

Instruction manual



Control unit for hold-open systems

FSZ Pro

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7003067

Contents

| | | |
|------|---|----|
| 1 | General safety information and protective measures | 5 |
| 2 | Scope of delivery | 6 |
| 3 | Warranty | 6 |
| 4 | Product description | 7 |
| 5 | FSZ Pro – technical data | 8 |
| 6 | Current requirements | 10 |
| 6.1 | Energy storage module ESM Pro (<i>must be ordered separately</i>) | 10 |
| 7 | Installing the FSZ Pro | 12 |
| 8 | FSZ Pro – applications | 13 |
| 9 | Electrical Installation | 14 |
| 9.1 | Installation instruction | 14 |
| 9.2 | Control unit FSZ Pro for hold-open systems | 16 |
| 9.3 | Termination module AM 142 | 19 |
| 9.4 | FSZ Pro - operation | 20 |
| 9.5 | Hold-open system according to DIN EN 14637 | 25 |
| 9.6 | Connection configurations according to DIBt and DIN EN 14637 | 26 |
| 9.7 | Signalling of the FSZ Pro | 32 |
| 10 | Certificate of conformity | 35 |
| 11 | Commissioning and acceptance | 36 |
| 11.1 | Acceptance testing according building type approval | 36 |

| | | |
|------|---|----|
| 11.2 | Maintenance instructions | 37 |
| 11.3 | Monthly functional test | 38 |
| 11.4 | Annual testing and maintenance | 38 |
| 11.5 | Functional test | 39 |
| 11.6 | Maintenance | 40 |
| 11.7 | Obligatory documentation requirement | 40 |
| 12 | Annex | 41 |
| 12.1 | Order data | 41 |
| 12.2 | Drilling template | 41 |
| 12.3 | Technical support and application support | 42 |

1 General safety information and protective measures

The present documentation describes the function of the FSZ Pro with the hardware and software version applicable at the date of issue of this document.

Information for Germany

The currently valid test regulations of the Deutsches Institut für Bautechnik and the respective type approval must be observed and followed while projecting, assembling, installing and operating hold-open systems on fire barriers.

The information contained in this Instruction Manual is based on these regulations.

Ensure proper use!

- The technical data specified for the equipment must be observed.
- Modifications or changes to the equipment are not permitted.
- The equipment must be used only for its intended purpose in an undamaged and perfect condition.
- No other spare parts than those available from the manufacturer must be used.
- The allowed components of the hold-open system are listed in a separate type approval.

Hold-open systems are subject to the duty of servicing required according to DIN 31051 and DIN 14677. More information can be found in the respective type approval document of the hold-open system.

If the use of the system is changed, it must be verified whether the legal provisions, requirements and state of the art are appropriately taken into account.

Specialised staff must be provided for projecting, assembling and commissioning.

When working on electrotechnical installations, special regulations must be complied with.

Such work may only be carried out by authorised qualified electricians.

2 Scope of delivery

On delivery, the FSZ Pro features the following components::

- 1 x FSZ Pro
- 1 x instruction manual
- 1 x assembly kit consisting of 2 screws and 2 dowels
- 1 x cable gland kit consisting of:
 - one M20 cable gland for the power supply cord
 - three M16 glands for connection of the peripheral equipment,
e.g. ORS 142, electromagnetic door retainers, etc.
- 1 x Slide-in unit for the integrated release button,
labelled "Tür schließen" (Close door) and "Tor schließen" (Close gate)
- 1 x termination module AM 142

3 Warranty

In case of non-compliance with the information contained in this Instruction Manual, any claims for guarantee and liability of the manufacturer will become invalid. In particular, the device or its components may only be repaired by authorised personnel. (It is not allowed to dismount or manipulate the device. If the device is manipulated nevertheless, any warranty claims become void.)

The information and warranty conditions in the general terms and conditions of Hekatron Vertriebs GmbH, Brühlmatten 9, D-79295 Sulzburg, shall apply.

4 Product description

The hold-open control unit, FSZ Pro, is preferably used to supply hold-open systems with voltage.

Compared to the FSZ Basis, the FSZ Pro offers some additional features.

