Contents

SafeRoute®-System Mini, Basic und Standard

System manual

EN

dormakaba

1   About this document

1.1   Contents and purpose

This document contains the information and instructions for the installation and operation of a SafeRoute® system on an emergency exit door unit according to EltVTR (12/1997 version) and DIN EN 13637:2015. The functional scope information refers to a SafeRoute® system with the Standard license.

1.2   Target group

This document is intended for assembling technicians and specialists authorized by dormakaba for the installation, operation, maintenance and testing of a SafeRoute® system.

1.3   Other applicable documents:

The following documents belong to the unit's complete documentation and must be observed:
- The installed individual components' assembly instructions and documents
- The operation manual
- The inspection log for the door unit on which the SafeRoute® system was installed
- The TMS Soft® handbook
- The approved components' declaration of conformity

1.4   Documents storage

This document and the other applicable documents must be handed over to the facility operator after commissioning. The facility operator must keep the documents for the entire service life and make them accessible to the persons responsible for the inspection and maintenance of the emergency exit door unit.

1.5   Abbreviations

Abbreviation	Definition
SCU-xx	SafeRoute® Control Unit - Control unit of a SafeRoute® system in three versions: • SCU-UP = Flush mounting • SCU-TL = in the door terminal STL-G • SCU-DR = DIN rail mounting
SLI	License card
SLI-A	Application
STL-G	Door terminal with emergency button SCU-TL and key switch ST
STV xxx	Electrical door lock
ST	Key switch

1.6   Symbols used

1.6.1   Hazard categories

⚠️ **WARNING**

This signal word indicates a situation of potential risk, which could lead to death or serious injury if not averted.

1.6.2   More symbols

ℹ️ **TIPS AND RECOMMENDATIONS**

This signal word indicates useful information for efficient and trouble-free operation.

2 Safety

The following instructions must be observed by the installer and facility operator. The installation of escape route security systems must not impede the unhindered escape of persons in the event of danger. Only use dormakaba spare parts or spare parts approved by dormakaba.

2.1 Intended use

The escape route security system SafeRoute® is an electrical locking system on doors in emergency and escape routes, which counteracts any misuse of the escape route. When using the dormakaba escape route security system SafeRoute®, the technical data and environmental conditions of the components used must be taken into account. Only components and parts approved by dormakaba for a SafeRoute® system may be used (see current list www.dormakaba.com).

The intended use also includes compliance with all information in this document and in the other applicable documents (see also Ch. 1.3).

2.2 General safety instructions

⚠️ **WARNING**

Danger to life due to blocked escape routes
Mounted devices and components as well as their settings can prevent people from escaping in an emergency if they are handled improperly.

2.3 Personnel qualification

Mounting, commissioning, testing and maintenance of the SafeRoute® system may only be performed by persons authorized by dormakaba.

3 Product description

A SafeRoute® system is an electrical locking system for emergency exit doors. The SLI license card defines the SafeRoute® system's functional scope. A SafeRoute® system consists of various components depending on the requirements.

3.1 Parts included

- Mini, Basic or Standard license card
- Battery (for the clock function from license standard)
- System manual
- Operation manual
- Inspection logbook

3.2 Technical information

- Systems according to EltVTR must be operated with 24 V ± 10% (to maintain the retention force for locking devices).
- Systems outside the scope of the EltVTR can be operated functionally safe with 24 V ± 15%.
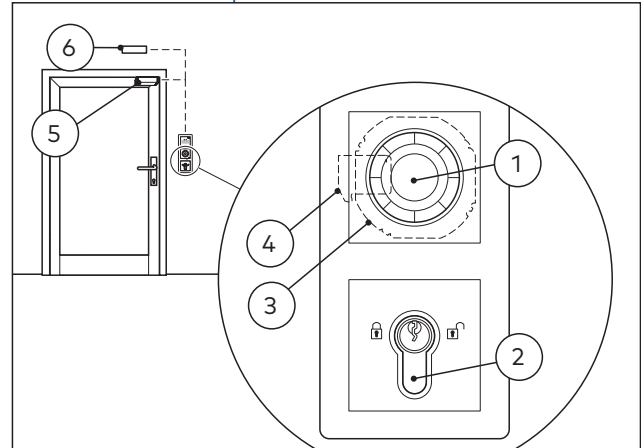
3.3 Basic components

Fig. 1   Example execution of a SafeRoute® system

A SafeRoute® system consists of at least the following basic components:
1   an emergency button
2   a key switch ST connected to SCU
3   a SafeRoute® Control Unit SCU
4   an SLI license card
5   an electrical door lock STV xxx
6   a power supply, e.g. power supply unit NT-S24-1.5
The basic components are connected via a four-core control cable (DCW® bus).
The connection of additional components is possible.

