



Key deposit boxes (KDB)

Requirements for system components

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Rules for physical security devices

Key deposit boxes (KDB)

Requirements for system components

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1 General

1.1 Scope

These rules contain minimum requirements for Key deposit boxes (KDB), Key deposit box adapters (KDB-adapter), Key deposit box adapter units (SD-adapter units) and Release elements (FSE). Furtheron requirements for KDB-pillars for the installation of KDB are described.

These rules shall be applied in conjunction with the “Rules for intruder alarm systems, general requirements and test methods“; VdS 2227 and the “Rules for intruder alarm systems, protection against environmental influences, requirements and test methods“, VdS 2110. The “Rules for fire prevention and security technology, software, requirements and test methods “, VdS 2203, also apply for system components controlled by software.

Remark 1: As KDB-adapters cover all functions, KDB adapter units realize the functions in one unit or in a separate assembly.

Remark 2: The following requirements are valid in analogy also for so-called Key deposit box-pillars (KDB-pillars).

The rules for planning, operation and maintenance of KDB are described in VdS 2350.

Key deposit boxes (KDB) are classified in analogy to DIN 14 675 in three classes SD1 – SD3.

In figures 1.01 to 1.03 the different possibilities are shown, how KDB of class SD3 could be connected to Alarm Systems (AS).

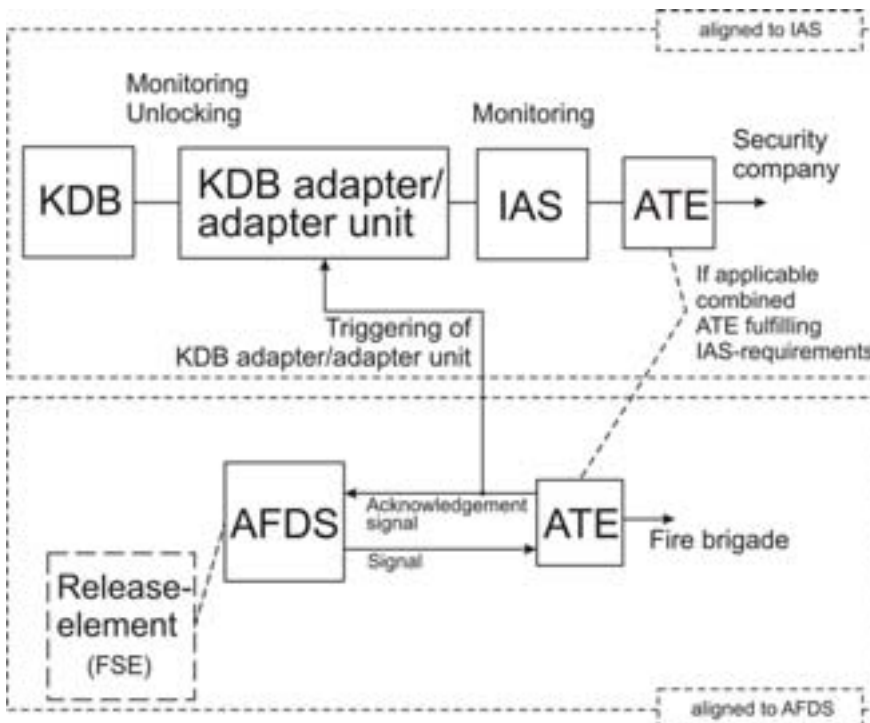


Figure 1.01: KDB with IAS and AFDS

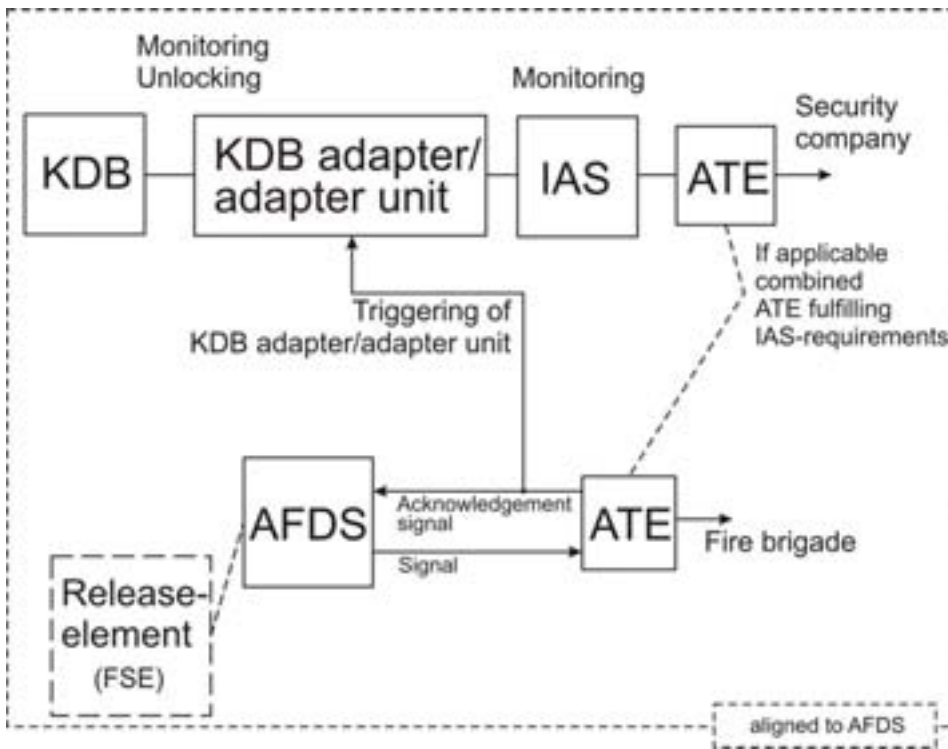


Figure 1.02: KDB with an Automatic Fire Detection and Alarm System (AFDS)

