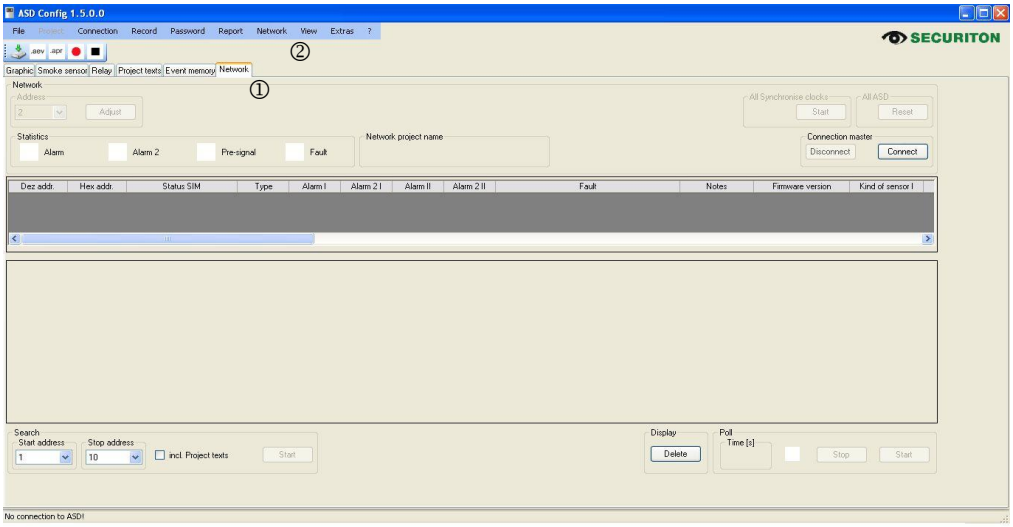
Before the ASD Config 1.5.0 software can be used, all the ASD 535s previously fitted to the network must be updated to firmware 01.05.00. The corresponding firmware file is contained in the ASD Config 1.5.0 software. Instructions on updating the firmware of the ASD 535 can be found in the ASD 535 Technical Documentation (7002570) or the ASD Config Help.

The ASD Config software is installed on a PC directly from a CD. Minimum PC requirements:

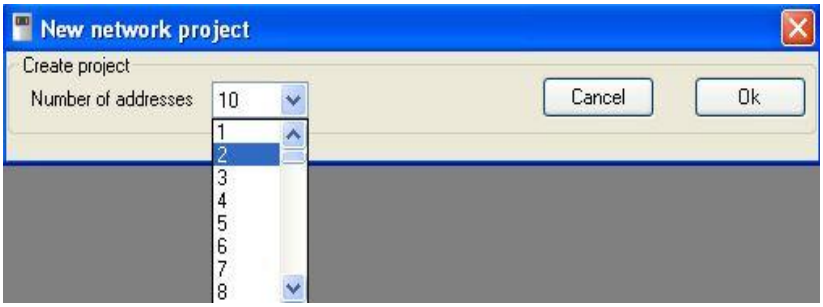
- CPU with min. clock speed of 1 GHz
- 1 GB RAM
- 300 MB of hard disk space available
- Windows XP, Windows Vista or Windows 7 operating system
- USB interface
- CD-ROM drive for the installation (administrator rights required)