- Switching power supply with higher performance (output current max. 900 mA)
- Optional energy storage with energy storage module ESM Pro (must be ordered separately)
- Built-in horn (signals up to 60 seconds after power failure)
- Alarm input for networking with alarm control panel
- Silent closure
- Horn can be switched on or off optionally
- Additional relay with a potential-free alternating contact for free use

Common features FSZ Pro and FSZ Basis

- Integrated manual release button conforming to standard and reset button
- Tested according to DIN EN 14637
- Distinction between fault causes via the LED flash code on the keypad
- Alarm storage can be activated via DIP switch
- Line surveillance can be activated via DIP switch
- Two smoke switch stubs can be connected with activated line surveillance
- Relay with potential-free alternating contact at the user's free disposal
- Short-circuit-proof primary pulsed switching power supply unit with stabilised output voltage
- Power supply with overtemperature shutdown

5 FSZ Pro – technical data

| | |
|---|--|
| Nominal voltage | 230 V AC |
| Nominal current consumption | 234 mA |
| Rated frequency | 50/60 Hz |
| Power consumption (apparent power/active power) | 54.3 VA/27.25 W |
| Nominal output voltage | 24 V DC |
| Residual ripple | 200 mV _{SS} |
| Output current | max. 900 mA |
| Output power | 21.6 W |
| Relay | 2 alternating contact, potential-free |
| Switching voltage AC | max. 250 V AC |
| Switching current AC | max. 5 A AC |
| Switching voltage DC | max. 30 V DC |
| Switching current at 30 V DC | max. 3 A DC |
| Switching current at 24 V DC | max. 5 A DC |
| Sound volume piezo (internal) | typ. 65 dB(A) @ 1 m |
| Operating ambient temperature | -10 °C to +45 °C |
| Storage temperature | -20 °C to +60 °C |
| Ambient conditions humidity (continuous, without condensation) ≤ 34 °C | 10 ... 95 % RH |
| Ambient conditions humidity (continuous, without condensation) > 34 °C | max. 35 g/m ³ min. 10 % RH |
| Degree of protection with exposed assembly | IP 65 |
| Degree of protection with cable entry from behind | IP 30 |

5 FSZ Pro – technical data

| | |
|-----------------------------|------------------------------------|
| Safety class | „I“ |
| Housing | PC-ABS housing |
| Colour | signal white according to RAL 9003 |
| Installation | exposed assembly |
| Installation position | as desired |
| Cable entries | 6 x M16 und 2 x M20 |
| Dimensions HxWxD | 146 mm x 146 mm x 60.5 mm |
| Weight with/without ESM Pro | 522/477 g |
| DIBt approval | Z-6.510-2358 |
| Tested according to | DIN EN 14637 |

6 Current requirements

The FSZ Pro provides a total output current of 900 mA. This output current can be completely used for the required components of the hold-open system. The current required for the hold-open system consists of the sum total of all currents of the components connected.

Example calculation:

The hold-open system comprises the following components:

| | | | |
|-----------------------------------|-------------|-----------|---------------|
| Smoke switch | 3 x ORS 142 | 3 x 22 mA | 66 mA |
| Electromagnetic door retainer | 2 x THM 425 | 2 x 63 mA | 126 mA |
| Total current requirements | | | 192 mA |

The total current must not exceed 900 mA. The current consumption of the various components of the hold-open system is specified in the related product documents.

6.1 Energy storage module ESM Pro *(must be ordered separately)*

6.1.1 Operating mode – buffering 24 V

The ESM Pro supports two different operating modes, which can be activated or deactivated using DIP switch 5 (buffering 24 V).

Operation mode buffering 24 V deactivated (see page 22)<GT>

Complete system is buffered for max. three seconds.

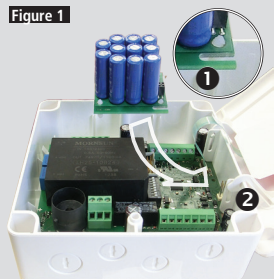
Operation mode buffering 24 V activated (see page 23)

Only the 24 V supply voltage is buffered until the energy store is emptied.

