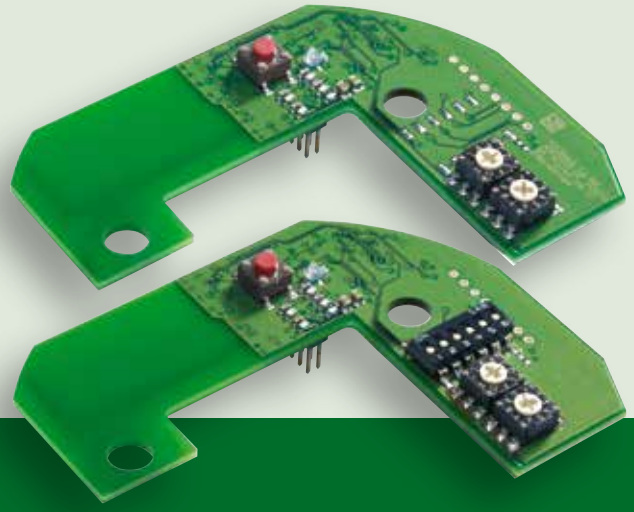

The Basic (image above) and Pro (image below) radio modules are fitted to the radio interface of the Genius Hx smoke detector. Genius Hx radio smoke detectors provide area-wide monitoring of entire facilities. This ensures that an alarm is heard even in rooms far away from the incident.

Radio modules

Basic and Pro
for radio smoke detector Genius Hx

Immune to interference
Both radio modules transmit over the 868 MHz frequency, specially reserved for short-link radio, to ensure the radio signal is transmitted more reliably and is immune to interference. Interference from other radio systems such as WLAN or DECT phones is excluded. GFSK (Gaussian Frequency Shift Keying) digital signal modulation provides additional reliability.

No radio smog
The new radio modules do not pose a health hazard as radio signals are transmitted only in the event of an incident. Unlike WLAN, mobile phones, DECT phones, etc., the transmission power is low even in the event of an incident (Fig. 4).

70 lines with identification code
All the radio smoke detectors used to monitor a large area together can be grouped to form a line.
The line is set using the two rotary switches on the radio modules. A line consists of a letter and a number (Fig. 5). All the radio modules in the same line are able to communicate with one another. A maximum of 20 radio modules can be set on any given line. During commissioning, each line is automatically assigned a unique identification code, which is given to all the detectors in that line. This prevents alarms from being triggered by radio signals from neighbouring radio networks. 70 lines can be planned out in parallel in this way.

Repeater
Both radio modules have a permanently activated repeater. The repeater performs two tasks:
1. The repeater (amplifier) captures telegrams and conveys them over large distances to the next detector (Fig. 2)
2. In the event of the failure of a radio link the repeater automatically looks for the fastest possible route to the next radio smoke detector (Fig. 3).

Reduced volume
For commissioning and maintenance purposes the test signal of the radio smoke detector is triggered at intervals at a reduced volume that is more comfortable for the human ear.

Radio link monitoring
Each radio module has a unique serial number. During commissioning each radio module stores the serial number of the other radio modules in the same line.
Every day the radio link monitoring uses the serial number to check whether all the networked radio smoke detectors are still present. If this is not the case, an acoustic signal is triggered.

Dismantling detection
Dismantling detection indicates the unauthorised removal (sabotage/vandalism) of a radio smoke detector from its base for longer than 5 minutes; any such incident is signalled immediately.

Collective alarm lines
With the Genius Hx radio smoke detector up to 6 collective alarm lines can be set up for the specific alarming or alarm forwarding of selected areas. Collective alarm lines are the only lines able to communicate with other lines. Collective alarm lines are activated/deactivated using the DIP switch (Fig. 6) on the radio module.
The radio modules are capable of both receiving and sending collective alarms. Example: an alarm can be transmitted from the apartment to the stairway, from the stairway to the apartments, or in both directions (Fig. 7).