9.2. Creating a new network

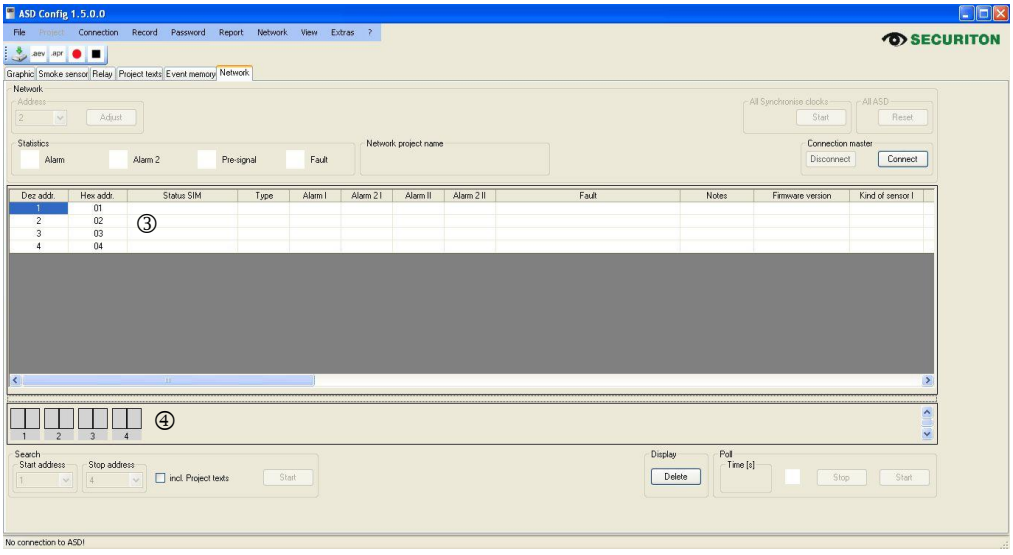
Once the ASD Config 1.5.0 software has loaded, the following start screen is displayed when the «Network» tab ① is selected.



From the menu bar select the sub-item "New project" under «Network» ②. In the window that appears next, specify the number of ASD 535 in the network and confirm with OK.

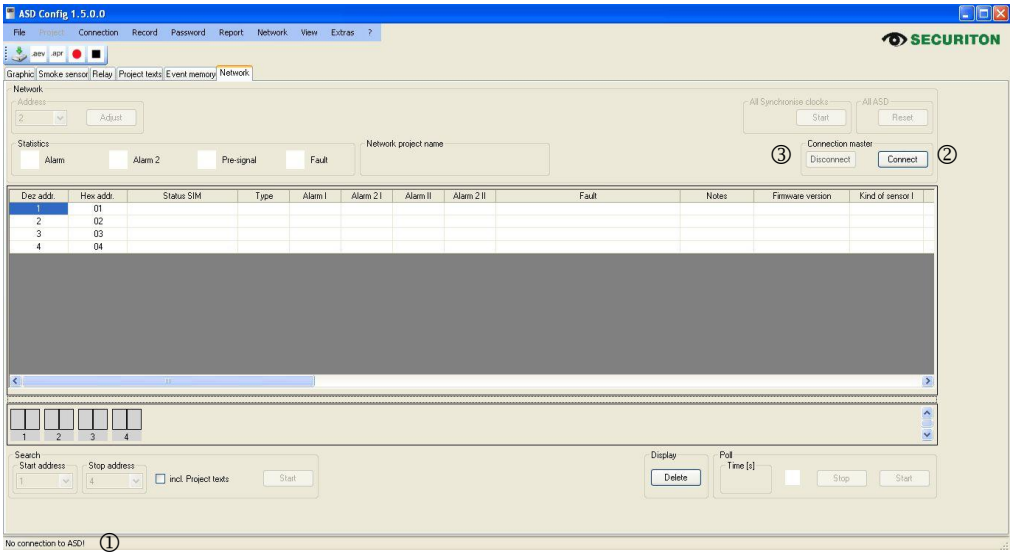


The specified number is now transferred to the table view ③ and the icon view ④.