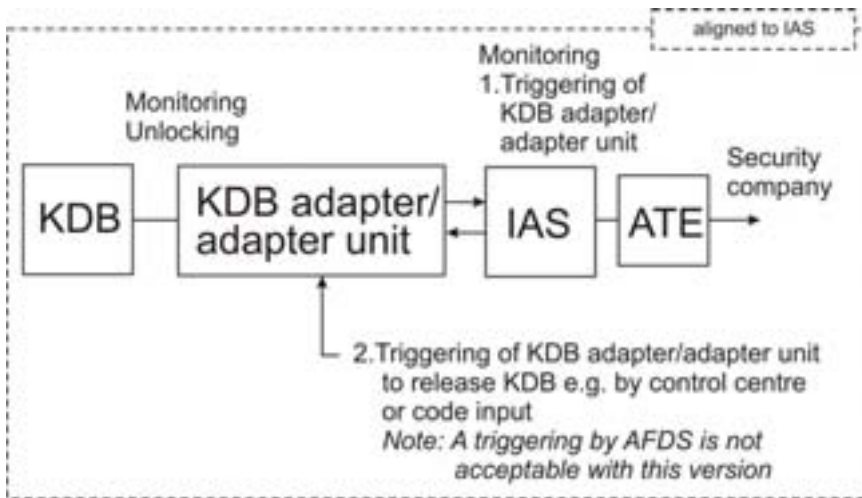


Figure 1.03: KDB with Intruder Alarm System (IAS)

The test methods for KDB, KDB-adapter, KDB-adapter units and Release elements (FSE) are described in the rules VdS 2492 (at draft stage).

Special note concerning insurance cover: If a key deposit box (KDB) is installed and a key is deposited there this automatically leads to an increase of risk for the insured premises and has to be notified to your insurer. If the KDB is not VdS-approved and/or not installed, operated or maintained according to the rules for KDB, planning, installation and maintenance (VdS 2350), there is no insurance cover against intruder if the building has been opened with the (right) key taken off the deposit. Especially the choice of the right class of KDB shall be considered and the determinations which keys may be deposited in the respective KDB and which not.

1.2 Validity

These rules are valid from 01. November 2005; they replace the edition VdS 2105 : 1996-12 (03).

Note: This is a translation of the German rules; if there are any discrepancies, the German version shall be binding.

2 Normative references

These rules contain dated and undated references to other publications. The normative references are cited at the appropriate places in the clauses, the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to these rules only when announced by a change of these rules. For undated references the latest edition of the publication referred will be applied.

Note: Some of the following publications have been published in German language only. In these cases the titles have been translated.

- **DIN 14 675** Fire Detection and fire Alarm Systems, Design and operation
- **DIN 17 440** Stainless steels - Technical delivery conditions for drawn wire
- **DIN 18 251** Locks, mortise locks for doors
- **DIN 41 636** Sensitive switches for communication technology; climatic test classes, measurement and test methods
- **DIN EN 206-1 : 2001-7** Concrete – part 1: Specification, performance, production and conformity
- **DIN EN 10 025** Hot rolled products of structural steels
- **DIN EN 50 086-1** Conduit systems for electrical installations; part 1: General requirements
- **DIN EN 60 529** Degrees of protection provided by enclosures (IP-Code), corresponds with VDE 0470-1
- **DIN EN ISO 6988** Metallic and other non-organic coatings - sulfur dioxide - test with general condensation of moisture
- **DIN IEC 65A/179/CDV** Functional safety – Safety-relevant systems – Part 1: General requirements
- **EN 61000-4-2** Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques – Section 2: Electrostatic discharge immunity test – Basic EMC publication
- **EN 61000-4-3** Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques – Section 3: Radiated, radio-frequency, electromagnetic field immunity test
- **EN 61000-4-4** Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques- Section 4: Electrical fast transient/burst immunity test
- **EN 61000-4-5** Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques – Section 5: Surge immunity test

- **EN 61000-4-6** Electromagnetic compatibility (EMC) - Part 4: Testing and measurement techniques – Section 6: Immunity to conducted disturbances, induced by radio-frequency fields
- **EN 60068-2-1** Environmental testing - Part 2: Tests, tests A: Cold;
- **EN 60068-2-2** Basic environmental testing procedures - Part 2: Tests; tests B: Dry heat
- **IEC 60 068-2-3** Environmental testing; Part 2: Tests, Test Ca: Damp heat, steady state
- **IEC 60 068-2-6** Environmental testing; Part 2: Tests, Test Fc: Vibration (sinusoidal)
- **IEC 60 068-2-27** Basic environmental testing - Part 2: Tests, tests Ea: shock
- **IEC 60 068-2-30** Environmental testing; Tests; Test Db and guidance: Damp heat, cyclic (12 + 12-hour cycle)
- **IEC 60 068-2-75** Environmental testing; Part 2: Test methods, Test Eh: Hammer test
- **VdS 2110** Rules for intruder alarm systems, protection against environmental influences, requirements and test methods
- **VdS 2113** Rules for physical security devices, burglar-resistant door shields, requirements and test methods
- **VdS 2156** Rules for physical security devices, locking cylinder with individual closing function, requirements and test methods
- **VdS 2203** Rules for fire prevention and security technology, software, requirements and test methods
- **VdS 2227** Rules for intruder alarm systems, general requirements and test methods
- **VdS 2311** Rules for intruder alarm systems, planning and installation
- **VdS 2350** Rules for physical security devices, Key deposit boxes (KDB), Planning, installation, operation and maintenance
- **VdS 2492** Rules for physical security devices, Key deposit boxes (KDB), test methods (under preparation)

3 Terms and definitions

For general terms and definitions refer to the “Rules for intruder alarm systems, general requirements and test methods”, VdS 2227. In addition the following term is valid.