Alarm transmission
If a radio smoke detector detects smoke, the alarm signal is forwarded to the other radio smoke detectors with a delay of 20 seconds. During that time the signal transmission can be prevented by pressing the test button on the Genius Hx, e.g. in the event of a false alarm. Once the 20 seconds have elapsed, the alarm is sent.
The signal transmission from radio smoke detector to radio smoke detector takes a maximum of 3 seconds.

- 10-year service life
- 70 lines with identification code
- VdS 3515
- Repeater
- One-man maintenance
- One-man range measurement
- Rapid alarm localising
- Two operating levels
- Reduced volume for commissioning and maintenance
- Immune to interference
- No radio smog
- Pro radio module: radio link monitoring
- Pro radio module: dismantling detection
- Pro radio module: 6 collective alarm lines

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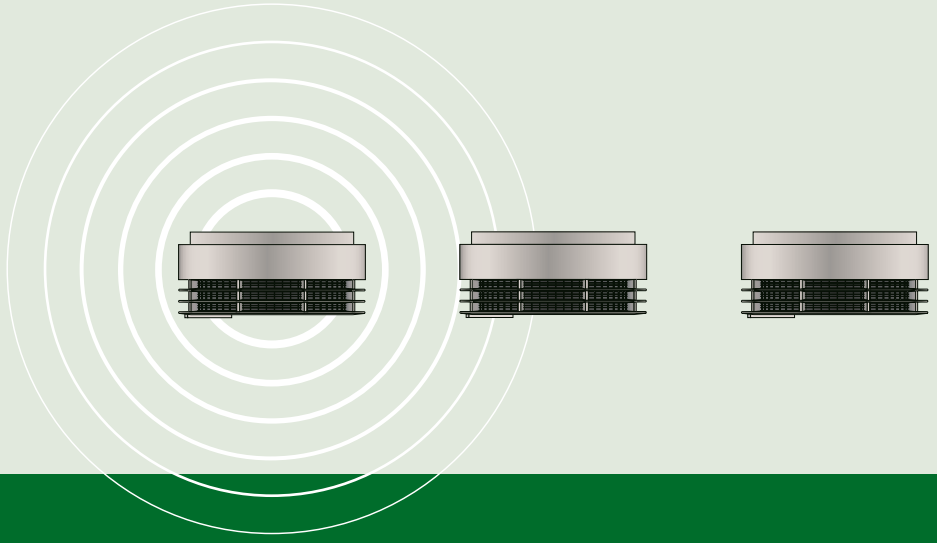
Fig. 1
Signal without repeater



Without a repeater the signal is not forwarded from detector 1 to detector 3

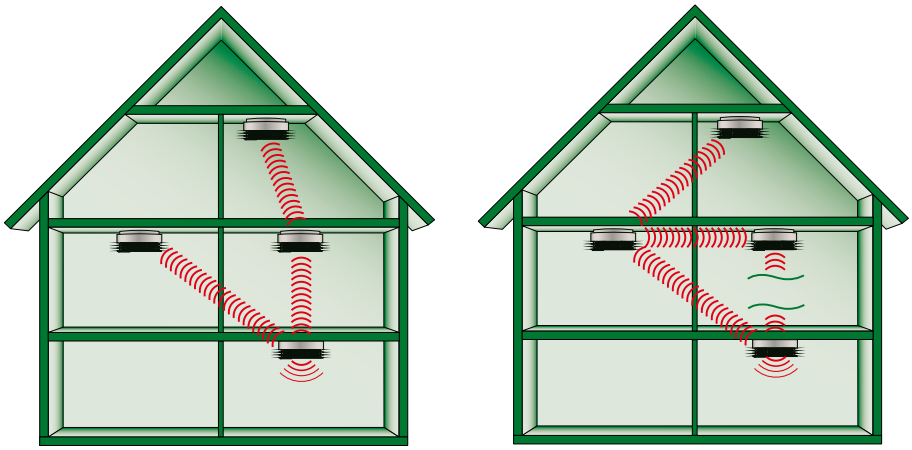
Rapid alarm localising
Alarm localising quickly determines where the fire is located within the radio network. If in the event of a fire all the detectors have triggered the alarm state, all the radio smoke detectors that are not at the actual location of the fire can be muted by simply pressing the test button on the detector. The smoke detectors that detected the smoke continue to sound the alarm with at least 85 dB until the alarm is acknowledged via the test button.