9.3. Connecting with the network

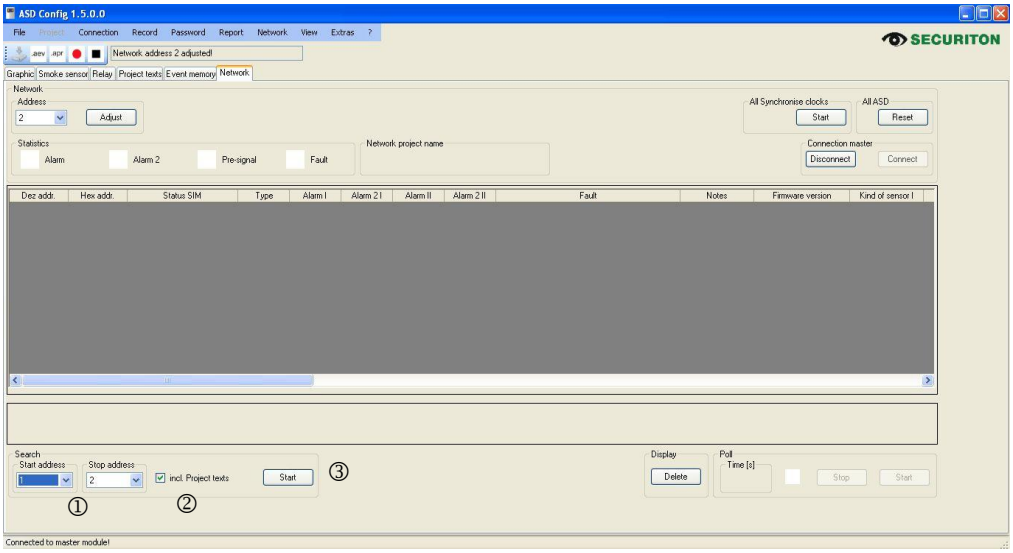
The message bar ① reads: "No connection to ASD!".



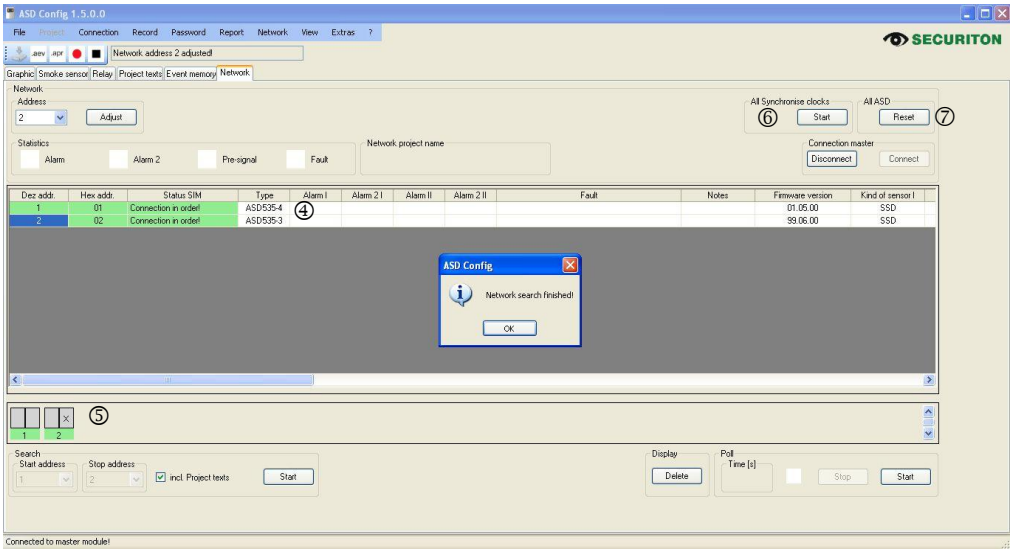
The "Connect" button ② is used to establish the connection between the PC and the SMM 535 Master Module (and therefore the network). The message bar now reads: "Connected with the Master Module!". The "Disconnect" button ③ can be used to clear down the connection with the SMM 535 Master Module.

9.4. Polling the network

To poll the network, specify the area to be polled by entering a start address and a stop address ①. As an option you can also poll any project texts stored on the ASD 535 by ticking the relevant check box ②. Finally start the network poll by clicking the "Start" button ③.



The end of the network poll is signalled by a dialog box that reads: "Network search completed!". The network participants with the corresponding data are now displayed in the table overview ④ and the icon view ⑤.



A green display indicates that the network participants are ready (SIM status column "Connection in order"). The icon view ⑤ displays two rectangles for each ASD 535; they symbolise the fitted smoke sensors. An X inside a rectangle indicates that the smoke sensor is not fitted (e.g. with ASD 535-1 or ASD 535-3). The "Start" button ⑥ is used to synchronise the clocks of all the ASD 535s with the PC's system time; the "Reset" button ⑦ is used to reset all the ASD 535s in the network.