Changeable lock: Lock, where the coding can be converted without a change of the lever package.

Note for this in the English version: For practical reasons the key-terms and definitions are listed here for a better understanding.

Key deposit box (KDB): Stable container for the storage of building keys intended to enable authorized helping forces with the stored keys a violent-free access to buildings.

Key deposit box adapter: The key deposit box adapter comprises all the functions required to control and monitor a key deposit box.

Key deposit box adapter unit: Technical realisation of the key deposit box adapter, which may be designed as an individual device or as a slide-in unit for a C.I.E. for alarm systems.

Release element: Facility which allows a provider of assistance to manually trigger a fire alarm from outside the object/protected premises.

Note: Release elements are components of an Automatic Fire Alarm System (AFAS).

4 Classification

4.1 Types of KDB

Depending of the significance of the key to be deposited KDB are classified into three type classes, SD1 – SD3, whereas SD1 is the lowest and SD3 the highest security class.

4.1.1 KDB type 1 (SD1) - corresponds with DIN 14 675 - FSD 1 -

This is a box to be used in exterior applications (also on-wall mounting) in which keys are deposited that do not allow access to buildings or parts of buildings, e.g. keys for gate systems, bars etc. No monitoring and control measures are foreseen for the KDB. The KDB is not connected to an Alarm System (AS).

4.1.2 KDB type 2 (SD2) - corresponds with DIN 14 675 - FSD 2 -

This is a box for use in or at buildings' exterior walls. The keys herein deposited allow access to areas without higher security relevant meaning, e.g. keys for parking garages, underground car parks, staircases etc. No monitoring measures are foreseen for the KDB. The KDB is connected to an Automatic Fire alarm and Detection System (ADFS) and is controlled by this system.

4.1.3 KDB type 3 (SD3) – corresponds with DIN 14 675 - FSD 3 -

This is a box which is firmly affixed at a massive exterior wall of a building. The keys herein deposited allow the access also to security relevant areas. Monitoring measures are foreseen for the KDB. The KDB is connected to an Alarm System (AS).

4.2 Environmental classes

The **environmental classes** are set in accordance with the "Rules for intruder alarm systems, protection against environmental influences, requirements and test methods", VdS 2110.

5 Protection against environmental influences

5.1 Limits of application

Environmental influences shall not affect the function of KDB, KDB-adapter, KDB-adapter units and Release elements (FSE). Environmental influences can have various effects on operating characteristics, depending on the nature of the function applied. The manufacturer shall therefore specify the limits of the application (e.g. climate).

For KDB and Release elements (FSE) the requirements according to environmental class IV are always valid. If SDA or the KDB-adapter (e.g. assembly of an Alarm System (AS)-CIE) are integrated components of an AS the environmental requirements of this AS are valid for the KDB-adapter/KDB-adapter unit.

5.2 Climates

The function of KDB, KDB-adapter, KDB-adapter unit and Release elements (FSE) shall not be adversely affected by the thermal conditions described in table 5.01, appropriate to its environmental class.

Test	Functional test	Endurance test	Degree of severity, abbreviated description of conditions			
			I	II	III	IV
Dry heat (T1) as spec. in IEC 60 068-2-2	x		+40 °C, 16 h	+55 °C, 16 h	+55 °C, 16 h	+70 °C, 16 h ¹⁾
Dry heat (T2) as spec. in IEC 60 068-2-2		x	no tests			+70 °C, 21 d ¹⁾
Cold (T3) as spec. in IEC 60 068-2-1	x		+5 °C, 16 h	-10 °C, 16 h	-25 °C, 16 h	-25 °C, 16 h
Damp heat, steady (T4), as spec. in IEC 60 068-2-3	x		+40 °C, 4 d, 93 % rel. air humidity		no tests	no tests
Damp heat, steady (T5) as spec. in IEC 60 068-2-3		x	+40 °C, 21 d 93 % rel. air humidity			
Damp heat, cyclic (T6) as spec. in IEC 60 068-2-30	x		no tests	+40 °C, 2 cycles	+55 °C, 2 cycles	
Damp heat, cyclic (T7) as spec. In IEC 60 068-2-30		x	no tests		+55 °C, 6 cycles	

¹⁾ The test at 70°C shall cover the effect of warming by solar radiation

Table 5.01: Climates

5.3 Protection against corrosion

KDB, KDB-adapter, KDB-adapter units and Release elements (FSE) shall have adequate resistance to corrosion as specified in table 5.02.

Test	Functional test	Endurance test	Degree of severity, abbreviated description of conditions			
			I	II	III	IV
SO ₂ -corrosion as spec. in DIN EN ISO 6988 (K3)		X	no test	0.2 l SO ₂ , 5 cycles	2 l SO ₂ , 5 cycles	2 l SO ₂ , 20 cycles
<i>Note: After each cycle all flexible parts of the KDB will be activated once.</i>						
Table 5.02: Protection against corrosion						

5.4 Mechanical influences

The function of KDB, KDB-adapter, KDB-adapter units and Release elements (FSE) shall not be adversely affected by mechanical influences as described in table 5.03.

Test	Functional test	Endurance test	Degree of severity, abbreviated description of conditions			
			I	II	III	IV
Shock (M1) as spec. in IEC 60 068-2-27	x		A(ms ⁻²) = 1000 - (200 x M) 6 x 3 Shocks, duration each 6 ms			
Impact (M2) as spec. in IEC 60 068-2-75	x		0.5 J, 3 impacts per point	0.5 J, 3 impacts per point	0.5 J, 3 impacts per point	1.0 J, 3 impacts per point
Vibration sinus (M3) as spec. in IEC 60 068-2-6	x		10-150 Hz, 2 ms ⁻² , 1 cycle/axis			
Vibration sinus (M4) as spec. in IEC 60 068-2-6		x	10-150 Hz, 5 ms ⁻² , 20 cycles/axis			
Table 5.03: Mechanical influences						

5.5 Electromagnetic compatibility (EMC)

The function of KDB, KDB-adapter, KDB-adapter units and Release elements (FSE) shall not adversely be affected by electromagnetic influences as specified in table 5.04.

