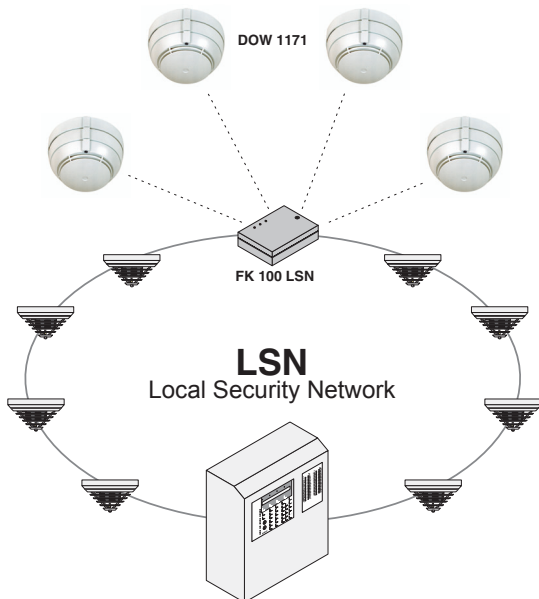


Wireless LSN Fire Detection System



The system operates in the new 868-870 MHz SRD (Short Range Devices) band, released exclusively for security technologies. It has radio certification according to ANNEX 4, Directive 99/5EC Radio recognition. The SRD is free of long-range amateur communications and industrial, scientific and medical applications with high transmission power. This gives high transmission and functional security.

■ System overview



Functional description

The wireless fire detection system (the wireless cell) consists of a FK 100 LSN radio coupler and up to 30 DOW 1171 radio smoke detectors. The radio coupler is installed in an LSN loop or stub line and is the interface between the radio fire detectors and the fire panel.

Data transfer between detector and coupler is bi-directional. If a basic channel is occupied by an external system, this is recognized immediately, the wireless cell switching to a secondary channel to guarantee transmission of alarms.

■ Planning notes

• Limit values:

- A maximum of 30 DOW 1171 radio smoke detectors per FK 100 LSN radio coupler.
- Each radio coupler and each radio smoke detector is an LSN element
(1 FK 100 LSN + 30 DOW 1171 = 31 LSN elements).
- Up to 127 LSN elements per NVU are permitted.
- When installing several radio couplers in the same area, a minimum distance of 2m must be kept to between each FK 100 LSN.
In addition, the maximum distance between FK 100 LSNs of 40m or a damping of 90dB must not be exceeded.
- The radio coupler must not be installed in a metal cabinet.
- A separate power supply is necessary for the module, the microprocessor and the peripherals.
- Power is supplied to the LSN components in the FK 100 LSN via two wires in the LSN line.
- A wire pair from the separate power supply can be looped through to provide power to following LSN elements.
- For commissioning a wireless system without a fire panel (BMZ), a magnet is needed to activate the reed contact in the radio coupler.
- If wall structures or other building structural properties are not known, field strength measurements using the DZW 1171 wireless test unit should be carried out for safer planning.
- The Radiospy software, with an associated field strength measuring unit, is a useful tool for planning and graphically displaying a wireless cell using a PC or laptop.

Planning a wireless cell

Note: In any building, the effective range of a wireless system is basically dependent on the reflective and absorption behaviour of materials used and on the construction of walls and ceilings.
Line of sight visibility between the radio components is not necessary.

Limiting value: total attenuation of the radio path < 90dB.

Relationship between distance and attenuation for line of sight connection:

in buildings, doubling of the distance between radio coupler and radio detector raises the attenuation figure by 16 to 17 dB.

Distance [m]	40	30	25	20	15	10	5
Attenuation [dB]	90	83	79	74	67	57	40

Building walls and ceilings additionally attenuate the radio signal.

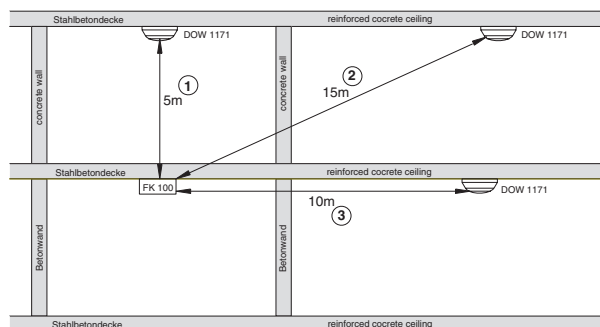
To determine the actual attenuation at the installation site, the attenuation values of each construction element (walls, ceilings) must be added to the attenuation given by distance.

Attenuation values for construction elements often used in buildings:

Construction element	Addition. attenuation	
Room dividers	very low	1dB
Dry brick walls or concrete walls/ceilings	low	6dB
Limestone brick	average	10dB
Limestone building blocks	average	10dB
Wood framed or wood panelled walls	average	10dB
Damp brick walls	average	10dB
Coated plasterboard, double walls	high	15dB
Steel-reinforced concrete	high	30dB
Thick damp brick walls	very high	40dB

Calculation example:

The FK 100 LSN radio coupler is mounted under a reinforced concrete ceiling, the dividing walls are concrete.