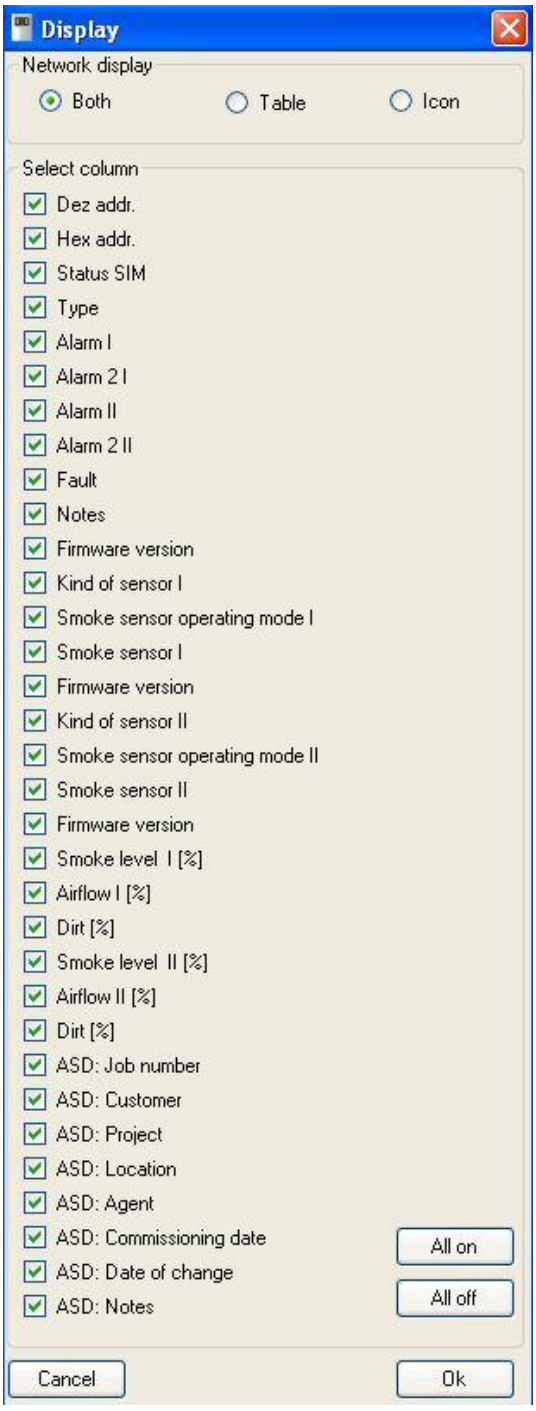
Displays in the table overview	
Dec addr.	Displays network address in the decimal system
Hex addr.	Displays network address in the hexadecimal system
SIM status	Displays status display of the SIM 35 in the ASD
Type	Displays particular variant of the ASD
Alarm I	Displays alarm of first smoke sensor
Alarm 2 I	Displays alarm 2 of first smoke sensor
Alarm II	Displays alarm of second smoke sensor
Alarm 2 II	Displays alarm 2 of second smoke sensor
Fault	Displays any faults that occur
Remarks	Displays an optional remark text
Firmware version	Displays the firmware version of the ASD
Sensor type I	Displays sensor type of first smoke sensor
Smoke sensor mode of operation I	Displays mode of operation of first smoke sensor
Smoke sensor I	Displays variant of first smoke sensor
Firmware version	Displays the firmware version of the ASD
Sensor type II	Displays sensor type of second smoke sensor
Smoke sensor mode of operation II	Displays mode of operation of second smoke sensor
Smoke sensor II	Displays variant of second smoke sensor
Firmware version	Displays firmware of second smoke sensor
Smoke level I [%]	Displays what % of the set smoke threshold has been reached for first smoke sensor
Airflow I [%]	Displays what % of the setpoint value (100%) set during commissioning has been reached for first smoke sensor [1)]
Soiling [%]	Displays soiling level of first smoke sensor [2)]
Smoke level II [%]	Displays what % of the set smoke threshold has been reached for second smoke sensor
Airflow II [%]	Displays what % of the setpoint value (100%) set during commissioning has been reached for second smoke sensor [1)]
Soiling [%]	Displays soiling level of second smoke sensor [2)]
ASD: Order number	Displays ASD order number
ASD: Project	Displays ASD project
ASD: Customer	Displays ASD customer
ASD: Location	Displays ASD location
ASD: Project manager	Displays ASD project manager
ASD: Commissioning date	Displays ASD commissioning date
ASD: Change date	Displays ASD change date
ASD: Remarks	Displays ASD remarks