6 Current requirements

6.1.2 Installation of ESM Pro in FSZ Pro

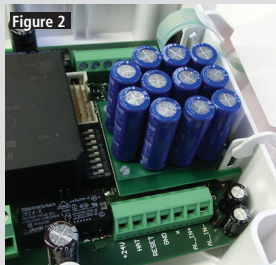
Figure 1



Open FSZ Pro enclosure and insert ESM Pro.

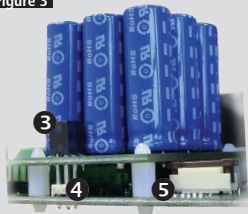
The strut of the hinge ② serves as a guide for the groove ① in the printed circuit board of the ESM Pro.

Figure 2



Place the ESM Pro on the printed circuit board as shown (Fig. 2).

Figure 3



Make sure that the contact pins ④ (Fig. 3) are inserted correctly into the terminal ③ (Fig. 3) of the ESM Pro.

Press the fixing clips ⑤ (Fig. 3) firmly into the fixing holes provided until they snap into place.

7 Installing the FSZ Pro

The safe installation of the FSZ Pro requires only 2 holes (see annex drilling template). The FSZ Pro is therefore delivered including two screws and dowels. The installation position can be selected as desired. The FSZ accessories kit – which must be ordered separately – includes two mounting adapters for installation of the FSZ Pro in a switch cabinet or on a top-hat rail. The mounting adapters can be mounted on the rear of the FSZ Pro at the points provided.

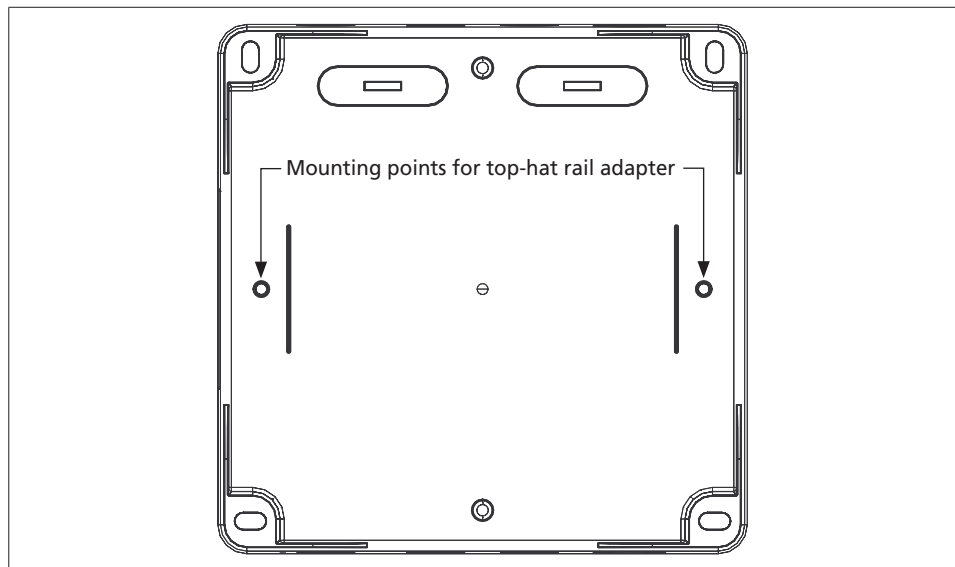


Fig. 1: Mounting points for top-hat rail adapter

8 FSZ Pro – applications

The FSZ Pro allows setting up a hold-open system in three different configurations:

1. According to DIBt without line surveillance

A +24 V wire jumper must be fitted to connector 5 in the last detector to be connected (see Fig. 5). If no manual button (HAT) is connected, a wire bridge must be implemented to the HAT connection terminal in the FSZ Pro. If nothing is connected to the external alarm input, a jumper must also be set there.

The connection lines of the smoke switches and manual buttons must be completely laid in a cable conduit or cable channel. If this is not possible, the lines must be laid separately.

No more than 20 smoke switches, electromagnetic door retainers (THM) and other consumer devices may be connected. The total current must not exceed 900 mA. The DIP switches 2 and 3 must be set to OFF.