3.3.1 SafeRoute® Control Unit

The SCU with the inserted license card is the SafeRoute® system's control unit. The license card defines the SafeRoute® system's functional scope. The SCU is available in three versions:
- SCU-UP: consists of an SCU with emergency button for flush mounting
- SCU-TL: consists of an SCU with emergency button in the door terminal STL-G
- SCU-DR: consists of an SCU for DIN rail mounting (SCU-DR can be used from the Basic license.)

3.3.2 Emergency button with connected key switch

The emergency button releases the electric locking device when pushed. The emergency button's multi-colored illuminated ring provides information about the current door status. A key switch (ST) must be connected to the emergency button.
The key switch offers the following functions:
- Locking and unlocking
- Alarm acknowledgement

3.3.3   Electrical door lock STV xxx

The electric door lock locks the door and releases the door on request. Up to four different as well as identical door locks can be connected to a SafeRoute® system via the DCW® bus. All dormakaba STV xxx door locks are permitted. Door locks without DCW® bus are integrated via the STV-A adapter.

3.3.4   Power supply unit

The power supply unit feeds the 24V DC voltage for all SafeRoute® and DCW® components at any point in the DCW® bus. If there is an increased demand for power, several power supply units can be connected (the +24V line between the power supplies must then be disconnected). Any power supply units used must meet the dormakaba requirements (definition of power supplies: see Declaration of Conformity at www.dormakaba.com).

3.3.5   DCW® bus

The DCW® bus connects the components. Power is supplied via the DCW® bus (four-core control cable). dormakaba recommends the following type of lead:
• For bus routes up to max. 300 m: J-Y(St)Y 2x2x0.8

3.4   Extension of the SafeRoute® system

3.4.1   Additional DCW® components

Depending on requirements, the SafeRoute® system can be supplemented with additional DCW® components, e.g. additional emergency button, key switches, self-locking panic locks, etc.

List of all approved components:
The list of approved components and parts and the declaration of conformity are available at www.dormakaba.com.

3.4.2   Inputs and outputs on the SCU

Each SCU has inputs and outputs where alarm and signaling systems, external access control systems and other components can be connected or switched. The input and output functions can be parameterized with TMS Soft® from the Basic license.

3.4.3   RS232 interface at the SCU (available from Basic license)

The SCU with the inserted license card can be connected to TMS Soft® (PC computer) via the RS232 interface. The connection can also be made via an LON or LAN network adapter.

3.5   Functional scope

The functions of a SafeRoute® system result from the connected components and the license card (see Chap. 12). The preconfigured functions (default values) can be changed with TMS Soft® and the SafeRoute® configuration software (possible from Basic license).
The SafeRoute® system's functional scope can be expanded by additional components and SLI-A application cards (from Basic license).

3.5.1   Release and unlock

The following functions are available (default values):
• Release via emergency button (with alarm trigger)
• Release in case of power failure
• Temporary unlocking
• Long-term unlocking (from Standard license)
• Permanent unlocking
• Release by an alarm system (fire, danger, smoke detectors, sprinklers, etc.)

3.5.2   Relocking

The following functions are available (default values):
• Automatically after power failure
• Temporary unlocking: Automatically after expiry of the set relocking time
• Long-term unlocking: Automatically after expiry of the set relocking time
• Permanent unlocking: Automatically after closing the door and operation via key switch

3.5.3   Monitoring

The default values are:
• Tamper monitoring
• "Door open" monitoring with two different time ranges for pre- and main alarm (from Standard license)

3.5.4   Visual and audible indicator

The following displays are possible:
• Operating of the emergency button
• Alarm trigger
• Activation of locking and unlocking
• Relocking failed
• Pending maintenance
• Malfunction and error reports
• Connected components

4 Mounting

4.1 Requirements for mounting a SafeRoute® system

4.1.1 Door unit

All door unit components must be approved by the manufacturers for use as part of an emergency exit unit and must function properly.