2 operating levels
If the Genius Hx radio smoke detector is at operating level 1, with the detector on its base, only the smoke detector itself can be checked using the test button on the detector. At operating level 2, with the detector removed from its base, the radio module and the radio networking can be checked.

One-man maintenance
The maintenance of the radio network can be carried out by one person on their own. The testing of the line is initiated by pressing the control key on the radio module. The test automatically checks the radio module itself, the send and receive device, the radio link, the interface and the smoke detector. If all the checks are positive, an acoustic test signal is sounded at reduced volume. The test signal is issued at intervals for 15 minutes.
It is acknowledged using the test button on the Genius Hx radio smoke detector.

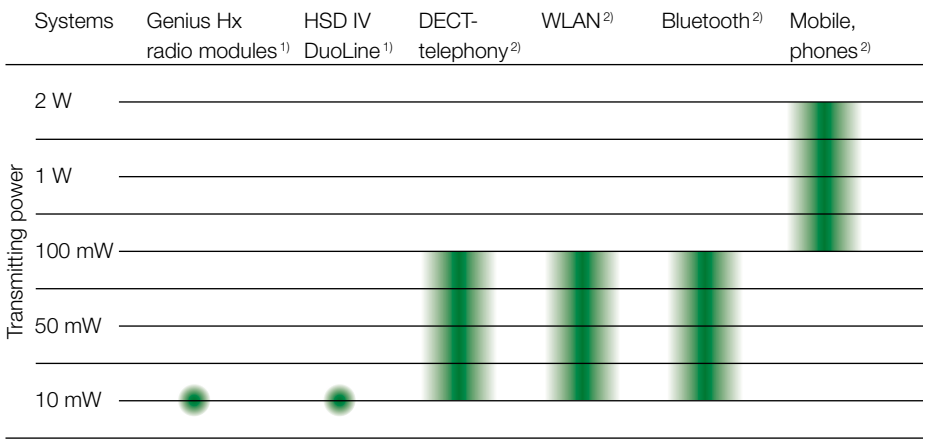
One-man commissioning
The commissioning of the radio modules can be carried out by one person on their own. A line is commissioned by pressing the control key (> 5 s) on the radio module. The commissioning is carried out with a reduced transmission power to prevent failures of the radio link due to changes in the environment caused for example by closed doors or by the number of people on the premises. For commissioning purposes the signal tone of the radio smoke detector is triggered at a reduced volume that is more comfortable for the human ear. The commissioning is completed by acknowledging the test button; each radio module is then automatically assigned a unique identification code. A line's unique identification code allows the simultaneous commissioning of several radio networks without the individual lines overlapping as a result.

Fig. 3
Radio link not faulty **Radio link faulty**



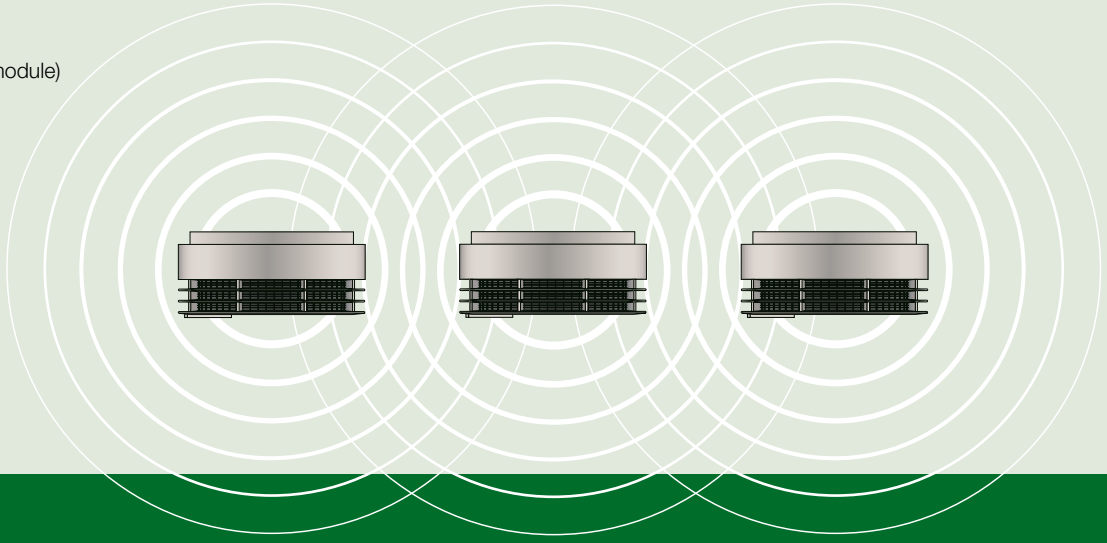
If the radio link is faulty a different radio smoke detector automatically assumes the repeater function to ensure area-wide alarming.