2. According to DIBt with line surveillance

The line surveillance function must be activated via DIP switch 3 (EN 14637). One termination module AM 142 or a magnet for ORS 142 must each be connected in the last detector to be connected and in the manual button (see Fig. 7 resp. Fig. 8). If no manual button is connected the termination module AM 142 must be connected to the HAT connection terminal in the FSZ Pro. If nothing is connected to the external alarm input, a jumper must also be set there.

No more than 12 smoke switches, electromagnetic door retainers (THM) and other consumer devices must be connected to one stub. The total current must not exceed 900 mA. The DIP switch 3 must be set to ON. Depending on the connection DIP switch 2 must set to ON or OFF.

3. According to DIN EN 14637

The line surveillance function must be activated via DIP switch 3 (EN 14637). One termination module AM 142 or a magnet for ORS 142 must each be connected in the last detector and in the manual button (see Fig. 7 resp. Fig. 8). If no manual button is connected the termination module AM 142 must be connected to the HAT connection terminal in the FSZ Pro. If nothing is connected to the external alarm input, a jumper must also be set there.

No more than 12 smoke switches must be connected to one stub. The remaining available current can be used by any number of electromagnetic door retainers (THM) and other consumer devices. The total current must not exceed 900 mA.

The DIP switch 3 must be set to ON. Depending on the connection DIP switch 2 must be set to ON or OFF.

9 Electrical Installation

WARNING

Risk of electric shock

The device contains unprotected contacts which may cause severe injuries through electric shock if touched.

► The power supply cord of the device must be de-energised before assembly work is started.

9.1 Installation instruction

Installation and electrical connections may only be executed by qualified electricians or by persons appropriately instructed with regard to electrical engineering. An interrupter (circuit breaker, max. 10 A / tripping characteristic B) must be installed in the supply circuit. The place of installation of the interrupter must be entered in the acceptance report.

Lines must be provided with adequate mechanical protection, properly installed and secured, and meet the requirements present at the place of installation. For installation, the local provisions shall have priority.

Protective conduits must generally be used in areas that are within reach of persons. On the basis of local provisions it must be determined whether to use plastic or steel-armoured conduits. Safety extra-low voltage lines must be laid separately from line voltage carrying lines. Therefore, separation strips must be used in cable conduits or in cable trays.

Cables and lines incoming from outside must be secured upstream of their connection sites such that the connection sites are strain- and pressure-relieved.

Cables must be laid separately inside the device. The jacket must be left on the cables all the way to the terminals.

Cable type NYM 3x1.5 or 3x2.5 must be used for power supply connection.

Any commercially available communication cables with or without shielding may be used for the safety extra-low voltage lines.

The cable cross-section must be configured according to the current consumption of the devices used and to the line length.

Power supply connection:

The cross-section of the power supply cord must not exceed 2.5 mm².


Hold-open system wiring:

| | | |
|------------------------|--|--|
| Recommended line type: | <i>without smoke switch status indicator</i> | <i>in combination with a smoke switch status indicator</i> |
| | IY(ST)Y 2x2x0,6 | IY(ST)Y 3x2x0,6 |
| | IY(ST)Y 2x2x0,8 | IY(ST)Y 3x2x0,8 |

Maximum line length:

- 35 m to the electromagnetic door retainer
- 45 m to the smoke switches (cable diameter 0.6 mm)
- 75 m to the smoke switches (cable diameter 0.8 mm)

The number of line connections should be kept as low as possible. Every required connection must be made by means of reliable methods. Clamped connections require the use of terminals with pinch protection.

 Do not place lines directly across the printed circuit board of the FSZ Pro.