4.1.2 Requirements for fire and smoke protection doors

When mounting a SafeRoute® System in preventive fire protection, the fire and smoke protection doors' properties must not be impaired.
Mounting is only permitted if the proof of usability for the fire and smoke protection door allows for mounting and the proof of usability's stipulations are observed.
Further information can be found in the report "Permissible changes and additions to fire protection closures" from the Deutsches Institut für Bautechnik (DIBt 1/1996), Berlin.

4.2 Mounting the components

The SLI license card and the battery (from Standard license) are plugged into the SafeRoute® Control Unit. The further mounting and connection of the SafeRoute® system's individual components is carried out according to the unit configuration and the assembly instructions. All connected components of the SafeRoute® system are entered in the respective door unit's inspection log.

4.2.1 DCW® bus addressing (door entry system)

Each DCW® component has a DCW® bus address. Similar DCW® components must have different DCW® bus addresses. The setting is made via the DCW® DIP switches on the components.

5 Commissioning

5.1 Put the SafeRoute® system into operation

Depending on the SafeRoute® Control Unit used (SCU-UP, SCU-TL or SCU-DR from Basic license), the procedure and status displays differ.

5.1.1 SCU-UP and SCU-TL as SafeRoute® Control Unit

The status display is indicated by the illuminated ring. The LED segments are assigned to the DCW® security components and light up or flash depending on the status of the connected DCW® component.
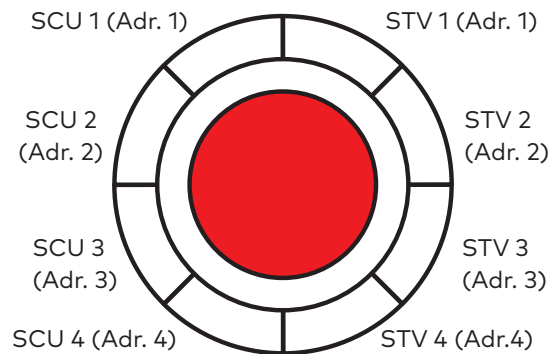

Fig. 2   Assignment of the LED segments in the illuminated ring

5.1.1.1 Configure an SCU-UP/SCU-TL

1. Connect the power supply.

   ‣ The illuminated ring on the SCU's emergency button flashes briefly (for initialization views see chapter 6.1) and changes to the rainbow view.

2. Press the S4 service button on the SCU and keep it pressed for 12 s.

   ‣ After 8 s, a signal sounds.

   ‣ After 12 s, another signal sounds and the illuminated ring lights up blue.

   ‣ The connected components are detected and displayed on the illuminated ring (flashing green/blue alternately).

3. Check if the connected components are displayed with the correct address.

   > **ℹ TIPPS UND EMPFEHLUNGEN**
   >
   > Duplicated DCW® addresses are indicated with yellow flashing.

4. Press and hold the service button for 3 s.

   ‣ The illuminated ring changes to the operation indicator.

   → **The SCU-UP/SCU-TL is configured.**

If the illuminated ring does not change to the operation indicator (permanently lit red):

1. Use the key switch to push right to left.

    ‣   The illuminated ring on the emergency button lights up red permanently.

    ‣   The STVxxx locks.

    →   **The SCU-UP/SCU-TL is configured.**

If the alarm signal "The emergency button is pressed" is pending (see Chap. 7 on page 8), reset the alarm signal:

1. Turn and hold the key to the right on the key switch.

2. Press the emergency button for 1 s and then release.

3. Push the key over the middle to the left and bring it back to the middle position.

4. Remove the key.

    ‣   The electric locking device is active.