1) normative limit of blockage detection 80%, normative limit of pipe breakage detection 120%
2) dust 50%, fault 75%

Notice

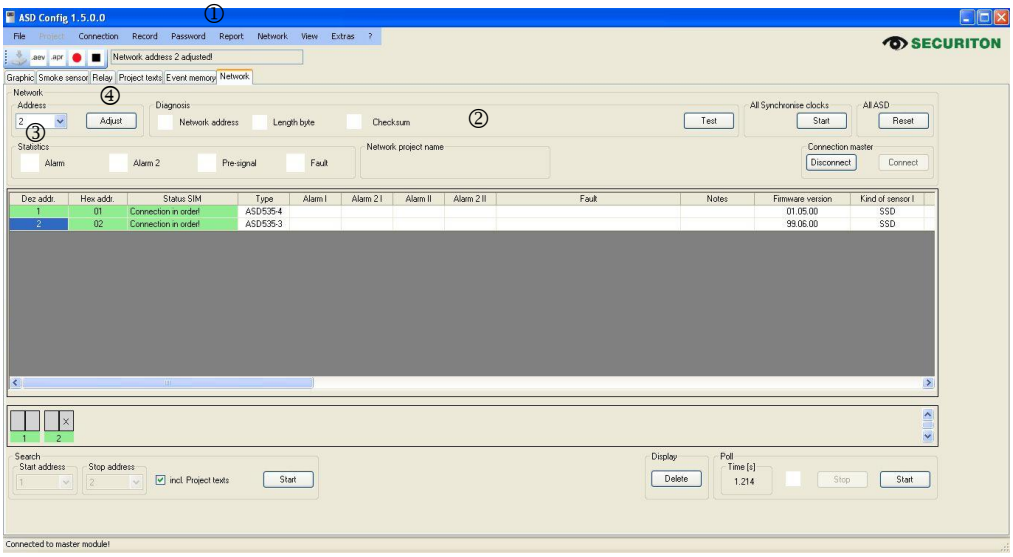
The entries listed in fields with a light-grey background are displayed only when polling the network with project texts in the status overview.

The networking representation type can be selected from the menu bar using «Network» and the sub-item "Representation". Either the table view, the icon view or both can be activated here. The individual displays can also be activated or deactivated.



9.5. Configuring the network

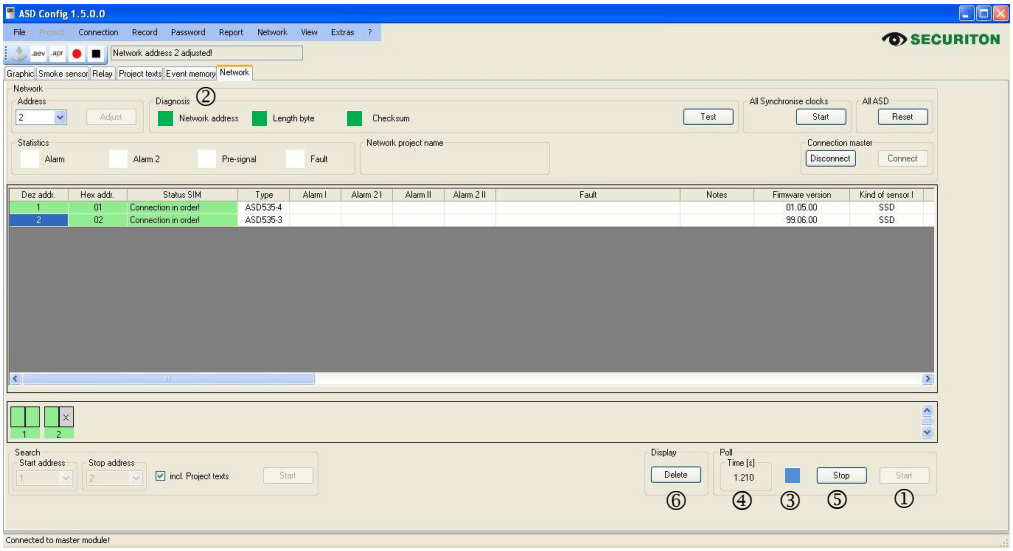
On the menu bar enter the password via «Password» ①. The diagnostics displays and the "Test" button ② are now also displayed ("Test" is used to start the network diagnostics). The entire network can now be configured from a centralised location. To adjust the settings of an ASD 535, select the address ③ of the participant concerned and use the Set button ④ to establish the connection. The message "Network address 1 set" appears in the information bar.