Fig. 4
Radio load



1) No permanent transmitter, transmits only as required
2) Permanent transmitter

Fig. 2
Signal with repeater
(as on the Basic and Pro radio module)



With a repeater the signal from detector 1 is forwarded to detector 3 by the repeater from detector 2

Fig. 5
Rotary switch for setting the line

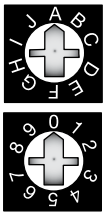
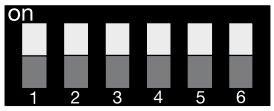


Fig. 6
DIP switches for configuration
(Pro radio module only)



The following functions are activated/deactivated using the DIP switches (default factory setting: Off)

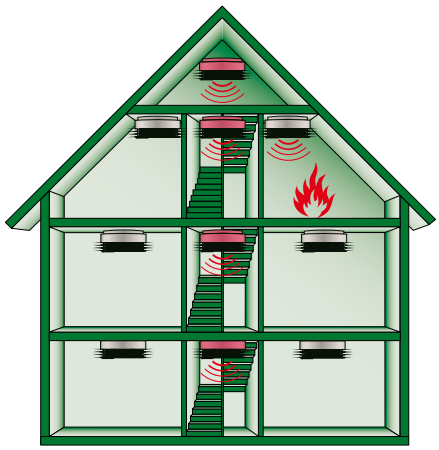
No.	Position	Function
1	Off	Suppress warnings 1) and 2) Warnings from other radio smoke detectors are signalled
2	Off	Alarm suppression 1) and 2) Warnings from other radio smoke detectors are signalled
3	Off	Send collective alarms 1)
4	Off	Receive collective alarms 1)
5	Off	Radio link monitoring/dismantling detection 1)
6	Off	Reduction in range 1) and 2)

1) On the Basic radio module all the functions are permanently set to Off.
2) If the function is activated, the radio module no longer complies with VdS Directive 3515.

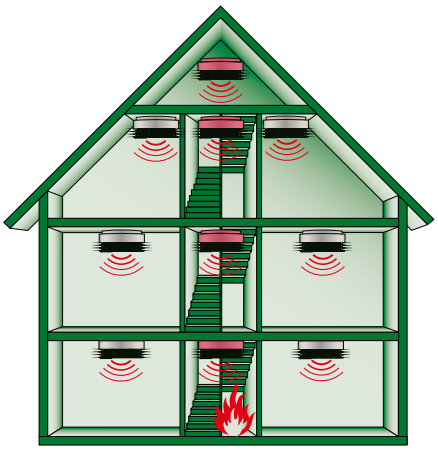
Range measurement
For planning and project-planning purposes the radio module has two integrated range tests for radio coverage.

1. Permanent range measurement is carried out using two radio smoke detectors (transmitter and receiver). The transmitter and receiver are positioned at the chosen installation locations. The LED on the radio module is used to indicate to the transmitter whether the receiver is still within range. This function helps to determine reliably the greatest possible distance between two radio smoke detectors (transmitter and receiver).
2. The second range test provides feedback on the number of radio-networked smoke detectors that have been found. A beep tone is output on the triggering detector for each radio smoke detector reached.