Test	Functional test	Endurance test	Degree of severity, abbreviated description of conditions			
			I	II	III	IV
Electrostatic discharge of low energy (E1b) acc. to EN 61 000-4-2	x		Each 10 times pos. and neg. contact discharge 2, 4 and 6 kV and air discharge 2, 4 and 8 kV			
Radiated, radio-frequency electromagnetic field (E2a) acc. to EN 61000-4-3	x		80 – 2000 MHz, 10 V/m as well as 415-466 and 890-960 MHz, 30 V/m Modulation: AM 80 % (modulated with 1 kHz Sinus) for at least 3 s and in addition 3 times switching on/off of the carrier with 1 Hz and 1 kHz			
Conducted radio-frequency (E2b) acc. to EN 61 000-4-6	x		150 kHz-100 MHz, 140 dB μ V Modulation: AM 80 % (modulated with 1 kHz sinus) for at least 3 s and in addition 3 times switching on/off of the carrier with 1 Hz and 1 kHz			
Conducted electrical fast transient with low energy – burst - (E3a) acc. to EN 61 000-4-4	x		Each for a period of 1 min pos. and neg. mains 0.5, 1 and 2 kV, other circuits 0.25, 0.5 and 1 kV			
Conducted slow surge with high energy - (E4a) acc. to EN 61 000-4-5	x		Mains 20 times pos. and neg. cl. 4 diff. 0.5, 1, 2 kV Other circuits 5 times pos. and neg. cl. 3: line-to-line 0,5, 1 kV and line-to-ground 0.5, 1, 2 kV			
Static magnetic fields (E6)	x		150 mT			

Table 5.04: Electromagnetic compatibility (EMC)

6 Functional reliability

6.1 Provision of functions

6.1.1 Technical data

Technical data describing the system components shall be provided in German language. This data shall include all information and parameters necessary for the correct and reliable operation of the system components.

6.1.2 Installation instructions

Installation instructions written in German language shall be provided for the system components. These instructions shall include a clear illustration of the assembly and installation procedures and information describing applications for which the system component is suitable (including an indication of the class according to clause 4). In addition, information regarding adjustment (calibration) and maintenance is required.

A warning note according to Annex A shall be annexed to each KDB underlying the problems with insurers in case KDB are not or not sufficiently monitored.

6.1.3 Operating voltage behaviour

Nominal voltage, operating voltage range (at least nominal voltage of $12\text{ V} \pm 15\%$ and/or $24\text{ V} \pm 15\%$) and the maximum acceptable ripple of the operation voltage shall be specified by the manufacturer. In case the KDB is integrated component of the AS (e. g. assembly in a CIE) the operating and nominal voltages are to be taken as basis.

KDB, KDB-adapter, KDB-adapter units and Release elements (FSE) PSU shall function correctly within these specified values. Variations in the voltage as specified in table 6.01 shall not adversely affect the function of KDB and KDB-adapter.

Test	Func-tional test	Endu-rance test	Degree of severity, abbreviated description of conditions			
			I	II	III	IV
Operating voltage range system-voltage (B1b)	x		UN \pm 15 %			
Operation voltage surge system-voltage (B2b)	x		10 cycles from UN +15 % to UN -15 % and back			

Table 6.01: Operating voltage behaviour

6.1.4 Ripple of the operating voltage

As a minimum requirement KDB, KDB-adapter and Release elements (FSE) shall function correctly with a voltage ripple of the operation voltage of $\leq 1,0\text{ V}_{\text{ss}}$ if U_{N} is 12 V and $\leq 2,0\text{ V}_{\text{ss}}$ if U_{N} is 24 V .

6.1.5 Reliability

Components for KDB, KDB-adapter and Release elements (FSE) shall be chosen such that they are suitable for the selected environmental class.

6.1.6 Components

Only components using a technology that has proven to be reliable in various applications, with an unmodified specification over a period of 2 years, may be used. For components of unproven reliability, other means of demonstrating reliability may be considered on an individual basis.

All components shall be operated within the limits specified by the component manufacturer while taking into consideration the effect of ambient temperature (including inherent warming) (see also DIN IEC 65A/179/CDV).

6.1.7 Relays

Relays shall be protected against the effects of dust at least to the degree of protection specified by DIN EN 60 529 (identical with DIN VDE 0470-1) - IP 5x.

Relay contacts shall be designed for at least 10,000 switching cycles at a corresponding connected load.

6.1.8 Switches

Switches shall be fitted with self-cleaning contacts or be enclosed in dust-protected casings complying at least with the degree of protection specified by DIN EN 60 529 (identical with DIN VDE 0470-1) - IP 5x.

6.1.9 Access to assemblies and components

KDB, KDB-adapter, resp. system components of the KDB-adapter and Release elements (FSE) shall be constructed to ensure that assemblies and components are easily accessible only for the installer and replacement is easily possible. Provisions shall be made to reduce handling errors to a minimum.

6.1.10 Connecting and adjustment elements

Connecting and adjustment elements shall be marked and shall be easily accessible to the installer. For the operator of the system they shall not be free accessible, they shall be protected against unauthorised access, e.g. by the use of covers.

6.1.11 Isolation of fundamental functions

It shall not be possible for third parties or the user to switch off fundamental security relevant functions (e.g. monitoring of KDB, notification of signals) at all. For installer and maintenance service the possibility to switch off (Isolate) fundamental security functions shall be limited.

6.2 Function monitoring

The failure of, or a fault in the central processing units (e.g. microprocessors) and other fault – detected by the function monitoring - shall be signalled.