All the configurations that are available with a local connection to an ASD 535 can also be made via the network. The only exception is carrying out an initial reset and uploading new firmware. The two settings are made exclusively using a local connection to the ASD 535.

9.6. Visualising the network

The visualisation is used to display incoming alarms, pre-signals and faults for all the network participants. The "Start" button ① is used to activate the visualisation.



The green flashing diagnostics displays ② and the blue flashing visualisation display ③ signal the active communications within the network. The poll time [s] ④ also indicates the instantaneous latency (network response time) in seconds. The "Stop" button ⑤ is used to stop the visualisation. The "Delete" button ⑥ is used to delete the entire current network display in order to carry out a new network search.

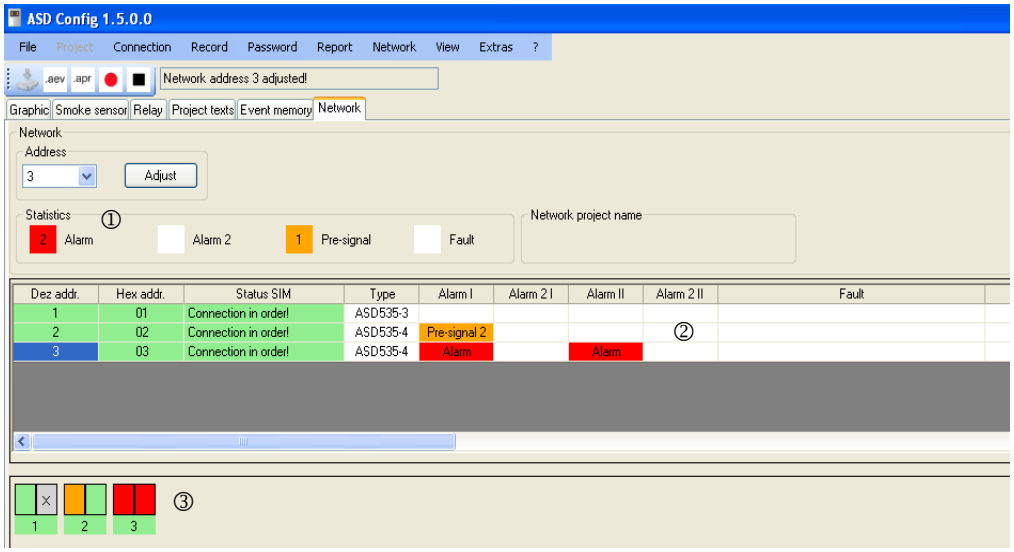
Warning

It is only possible to carry out either a configuration or a visualisation within the network. It is not possible to run both functions at the same time. So to carry out a configuration, the user must first terminate an active visualisation using the "Stop" button ⑤. Once the configuration is completed, the visualisation can be restarted using the "Start" button ①.