    →   **The SCU-UP/SCU-TL is configured.**

5.1.2 SCU-DR as SafeRoute® Control Unit (from Basic license)

The status display during the configuration takes place via LEDs on the board. The LEDs light up or flash depending on the status of the connected DCW® component.
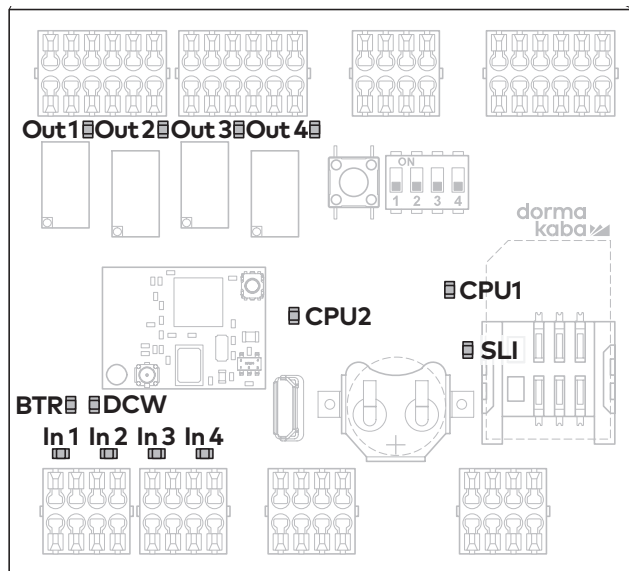

Fig. 3   Arrangement of the LEDs on the SCU-DR board

5.1.2.1 Configure an SCU-DR

1. Connect the power supply.

    ‣   The DCW® LED lights up red when correctly connected.

    ‣   The SLI LED lights up yellow when the license is inserted.

‣   The LEDs from In 1 to In 4 change to the initialization view and display the license.
    In 1 - 4 off   no/defective license card
    In 4 on   SLI Basic
    In 3 on   SLI Standard

‣   The illuminated ring on the emergency button flashes briefly and changes to the rainbow view.

2. Press and hold the S4 service button on the SCU-DR for 12 s.

    ‣   After 12 s, the illuminated ring on the emergency button lights up blue.

    ‣   The BTR LED flashes green.

    ‣   The connected components are detected and displayed on the illuminated ring (flashing green/blue alternately).

3. Press and hold the S4 service button for 3 s.

    ‣   The BTR LED lights up green.

    ‣   The DCW® LED lights up red.

    ‣   The CPU1 and CPU2 LEDs light up red (CPU1) and yellow (CPU2).

    ‣   The illuminated ring on the emergency button lights up red permanently.

4. Use the key switch to push right to left.

    ‣   The illuminated ring on the emergency button lights up red permanently.

    ‣   The STVxxx locks.

    →   **The SCU-DR is configured.**

5.2 Parameterization with TMS Soft® (from Basic license)

With TMS Soft® and the SafeRoute® configuration software, the functions of the components and the SafeRoute® system can be adapted. For more information, see the TMS Soft® handbook.
The settings made with the SafeRoute® configuration software must be entered in the respective door unit's inspection log.

5.3 Handover of the documentation to the facility operator

All documents relevant for proper operation are handed over to the facility operator after initial commissioning:

• The installed individual components' assembly instructions and documents
• The operation manual
• The door unit's inspection log
• This system manual

6 Status query of a configured unit

After a power failure, the license used and the status of all connected components are displayed in several initialization steps on the SafeRoute® Control Unit emergency button's illuminated ring.

6.1 Querying the status of an SCU-UP/SCU-TL

1. Disconnect the power supply.

2. Reconnect the power supply.

   ‣ The illuminated ring on the emergency button changes to Initialization view 1:
   White (lit up) = SLI license card
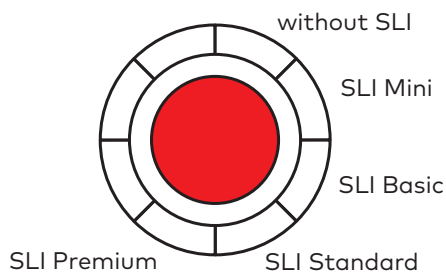
   ‣ The illuminated ring changes to Initialization view 2:
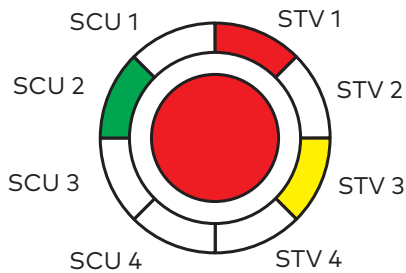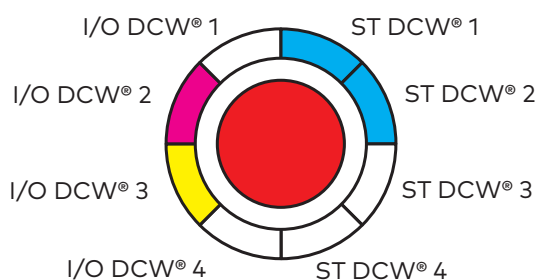