7 Operational security

7.1 Operation

Actions to be executed by the operator shall be simple. Indicators shall be designed to be clear and easily understood.

7.2 Operation instructions

Operation instructions written in the German language shall be available to the operator of the KDB. The instructions shall include a clear illustration and description of all control and display elements and unambiguous instructions for all operational statutes of SD and SDA. Furthermore a "Warning note" according to Annex A shall be annexed to the operation instructions underlying the problems with insurers in case KDB are not or not sufficiently monitored.

7.3 Degree of protection

KDB and Release elements (FSE) shall, if installed, be constructed at least to the degree of protection as specified by DIN EN 60 529 (identical with DIN VDE 0470-1) - IP 44. SD-Adapter being mounted shall guarantee at least a degree of protection as specified in DIN EN 60 529 (identical with VDE 0470-1) - IP 3x.

7.4 Protection against access

Parts affecting the function of KDB, SD-adaptor and Release elements (FSE) as well as connecting elements and adjustment elements shall not be freely accessible; they shall be protected e.g. by covers.

7.5 Sealing capability

SD-adaptor shall be designed so that the sealing of parts, which must not be accessibly by the user for the operation, is possible.

7.6 Error tolerance

KDB, KDB-adaptor and Release element (FSE) shall be constructed such that they cannot be adversely affected by incorrect operations executed by the operator.

8 Tamper

8.1 Tamper protection

Requirements regarding the protection against tamper are described in clauses 9.2 and 9.3.

8.2 Tamper detection

8.2.1 Key Deposit Box (KDB)

Type SD3

With the exception of stand-over parts of the housing and fastening points of the de-locking mechanism and the door hinges all surfaces of the KDB which are free accessible of the outside shall be penetration-surveilled. At least 80 % of the freely accessible surface has to be surveilled whereas security-relevant areas shall not be excluded. A penetration of more than 2 mm diameter shall generate a signal.

Is the installation carried out deviating from VdS 2350, clause 4.2, the area of the KDB where the keys for the object are deposited has to be equipped with a penetration surveillance such that an unauthorised removal of the keys will be detected early. An opening in the penetration monitoring measures greater than 4 mm diameter shall generate a signal.

Opening of the external door of the KDB shall be detected. The means for the opening-monitoring shall be designed for at least 10,000 openings. Only micro-“snap”-switches according to DIN 41636 or equivalent parts shall be used for cover contacts. The contact area of the contacts shall be gold-plated or of equivalent finish. Alternatively, reed contacts may be used as long as they cannot be influenced from the outside.

An interference with the electrical monitoring measures from outside shall not be possible.

8.2.2 KDB-adapter unit

Opening of SD-adapter unit shall be detected and signalled if security relevant functions become accessible. The inside of the SD-adapter unit and the monitoring of the opening shall be protected against access as long until the monitoring system has responded.

Only micro-“snap”-switches according to DIN 41636 or equivalent parts shall be used for cover contacts. The contact area of the contacts shall be gold-plated or of equivalent finish. Alternatively, reed contacts may be used as long as they cannot be influenced from the outside.

If the opening monitoring is not included in the other monitoring measures of the KDB, it shall be connected to separate terminals (see clause 12.2).

8.2.3 SD-adapter in CIE of Fire Detection and Fire Alarm System

For SD-adapter which are a part of Automatic Fire Detection and Alarm System-CIE it shall be ensured that the interface to the IAS according to figure 1.01 is protected against access and monitored against tamper (e.g. by covering of the connection elements and opening-monitoring for this cover).

9 Construction

9.1 General

9.1.1 Stationary installation

KDB, KDB-adapter units and Release elements (FSE) shall be designed that a stationary installation is possible.

9.1.2 Freedom of potential, isolation resistance

The housing and all parts of the housing of KDB, KDB-adapter units and Release elements (FSE) as well as the electrical monitoring measures shall be free from electrical potential (with the exception of electrical protective measures). The isolation resistance shall be at least 500 k Ω .

9.1.3 Equipotential bonding

Types SD2 and SD3

For the connection of the KDB to the equipotential a clamp for wires with a diameter of 4 mm² shall be foreseen

Note 1: The external door of the KDB shall also be connected to the equipotential bonding.

Note 2: This requirement is also valid for type SD1 KDB if an electrical connection is available, e.g. to an Alarm System (AS).

9.1.4 Shielded cables

KDB-adapter units shall be constructed so that the shielded cables can be joined together in a reliable manner.

9.1.5 Strain relief

Connecting and contact areas of cables and wires in KDB, KDB-adaptor units and Release elements (FSE) are to be relieved of mechanical strains if such strains can be anticipated.

9.1.6 Fastening and calibration

KDB, KDB-adaptor units and Release elements (FSE) shall be constructed to allow proper installation and calibration. Any special tools required shall be supplied by the manufacturer of the device.

9.1.7 Indicators

9.1.7.1 Design of visible indicators

All visible indicators - except concentrated displays - shall be marked by different colours and - if their meaning is not clearly identifiable - by a respective legend.

The following colours shall be selected:

- GREEN = Operation
- RED = Signal from the KDB-monitoring measures
- YELLOW = State (KDB unlocked), if given fault

9.1.7.2 Concentrated displays

If concentrated displays are used alarm signals have priority to other signals/messages, e.g. "fault" and further information. It shall be possible to recognize if more information is given than the concentrated display is able to indicate. It shall be possible to recall this information; such a recall shall not lead to a loss of information.

9.1.7.3 Recognisability of visible indicators

Visible collective indicators shall be recognisable unambiguously at a lightening between 0 - 200 Lux with a distance of 3 m and radiating angle of $\pm 22.5^\circ$. The radiating angle is measured from the vertical to the front of the CIE.

All other indicators shall be recognisable unambiguously at a lightening of 50 to 1,000 Lux with a distance of 1 m and a radiating angle of $\pm 22.5^\circ$.