Radio path 1: 5m distance + reinforced concrete ceiling
= 40dB + 30dB = **70dB**

Radio path 2: 15m distance + reinforced concrete ceiling + concrete wall = 67dB + 30dB + 6dB = **103dB**

Radio path 3: 10m distance + concrete wall
= 57dB + 6dB = **63dB**

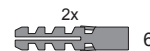
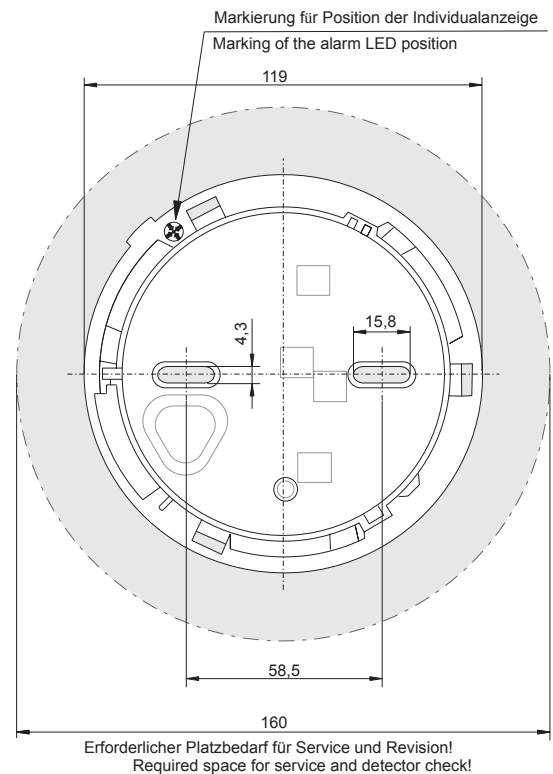
Radio paths 1 and 3 can be used (total attenuation < 90dB).

The radio path 2 detector is unreachable.

Total attenuation of 103dB is greater than the 90dB total attenuation allowed.

Installation notes for the DOW 1171 radio smoke detector

The necessary room for servicing (e.g. replacing batteries) and repair must be taken into account.



International certifications

The radio module used in the FK 100 LSN wireless coupler and the DOW 1171 radio smoke detector is certified in the following countries:

Austria, Belgium, Croatia, Denmark, Germany, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Slovak Republic, Slovenia, Sweden, Switzerland, Great Britain.

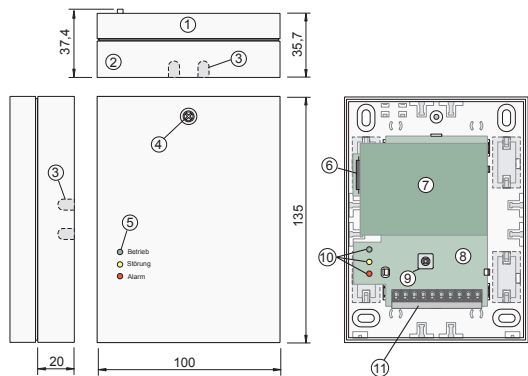
FK 100 LSN, Radio coupler

Prod. ID 4.998.111.422

VdS ID number: requested

Functional description

FK 100 LSN device construction



Pos. Description

- 1 Cover with embedded fibre-optic cables
- 2 Housing undersection
- 3 Prepared in-/outputs for surface-mounting cable ducts
- 4 Locking screw
- 5 Fibre-optic cable for operating status display LEDs
- 6 Reed contact
- 7 Radio module
- 8 Coupler board
- 9 Sabotage contact
- 10 Operating status display LEDs
- 11 Terminal block

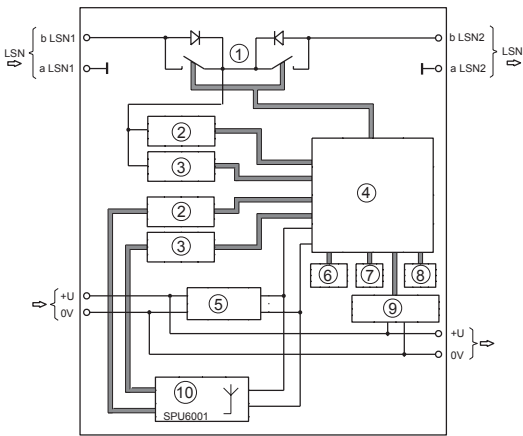
The LSN part of the radio coupler is supplied with voltage via the LSN, the plug-in radio module, is radio certified according to ANNEX 4, Directive 99/5EC Radio recognition, and requires a separate voltage supply.

The integrated microcontroller drives interfaces and user elements and is responsible for data transfer between the radio fire detector and the fire panel.

The FK 100 LSN has a sabotage contact, a reed contact for manually activating the configuration mode and 3 LEDs for operating status display.

The radio coupler complies with standard regulations and guidelines for security systems: EN 54; DIN - VDE 0833; VdS.