   Red = STV-xxx available.
   The display flashes red (2.5 Hz) if there is no configuration and the STV is not assigned to any SCU.
   Green = SCU emergency button available.
   The indicator flashes green (2.5 Hz) if the emergency button is not yet configured.
   Yellow = Malfunction: STV/SCU is missing/defective.

   ‣ The illuminated ring changes to Initialization view 3:

Blue = ST DCW® address X available.
Magenta = I/O DCW® available.
Yellow = Malfunction: STV/SCU is missing/defective.

‣ The SCU switches to the operating state and the illuminated ring lights up red permanently.

→ **The door is locked.**

6.2 Querying the status of an SCU-DR

1. Disconnect the power supply.

2. Reconnect the power supply.

   ‣ The LEDs from In 1 to In 4 change to the initialization view and display the license.
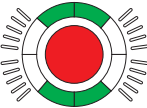   In 1 - 4 off   no/defective license card
   In 4 on   SLI Basic
   In 3 on   SLI Standard

   ‣ The illuminated ring lights up/flashes green/yellow briefly.

   ‣ The LED segment 1 on the SCU emergency button's illuminated ring lights up white.

   ‣ The illuminated ring on the emergency button lights up red.

→ **The door is locked.**

7   Troubleshooting
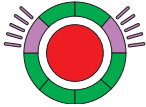
7.1   Illuminated ring display in case of alarm and malfunction

Signal	Cause	Procedure
	No visual or audible indicator 230 V AC- or 24 V DC power supply missing.	1. Check the power supply. 2. Connect the power supply.
	The door lock does not become active Permanent unlocking is still active.	1. Close the door. 2. Turn the key in the key switch to the left.
	Tampering message: **The STV is unlocked** Tamper alarm was triggered. All door locks on the door are unlocked. The tamper alarm occurs after unlocking the door. The door can be opened.	1. Make sure all housings and covers are intact and sealed. 2. Turn and hold the key switch to the right. ‣ The alarm is acknowledged. → **The door remains unlocked.**
	Tampering message: **The STV is locked** Tamper alarm has been triggered, all door locks on the door are locked.	1. Make sure all housings and covers are intact and sealed. 2. Turn and hold the key switch to the right. ‣ The alarm is acknowledged. ‣ The door unlocks. 3. Turn the key switch to the left. → **The door locks.**
high flashing frequency	**License error** The locks are disabled, the license card has been removed from the SCU control center for more than 2 minutes	1. Reinsert the license card assigned to the door. → **The door locks.**
	Partially locked (where a door has several locks) Here: Locks 1 and 2 are locked, lock 3 is not.	1. Check if all door leaves are locked or can lock (mechanically). 2. Turn the key switch to the right. 3. Push the key switch to the left. → **The door locks.**

Signal	Cause	Procedure
	The alarm system reports an alarm Alarm system has triggered via fire detector or smoke switch or there is an open circuit/short circuit to fire detector or smoke switch.	1. Reset to fire detector or smoke switch. ‣ The alarm is automatically* acknowledged. → **The door lock locks.**
	The emergency button is pressed The locking device does not lock.	1. Push and hold the key to the right on the key switch. 2. Press the emergency button for 1 s and then release. 3. Push the key over the middle to the left and bring it back to the middle position. 4. Remove the key. → **The electric locking device is active.**
	The emergency button is faulty Internal emergency button error.	1. Push and hold the key to the right on the key switch. 2. Press the emergency button for 1 s and then release. 3. Push the key over the middle to the left and bring it back to the middle position. 4. Remove the key. → **The electric locking device is active.** If the error occurs again, replace the device.
  When locked When permanent open	**The connection via DCW® bus to a standard DCW® node is interrupted** A standard DCW® component** is missing/defective or SCU emergency buttons signal that the SCU control center is missing or defective.	1. Check the DCW® connection to the DCW® component. 2. Reset the components table with the TMS Soft or perform new configuration. **Attention:** Parameter settings changed by TMS Soft® are lost! If the error persists: Replacement of the non-safety-related DCW® component.