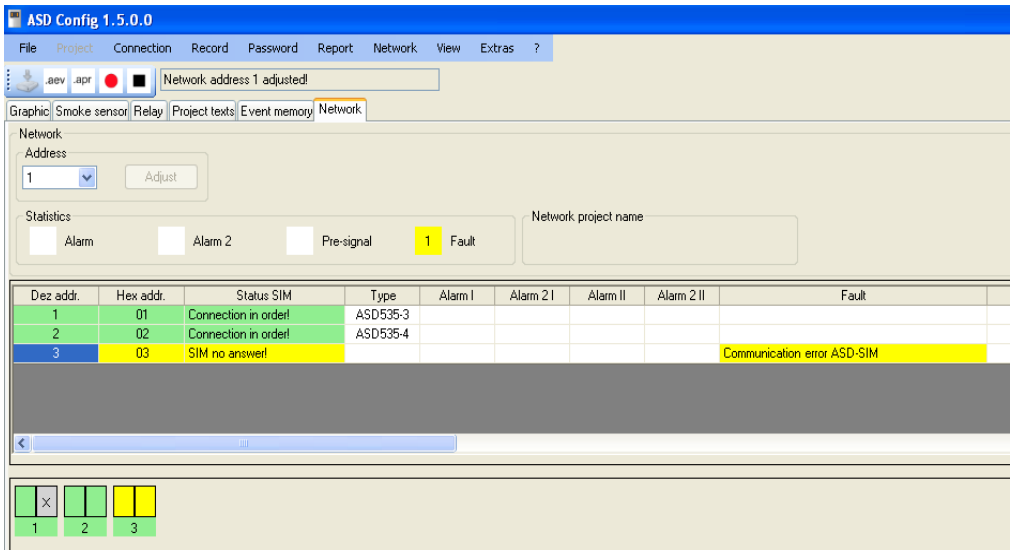
9.7. Visualisation examples

Incoming alarms 1 or 2 are displayed in red in the table overview ② and in the icon overview ③; incoming pre-signals are shown in orange, and incoming faults in yellow. The total number of alarms, pre-signals and faults is incremented in the Statistics field ①.