FK 100 LSN block schematic



Pos. Description

- 1 FET switch
- 2 Receiving data
- 3 Transmitting data
- 4 Microprocessor for data processing/data transfer
- 5 Voltage supply
- 6 Reed contact
- 7 LEDs
- 8 Sabotage contact
- 9 Monitoring of external voltage supply
- 10 SPU6001 Radio module

Technical data

FK 100 LSN Radio coupler

Operating voltage	
- LSN components	+10V .. +33V DC
- Other components	+20V .. +30V DC
Current consumption	
- LSN components	6mA
- Other components	< 20mA
Frequency range	868 to 870MHz (SRD band)
Channel spacing	25kHz
Transmitting power	Up to 5mW
Maximum range in buildings	30m
Max. number of radio couplers	10 (see also limiting values)
Maximum number of detectors	30 DOW 1171 per FK 100 LSN
EN 60 529 protection category	IP 30
Permitted ambient temperature	-10°C ... +55°C
Housing material/colour	ABS Plastics, Terluran, Light grey, RAL 9002
Dimensions (W x H x D)	135 x 100 x 35.7mm
Weight	200g approx.
Radio certification (conforming to ANNEX4, Directive 99/5EC Radio recognition)	CE 0123 (!)
VdS certificate number:	requested

DOW 1171, Optical radio smoke detector

Prod. ID 4.998.115.784

VdS ID number: **G 200 112**



■ Functional description

The battery-powered configurable radio smoke detector operated according to the tried scattered light principle with side scattering, and achieves, due to modern detection algorithms, homogeneous behaviour combined with outstanding interference rejection. The same radio module is integrated into the detector and the wireless coupler for bidirectional information transfer.

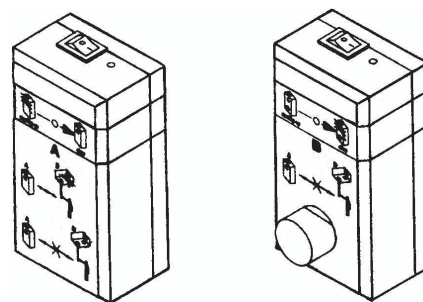
■ Technical data

DOW 1171 Radio smoke detector

Voltage supply	Two 9V lithium block batteries
Battery life	approx. 5 years
Average current consumption	0.07mA
Frequency range	868 to 870MHz (SRD band)
Channel spacing	25kHz
Transmitting power	Up to 5mW
Range in buildings	30m
Maximum number of detectors	30 DOW 1171 per FK 100 LSN
Detection principle	Scattered light measurement
EN 60 529 protection category	IP 44
Permitted ambient temperature	-10°C . . . +55°C
Permitted relative humidity	< 95% at T < 34°C
Housing material/colour	PC/ABS Plastics white, similar to RAL 9002
Dimensions (W x H x D)	Ø 119 x 73mm
Weight	335g approx.
Radio certification (conforming to ANNEX4, Directive 99/5EC Radio recognition)	CE 0123 (!)
VdS certificate number:	G 200 112

DZW 1171, Radio test unit

Prod. ID 4.998.120.143



DZW 1171

Field strength measuring unit for planning and checking the maximum range of a wireless fire detection system in unknown building constructions. Unit A is fixed in position at the predetermined installation location of the coupler. Unit B is taken to the predetermined mounting location of the DOW 1171 wireless smoke detector to check whether the permitted attenuation of the radio signal is not exceeded.

Radio Spy 1, Field strength measuring unit and software

Prod. ID 4.998.117.745

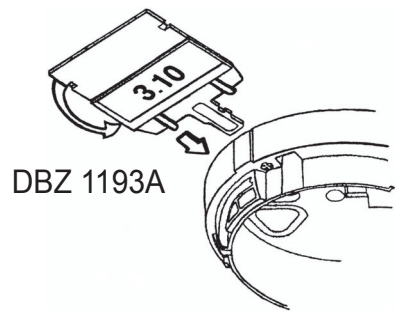
Field strength measuring unit and software for convenient PC-supported planning and graphical display of a wireless fire detection system. Functions similarly to a test unit, however field strength and configuration of the wireless fire detection system are graphically displayed on-screen.

Extensions

DBZ 1193A, Detector Identifier for the DOW 1171

Prod. ID	4.998.115.785
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Polycarbonate holder with cover for secure holding of an identifier plate with dimensions 58mm x 19mm.



Magnet for start up the wireless system without a fire detection control unit and WinPara.

Prod. ID	2.799.270.113
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Bar magnet 10 x 45mm. A magnet is needed to activate the wireless coupler when start up the wireless system without a fire detection control unit and WinPara.

9V Lithium block battery for DOW 1171 detector (PE = 1 unit)

Prod. ID	8.787.335.005
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Note: Two batteries are needed per DOW 1171 detector.

Detector replacer for the DOW 1171 detector

Prod. ID	4.998.120.144
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Note: The detector replacer only fits for Siemens service rods.
The Siemens service rod is not included in the shipment contents.