*Depending on the parameterization, manual acknowledgment may also be required.
**I/O module DCW®, key switch STxx DCW®, SVP lock SVP 2xxx DCW®, smoke switch RS DCW®

Signal	Cause	Procedure
 in addition, an alarm signal sounds	**The connection to an SCU emergency button is interrupted** The electrical lock is deactivated. or **The door is not closed.** or **The door contacts on the STV are not connected.**	1. Check the line to the SCU emergency button. 2. Acknowledge the error after removal. 3. Press the key switch to the right and then to the left. → **The STVxxx locks.** or 4. Replace the defective SCU emergency button
  	Missing or defective STV-xxx STV-xxx is missing or the connection is broken, e.g. plug disconnected (Fig. shows Address 1 as an example) The communication between SCU and STV-xxx was interrupted (e.g. due to a loose connection).	1. Check the line to STV address 1. 2. Acknowledge the error after removal. 3. Press the key switch to the right and then to the left. → **The STVxxx locks.**
	Maintenance is required The maintenance interval has been exceeded.	1. Conduct maintenance (or order it) according to specifications. 2. Reset the maintenance alarm. To do this, press the key switch to the left for 15 seconds or set a new maintenance interval with TMS Soft (as of license standard).
	The unit is not configured	1. Check the components. 2. Carry out a new configuration.
	The unit is supplied with over/ undervoltage. The power supply does not meet the requirements or specifications.	1. Check the power supply. 2. If the voltage drop on the supply cable is too high, select a larger cable cross-section or place an additional power supply.

*Depending on the parameterization, manual acknowledgment may also be required.

8   Replacement and removal of components

The replacement and removal of components connected to the SCU is performed in accordance with the relevant assembly instructions. For safety-related components, such as e.g. electrical door locks STV xxx or SCU control units, the replacement must be documented in the door unit's inspection log. The SafeRoute® system must then also be re-commissioned.

Replacing DCW® components
When exchanging standard DCW® components, the DCW® address and thus the set parameters can be adopted. For a permanent removal from the bus system, additional steps must be taken.

Replacing license cards
The replacement of the license card must be done within 2 minutes. Any loaded applications are permanently stored on the SLI license card. After replacement, any necessary applications must be reloaded.

8.1   Replace non-safety related DCW® components

> **ℹ** **TIPS AND RECOMMENDATIONS**
>
> If the replaced component's DCW® address is retained, the set parameters are adopted.

1. Disconnect the wiring to the component.
2. Replace the defective component.
3. Take over the defective component's DCW® address (DIP switch).
4. Reconnect the wiring to the component.
   → **The component is incorporated in the system.**

8.2   Remove non-safety related DCW® components completely

1. Disconnect the wiring to the component.
2. Remove the component.
3. Delete the component from the system. To do this, update the internal DCW® table (see chap. 8.4).
   → **The component is completely removed from the system.**

8.3   Replace/remove safety-related DCW® components

1. Use TMS Soft® to read the current parameters (if parameterized).
2. Disconnect the wiring to the component.
3. Replace/remove the component.
4. Take over the replaced component's DCW® address (DIP switch).
5. Reconnect the wiring to the component.
6. Carry out a new configuration.
7. Transfer parameter settings changed by TMS Soft®.
   → **The component is incorporated in the system.**

8.4   Update internal DCW® table

> **ℹ** **TIPS AND RECOMMENDATIONS**
>
> **Attention:** Parameter settings changed by TMS Soft® are lost during configuration! Before configuring with TMS Soft, read out the current parameters (if parameterized) and transfer again after configuration.

1. Reset the components table with TMS Soft®.
   → **The internal DCW® table is updated.**
or
2. Carry out a new configuration.
   → **The internal DCW® table is updated.**

8.4   Reset configuration to factory settings

> **ℹ** **TIPS AND RECOMMENDATIONS**
>
> Alternatively, the configuration can also be done with the configuration software.