9.1.7.4 Reliability of visible indicators

Visible indicators shall be long-lasting; their life cycle shall at least be 30,000 h.

9.2 Key Deposit Box (KDB)

9.2.1 Dimensions of housing

The following dimensions are recommended for the housing of KDB:

- Height 180 mm
- Breadth 180 mm
- Depth 140 mm

Parts standing over (e.g. rear panel) are not considered in these dimensions. Other equivalent solutions are admitted.

Type SD3

The rear panel of KDB shall overlap at each side by at least 25 mm in order to complicate pulling out the KDB of the wall.

9.2.2 Material**Type SD1**

The KDB shall consist of a mechanically stable, corrosion-resistant housing.

Types SD2 and SD3

Housing, external door and internal door of KDB shall consist of a corrosion-resistant steel plate of at least 5 mm thickness material according to DIN EN 10 025 or stainless steel according to DIN 17 440 or equivalent material.

9.2.3 Front**Types SD2 and SD3**

The KDB front shall be planar and shall have no parts standing over – with the exception of the doorknob. The doorknob shall be designed such that it is not be usable as a tool to break open the door (e.g. by the implementation of a predetermined breaking point); however the doorknob shall be stably fixed to the door. Hinges shall neither be visible nor attackable.

9.2.4 External door**Types SD2 and SD3**

To counteract a forced penetration via the external door, the housing shall be fitted with a bearing.

The closing of the external door shall not be possible before the internal door is closed, locked and the key has been removed.

9.2.5 Locking of the external door**Type SD1**

For de-locking a profile cylinder, at least VdS-class A, or an equivalent locking mechanism shall be used.

Types SD2 and SD3

The de-locking mechanism of the external door shall be currentless in the locked state and function within the operation voltage range according to the nominal voltage; the nominal voltage shall be 12 V \pm 15 % and/or 24 V \pm 15 % at a maximum current consumption of 0.5 A.

The de-locking mechanism shall be equipped with a potential-free contact (monitoring contact) which signals the locked resp. the unlocked state of the external door. This contact shall be designed for the degree of protection specified by DIN EN 60 529 (identically with VDE 0470 Part 1) - IP 40 designed for at least 10,000 switching cycles.

Further on the de-locking mechanism shall be designed for a duty-ratio of 100 % and at least for 10,000 operations; it shall withstand a minimum force of 3 kN.

The external door of the KDB shall be unlocked at least after triggering by the SDA; an automatic opening is, however, not permitted.

9.2.6 Lock of the internal door

Types SD2 and SD3

The lock of the internal door of the KDB shall be equipped with a mechanically stable detainer or cylinder lock. The mechanical stability of the bar shall fulfil the requirements of DIN 18 251 (minimal static load 4 kN at 4 mm distance). It shall not be possible to pull the key in the unlocked state of the lock.

For detainer locks the key shall be provided with at least six asymmetric detainers for each key bit. Detainers shall be sure against gauging and unlocking. Function relevant parts of the lock case (e.g. pin/bolt) shall be especially protected against mechanical attacks (e.g. drilling). The detainer lock shall be designed as changing lock.

Note 1: Tumblers are sure against gauging if it is not possible to receive the necessary measures/dimensions for producing a skeleton key/copy of the key by measuring the key hole.

Note 2: Tumblers are sure against unlocking if it is not possible to bring and keep one after another into opening status when pressing the bar.

For cylinder locks the locking cylinder shall fulfil the rules for physical security devices, locking cylinder with single locking function, VdS 2156, class B. The profile cylinder shall preferably be flushed with the internal door and shall not stick out more than 3 mm. Cylinders sticking out more than 3 mm shall be protected with a burglar resistant door shield, which fulfils the rules of physical security devices, burglar resistant door shields, VdS 2113, class A.

Only VdS-approved locks and lock cylinders shall be used. The supply of keys shall be restricted to manufacturer or to companies authorised by the manufacturer.

Locking and key of the internal door of type SD3 KDB shall exclusively be used for these internal doors.

9.2.7 Monitoring of the deposited keys

Types SD2 and SD3

The presence of the deposited key shall be monitored by electrical means. The monitoring may be indirect (e.g. with an auxiliary key connected non-detachably with the keys to be deposited) or direct. For the auxiliary key a locking cylinder at least class A according to the rules for physical security devices, profile cylinders, VdS 2156, shall be used.

Contacts used for the monitoring of the deposited keys shall have definite positions for the different switching points.

If several keys will be deposited, also these have to be connected together non-detachably. In type SD2 and SD3 KDB at maximum three keys shall be deposited.

Note: In type SD1 KDB the deposit of maximum two key is permitted. If this number is exceeded e.g. for organisational reasons a co-ordination between user, fire brigade and insurer is necessary.

9.2.8 Condensation water

The housing of KDB shall be designed such that accumulation of condensation water may be excluded (e.g. by water drain, forced air circulation).

9.2.9 Heating

Types SD2 and SD3

KDB shall be equipped with heating measures (power appr. 5 W) (e.g. planar heating on the inner side of the external door, heating resistor).

Note: Due to prefixed connection technology of KDB the heating is possible only by extra-low voltage.

9.2.10 Connection cable

Types SD2 and SD3

KDB shall be equipped with a fixed connecting lead with a length of at least 10 m – with the following exceptions. The used cable type shall be LiYY 10 x 0.5 mm².

Exception 1: The customer asks especially for his object another length of the cable.

Exception 2: For technical reasons a KDB with a fixed connected cable is not usable in a special object. For such cases KDB alternatively may be equipped with adequate connection elements. A procedure shall be determined how the connections may be durably protected against moisture and corrosion on site (degree of protection DIN EN 60 529 - IP 56).