Fig. 7
Collective alarm line
(example: fire in an apartment building)



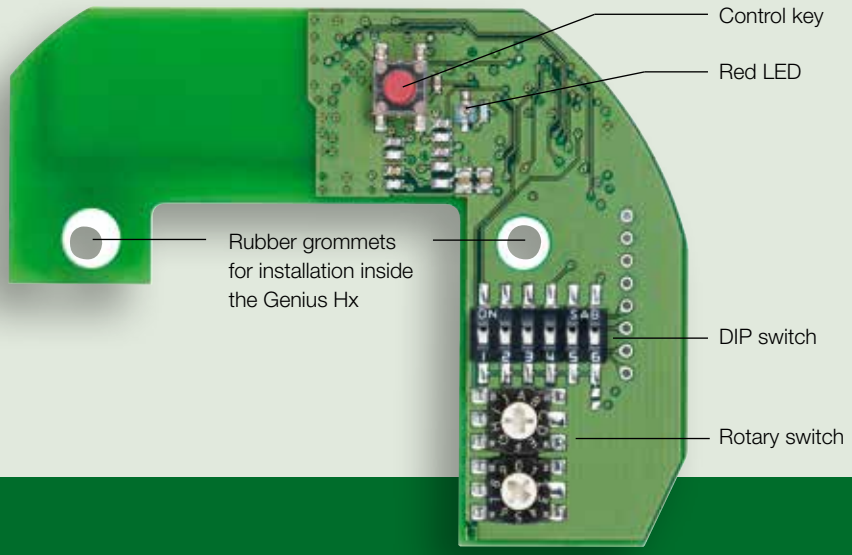
Collective alarm line
(example: fire in a stairway)



Collective alarm line, e.g. stairway
Separate lines for each apartment

Collective alarm line
The collective alarm function is activated/deactivated via DIP switches 3 and 4. If the «Send collective alarm» function is activated, an alarm is sent not only within its own line but also as a collective alarm.
If the «Receive collective alarm» function is activated, the collective alarm is signalled.The radio smoke detector detects smoke and only sends the alarm to the radio smoke detectors in the stairway using the collective alarm function.
A fire breaks out in the stairway; the alarm is sent to all the apartments via the radio smoke detector in the stairway.
It is possible to form up to 6 collective alarm lines. Each collective alarm line is capable of receiving collective alarms from different lines.

Fig. 8
Radio module design
Plan view of the printed circuit board for Pro radio module



We reserve the rights to implement technical changes and modify delivery options.

Collective alarm lines

Lines	A.n	B.n	C.n	D.n	E.n	F.n	G.n
H.0	●	●					
H.1			●	●			
H.2					●	●	
H.3	no function						
H.4	●	●	●				
H.5				●	●	●	
H.6	no function						
H.7	●	●	●	●	●	●	●
H.8	no function						

n = 0 bis 9, ● = possible combinations

Example: Line H.0 can exchange messages with lines A.n and B.n. While line A.n can exchange messages with H.0, H.4 and H.7. Communication is not possible between A.n and B.n.

Technical data for Basic radio module/Pro radio module	
VdS device approval	G 210149
Power supply	via Genius Hx
Typically 10 years	battery life
868.3 MHz	frequency range
100 m open field	range
PCB antenna	antenna type
Using 2 rotary switches	line setting
0 °C to + 55 °C	operating temperature
–10 °C to +60 °C	storage temperature
At 40 °C max. 70 °C	relative ambient humidity
Approx. 60 × 78 mm	dimensions
11 g/12 g	weight of Basic radio module/Pro radio module
R&TTE/VdS 3515	approval

Additional technical data for Pro radio module	
Configuration	via DIP switches

Order data	
Genius H	239 151
Genius Hx	239 160
Basic radio module	239 178
Pro radio module	239 186

Accessories	
Radio push button Genius	248240
Set of adhesive pads for Genius H/Hx, 10 pads	246522
Set of seals for Genius H/Hx, 32 seals	246611

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