1. Press the S4 service button for 8 s.
   ▸ All default values are loaded.
2. Carry out a new configuration.
   → **All parameters are reset to the factory settings.**

9   Maintenance

The facility operator commissions the maintenance. Maintenance is periodic and is performed by service technicians authorized by dormakaba.

Customer service
dormakaba Service can be reached at the toll-free number.
E-mail: service@dormakaba.com
Fax: +49 2333 793-3777

dormakaba

24 h SERVICE
      HOTLINE
      0800 - 5240246

Other contact options:
- dormakaba - Technical Competence Center
  Tel.: +49 2333 7932900
- Online repair order: www.dormakaba.com

dormakaba Service App for smartphone/tablet: Apple iOS Appstore or Google Android Playstore

10   Disassembly, recycling and disposal

Disassembly is carried out in the reverse order of mounting and must be carried out by qualified personnel.

The product must be disposed of in an environmentally friendly manner. Electro-technical parts and batteries must not be disposed of as domestic waste. Dispose of electrotechnical parts and batteries in the designated acceptance and collection points. Refer to the statutory regulations for your country.

11   Manufacturer's declarations and test certificates

Any required documents, such as e.g. the EC Declaration of Conformity, the manufacturer's Declaration of Conformity, and compatibility lists, are available at www.dormakaba.com .

12   Annex

		SLI Mini	SLI Basic	SLI Standard
Release	Via emergency button (with alarm trigger)	O	O	O
Unlock	Via key switch(without alarm trigger)			
	– Temporary unlocking	O	O	●
	– Long-term unlocking	-	-	●
	– Permanent unlocking	O	O	O
	– Operating time of the key switch for triggering the unlocking type long-term permanent unlocking	-	-	●
	– Combination function short-term, long-term, permanent unlocking: one of the different unlocking types can be deactivated	-	-	●
	Automatic unlocking at defined times of day (timer)	-	-	●
	By alarm system (fire, danger, smoke detectors, sprinklers, etc.)	O	O	O
	Bi-directional escape route	-	O	O
	From outside to inside via external analog ST (key switch)	O	●	●
	From outside to inside via external DCW® ST or SVP / M-SVP 22xx	-	●	●
Lock	Automatic relocking			
	– After temporary unlocking	O	O	●
	– After long-term unlocking	-	-	●
	– If door was not opened after pressing the emergency button [1]	-	●	●
	– After closing	-	-	●
	Automatic locking at defined times of day (timer)	-	-	●
	Automatic relocking after power cut	O	O	O
	Resetting the unlocking via key/emergency button	O	●	●
	Direct connection of motor locks SVP 2xxx DCW®/ M-SVP 22xx DCW®	-	●	●
Vis./Aud. display	Status/Warning/Initialization display on the illuminated ring.			
	– Adjusting the brightness	-	●	●
	– Adjusting the flashing frequencies	-	-	●
	Pre-alarm/main alarm after temporary unlocking and long-term unlocking	O	O	●
	Maintenance alarm	O	O	●
	Acoustic confirmation when activating long-term or permanent unlocking	O	O	●
	Alarm duration limit	O	●	●
	Alarm management (activation/deactivation of alarms)	-	●	●
Monitoring	Tamper monitoring (can be deactivated for maintenance purposes)	●	●	●
	"Door open" monitoring	O	O	●
	Two different time ranges for the "door open" monitoring's pre-alarm and main alarm	-	-	●
Entry control	Access control via keypad, e.g. STD-UP touchscreen display	-	-	●
	History memory with date and time stamp	-	-	O
Networking	LON	-	●	●
	LAN	-	O	O
Miscellaneous	Automatic reactivation after power cut	O	O	O
	Parameterization/visualization/control via TMS Soft®	-	●	●
	Freely programmable inputs/outputs on the SCU	-	●	●
	Additional programmable inputs/outputs via SIO-DR or I/O DCW®	-	-	●
Application cards SLI-A	**Multi-door control**	-	■	■
	Interlock control	-	■	■
	Logic functions	-	-	■
	Time-Delayed Release [1]	-	■	■
	– one time delay step (parameterizable)	-	■	■

- not available   O available, not parameterizable   ● available and parameterizable   ■ with app
[1] EN 13637 function

www.dormakaba.com