Electrical connections within KDB shall sufficiently be protected against ingress of humidity, e.g. by durable sealed rubber bushings. If the cable has to be extended, sufficient corrosion-protected cable connection techniques (e.g. solder shrinking sleeves) have to be used.

9.2.11 Cable entry point

Types SD2 and SD3

The connection cable shall be feed in from the rear of the housing of the KDB or edgewise, in direct vicinity of the rear side of the housing (maximum 50 mm distance).

9.2.12 Marking of the connection terminals

Types SD2 and SD3

Connection terminals of the KDB shall be marked according to table 12.01.

9.2.13 Degree of protection of the monitoring measures

Types SD2 and SD3

All electrical monitoring measures according to clauses 8.2 and 9.2.7 shall be protected against the effects of dust at least to the degree of protection specified by DIN EN 60 529 (identical with DIN VDE 0470-1) - IP 56.

9.3 Construction of SD-adapter units

Housings of SD-adapter units shall be mechanically strength and made from metal (at least 0.80 mm sheet steel or equivalent). Covers shall be mounted mechanically stable, e.g. by screwing.

For SD-adapter units which are integrated in other devices (e.g. in an Intruder Alarm System (IAS)-CIE), the respective requirements of these devices apply.

10 Function of the SDA

10.1 Unlocking (release) of the external door of the KDB

Types SD2 and SD3

The external door of the KDB shall be unlocked (released) during following criteria:

- Type SD2 and SD3: Signal fire **and** associated acknowledgement from the dedicated Alarm Transmission Equipment (ATE) (see figure 1.01 and 1.02)

or

- Type SD3: Signal intrusion or associated acknowledgement from the dedicated Alarm Transmission Equipment (ATE) **and** in each case at least one additional criteria (e.g. enabling by a provider of assistance or input of a code on site, see figure 1.03)

Note: The final regulations for the logic operation are described in the rules for planning and installation of IAS, VdS 2311.

The unlocked (released) state of the external door shall be visually indicated for the user at the KDB-adapter unit or at the device where the KDB-adapter is an integral part in (e.g. Automatic Fire Detection and Alarm System-CIE). Triggering of the de-locking mechanism of the external door of the KDB is performed statically until restoring of the triggering Alarm System (AS).

10.2 Opening of the unlocked external door, removal of key

Type SD3

Correct opening of the KDB after unlocking (see clause 10.1) and the following removal of the key shall not cause signals onto the downstream Alarm Systems (AS).

10.3 Re-activation of the monitoring measures

Types SD2 and SD3

After reset of the triggering the KDB may be integrated in the monitoring measures and may be locked if the key for the object is accordingly deposed and the external door is closed. For the control of the reactivation of the monitoring measures the potential-free monitoring contact of the de-locking mechanism shall be used.

10.4 Automatically locking

Types SD2 and SD3

In cases where after triggering of the KDB the KDB was not used it shall be assured that the KDB after reset of the triggering will be locked and incorporated in the monitoring measures automatically.

10.5 Monitoring of the KDB

Type SD2

The KDB-adapter has to monitor the deposited key in the KDB for availability (see clause 9.2.7). The activation of the monitoring shall be visually indicated for the user.

Type SD3

The KDB-adapter shall monitor the KDB against penetration, opening and availability of the deposited keys (see clauses 8.2 and 9.2.7). The response of the monitoring shall be visually indicated for the user; restoring of this indication is only permitted for the maintenance service. If a KDB-adapter unit is used the signal of the response shall be routed via potential-free contacts (see clause 12.2).

Monitoring of the KDB shall be effected by a monitored interconnection ("primary line"). If monitoring criteria are used which could easily be simulated (e.g. quiescent current) the "primary line" shall respond at a change of the monitoring criterion of more than 40 %. The response time shall not exceed 200 ms.

The current used for the monitoring shall be at least 1 mA; for the terminal resistor a value of 2.2 k Ω shall be used (tolerance: $\pm 5\%$, load: ≥ 0.5 W).

Note: This resistor shall be built into the KDB, but easily removable for the installer (if other termination elements are used).

10.6 Indication of operating states

Types SD2 and SD3

The following statuses of the KDB shall be indicated at the KDB-adapter:

- Operation for types SD2 and SD3 KDB
- KDB „de-locked" for types SD2 and SD3 KDB
- KDB-monitoring "triggered " for type SD3 KDB

10.7 Loss of supply power and malfunction

Types SD2 and SD3

A response of the automatic function monitoring of the SD-adapter unit according to clause 6.2 as well as a complete loss of power shall generate a signal via the potential-free contacts required in clause 12.2.

10.8 Testability

Type SD3

For testing of the monitoring measures it shall be possible for the maintenance service to trigger the external door of the KDB without deactivation of the monitoring measures. If the external door is not opened, triggering of the KDB has to be withdrawn automatically at latest 180 s after the manual triggering.

11 Release element (FSE)

11.1 General

Release elements (FSE) shall be designed such that they may be used for a deliberate triggering (e.g. fire brigade) of a fire alarm in an AFDS from outside of an object/protected premises by a provider of assistance. Release elements (FSE) shall be designed such that unauthorised may not trigger a signal.

Note: FSE are parts of the Automatic Fire Detection and Alarm System (AFDS).

11.2 Condensation water

Housings of release elements (FSE) shall be designed such that an accumulation of condensation water can be excluded (e.g. by water drain, forced air circulation).

11.3 Equipotential bonding

Release elements (FSE) shall be designed such that they may be connected to the equipotential with a wire with a diameter of at least 4 mm².