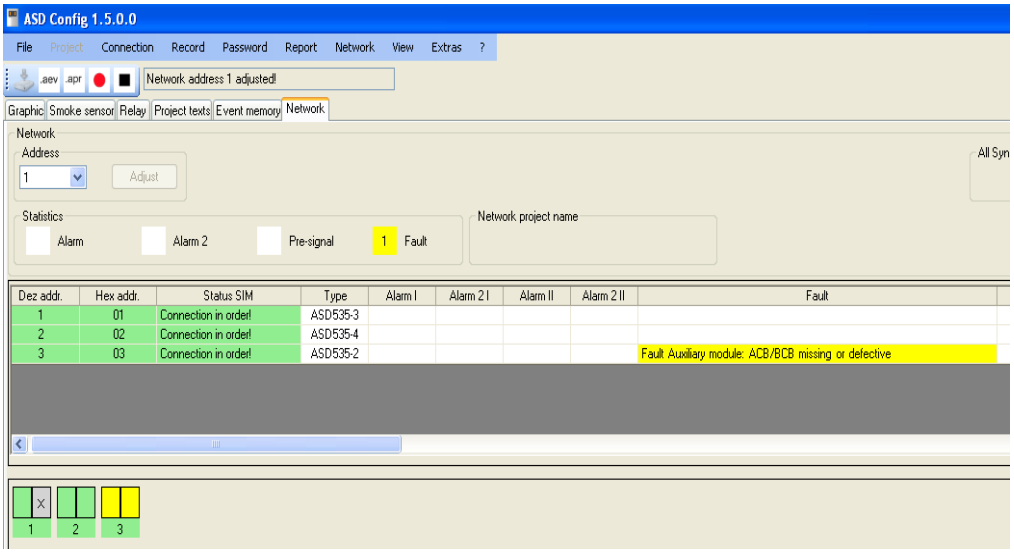
Indication of alarms and pre-signals



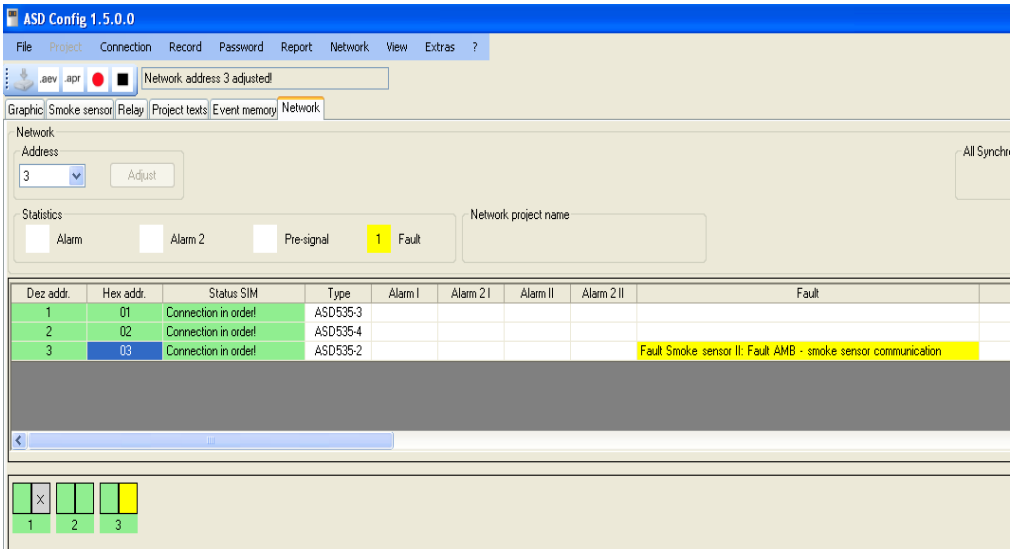
Indication of a communication fault



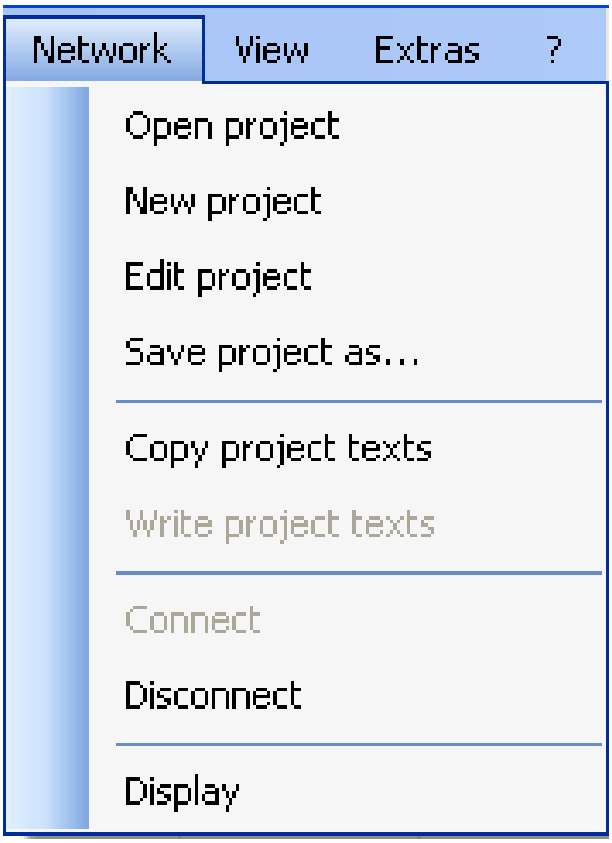
Indication of a front panel fault



Indication of a detector fault



9.8. Network menu



Open project	Opens a previously stored project
New project	Creates a new project with a defined number of network participants
Edit project	Subsequently adds to or reduces the number of network participants and enables project texts to be processed
Save project as...	Saves a current project
Copy project texts	Copies existing project texts
Write project texts	Writes amended projects texts into the ASD 535
Connect	Sets up the connection to the SMM 535 Serial Master Module
Disconnect	Clears down the connection with the SMM 535 Serial Master Module
Representation	Customises the look & feel of the network view

Warning

“Connect” and “Disconnect” in the Network menu have the same function as the buttons under "Connect Master" in the network view. “New project” and “Edit project” can also be carried out using the search in the network view and then entering a start and stop address.

10. Maintenance

Maintenance and servicing work is to be carried out in accordance with applicable standards and guidelines.

11. Order data

Item	Order number	
	Securiton	Hekatron
Serial Interface Module SIM 35	244929	11-2200000-01-02
Serial Master Module SMM 35	244910	11-2200001-01-01
Repeater for RS 485 extension REP I-7510	on request	on request
Software for ASD networking ASD Config 1.5.0	by download	11-2300013-01-04
ASD 535 visualisation without USB dongle	973408	VE010961
ASD 535 visualisation and USB dongle	973416	VE010960
Overvoltage protection module PT HKT-5-HF+F-5DC	247634	6900383
Overvoltage protection module PT HKT-4x1+F-24DC	247669	6900382