12 Interfaces

12.1 Interfaces of the KDB

SD-clamp	Wire	Colour	Connected items
1	1	White	„Primary line“ for the monitoring measures
2	2	Brown	
3	3	Green	Connection facility for the terminating element ¹⁾ of the „primary line“
4	4	Yellow	
5	5	Gray	De-locking mechanism
6	6	Pink	
7	7	Blue	Monitoring contact (door unlocked, contact closed)
8	8	Red	
9	9	Black	Heating
10	10	Purple	
⊥			Connection for the equipotential bonding (4 mm ²)
¹⁾ Value 2.2 kΩ, tolerance: ± 5 %, load ≥ 0,5 W. This resistor shall be assembled within the KDB, but shall be easily removable for the installer in cases where other terminating elements may be used.			
Table 12.01: Clamps and wire layout KDB			

Type SD2 and SD3 KDB shall be – according to clause 9.2.10 – connected with a connection cable type LiYY 10 x 0.5 mm²; the single wires have to be connected according to table 12.01.

Note: Because type SD2 KDB does not require monitoring measures the connections may be modified accordingly.

12.2 Interfaces of the KDB-Adapter unit

KDB-adapter units shall dispose of adequate connection points which shall be assigned according to table 12.02 and marked (not applicable for KDB-adapters which are designed as insertion to CIE of automatic fire detection and alarm systems).

SD-Adapter clamp	Connection
1	"Primary line" for the KDB-monitoring measures
2	
3	Triggering of the KDB de-locking mechanism
4	
5	KDB – monitoring contact
6	
7	+12 V/ +24 V
8	Reference potential(0 V)
9	Input for first triggering e.g. by the Alarm System (AS)-CIE
10	
11	Free
12	
13	Signal output for the monitoring of the KDB and loss of power, if given also function monitoring according to clause 6.2
14	
15	Opening detection
16	
17	Input for second triggering, e.g. for enabling via code-input on site
18	

Table 12.02: Connector pin assignment SD-Adapter

For logical combinations with Alarm Systems (AS) additional clamps (connector pins) may be arranged.

12.3 Other interfaces

The performance shall be specified by the manufacturer.

13 Power supply

The requirements for the power supply of KDB and KDB-adapter units shall correspond with the requirements of the respective Alarm System (AS). This requirements is not valid for the heating measures of the KDB (see clause 9.2.9).

14 KDB pillars

14.1 General

In the case, where no suitable area in the facade is available for a KDB mounting, it is permitted to install the KDB in a free-standing pillar. It is differentiated between hollow pillars and pillars which have to be filled after successful mounting with a respective filling material.

14.2 Construction

Stainless steel or equivalent material shall be used for the pillar with a wall thickness of at least 3 mm all side. For a protected underground cable-routing a flexible metal tube according to DIN EN 50 086-1 or equivalent shall be used, with a minimum length of 100 cm. The metal tube shall be routed at least 200 mm under the mounting surface. De-mounting of the KDB from the pillar shall be possible only from inside of the KDB.

Disassembly of the complete pillar and/or parts of the pillar shall only be possible from the interior of the pillar. Material, which is necessary for the anchoring of the pillar, shall be specified by the manufacturer.

14.2.1 Hollow pillar

A KDB installed in a hollow pillar shall be penetration-monitored all-round (see clause 8.2.1, 2. clause). The connecting cable of the KDB in the pillar shall be passed through a metal tube. The metal tube shall be run up to the KDB. If the connection cable within the pillar is routed via a junction box, a class C junction box environmental class IV has to be used.

14.2.2 Filled pillar

As filler concrete C20/C25 according to DIN EN 206-1 : 2001-7 (table) shall be used. A feed cable which is not covered by the filler shall be routed in a metal tube. The KDB installed in the pillar shall be surrounded by the filler at least for 100 mm.

15 Options

Options shall have no adverse effects on the functions required for KDB, SDA and FSE. The performances of the options shall be specified by the manufacturer.

Changes

Compared with edition VdS 2105 : 1996-12 the following changes have been made:

- Separation of the former rules VdS 2105 in equipment requirements (VdS 2105) and requirements for planning, installation, operation and maintenance for KDB (VdS 2350)
- Amendment of clause 1 „Scope” by “Release elements” (FSE)
- Revision of figures 1.01 to 1.03; among others the use of the acknowledgement signal of the fire signal shall be used for triggering of the KDB-adapter
- Addition of clause 2 (new) „Normative references”
- Change of the term „Übertragungsgerät (ÜG)” to „Übertragungseinrichtung (ÜE)” (only relevant in the German version).
- Description of three types of KDB in clause 4 „Classification”; use of the three types in the whole rules
- Revision of whole clause 5 " Protection against Environmental Influences"
- New clause 8.2.3 „KDB-connection” to Automatic Fire Detection and Alarm System-CIE“
- Amendment of clause 8.2.2 „Access protected interface for the KDB-adapter in AFDS-CIE“
- Amendment of requirements for VdS-approved locks and lock cylinders in clause 9.2.6
- Regulation of the maximum number of keys to be deposited in clause 9.2.7
- Note in clause 9.2.9 „Heating“, that the supply is possible only by extra-low voltage.
- Note in clause 9.2.10 „Connection cable“, that there are alternatives allowed for the fixed connection cable
- Change of clause 10.1: in future the acknowledgement signal of the fire signal shall be used for triggering of the KDB-adapter
- Amendment of the new clause 11 „Release elements (FSE)”
- Addition of the new clause 14 „KDB-pillars“
- Deletion of the note for old locking mechanism in Annex A „Example for a Warning note“
- Editorial changes

Annex A – Example for a "Warning note" (normative)

Important note for operators of Key Deposit Boxes (KDB)

If a Key Deposit Box (KDB) is installed and a key is deposited there this automatically leads to an increase of risk for the insured premises and has to be notified to your loss prevention insurer.

If the KDB is not VdS-approved and/or not installed, operated or maintained according to the rules for KDB, planning, installation and maintenance (VdS 2350), there is no insurance cover against intrusion if the building has been opened with the (right) key taken off the deposit. This applies also if keys according to their quality rating have been deposited in a wrong, i.e. lower class of SD.