9.2 Control unit FSZ Pro for hold-open systems

9.2.1 Printed circuit board with connection terminals

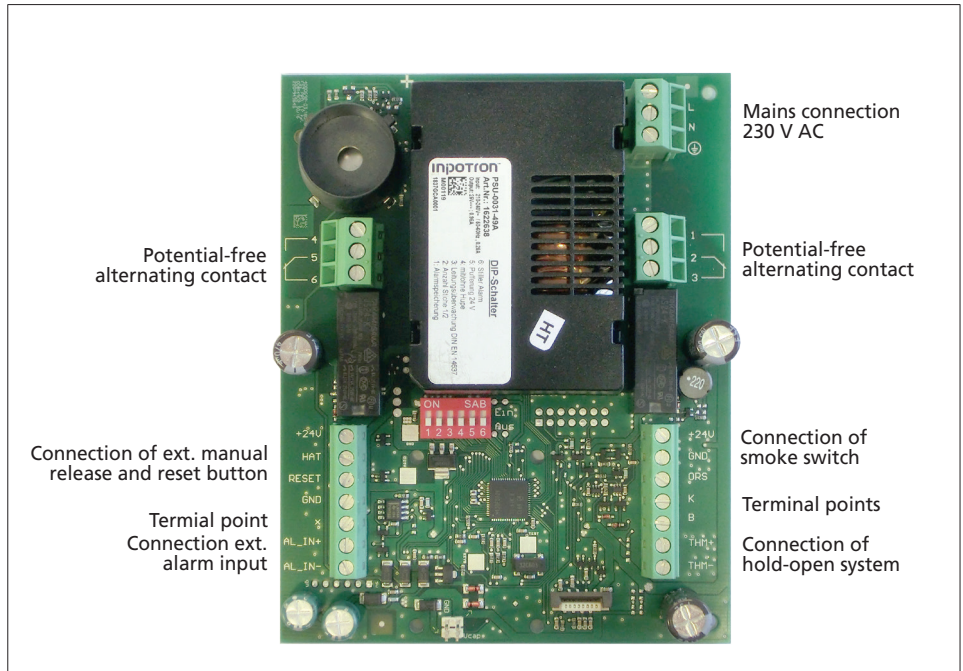



Fig. 2: FSZ Pro terminal assignment

| Labelling | Connection | Note/remark |
|---|-------------------------------------|--|
| L | Mains phase | |
| N | Mains neutral conductor | |
|  | Mains protective conductor | |
| 1 | Relay, line voltage NC | Closed in the event of an alarm or fault |
| 2 | Relay, line voltage COM1 | Common potential-free contact |
| 3 | Relay, line voltage NO | Closed when system in operation |
| +24 V | Output voltage +24 V DC | |
| GND | Output voltage 0 V DC | |
| ORS | Feedback from ORS alarm loop | |
| K | Connection point terminal | |
| B | Connection point terminal | |
| THM+ | Electromagnetic door retainer +24 V | |
| THM- | Electromagnetic door retainer GND | |
| +24 V | Output voltage +24 V DC | |
| HAT | Feedback from manual release button | |
| Reset | Feedback from reset button | |
| GND | Output voltage 0 V DC | |

| Labelling | Connection | Note/remark |
|-----------|---------------------------|---|
| x | Connection point terminal | |
| AL_IN+ | Ext. alarm input | Activation e.g. via a contact of a fire alarm control panel |
| AL_IN- | Ext. alarm input | Activation e.g. via a contact of a fire alarm control panel |
| 4 | Relay, line voltage | Closed in the event of an alarm or fault |
| 5 | Relay, line voltage | Common potential-free contact |
| 6 | Relay, line voltage | Closed when system in operation |

When line surveillance is switched off, the inputs for the external manual button and the external alarm input must be bridged when not in use.

When line monitoring is switched on (see pages 28, 29 und 30), the input of the external manual button must be terminated with an AM 142 if no external manual button is connected. If an external manual button is connected, the AM 142 must be installed in the manual button. In addition, the external alarm input must be bridged when not in use.



The connection cables for the **ext. alarm input** must be completely laid in a cable protection conduit or cable conduit . If this is not possible, a separate cable routing is required.

9.3 Termination module AM 142

9.3.1 Printed circuit board with connection terminals

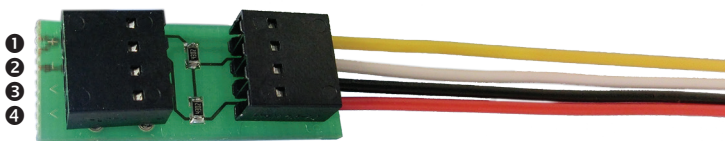


Fig. 3: Termination module AM 142

9.3.2 AM 142 connection

| Coming from the power supply unit or the second to last smoke switch | Going to the last smoke switch |
|--|--------------------------------|
| ❶ → + 24 V | yellow → feedback (alarm loop) |
| ❷ → GND | white → feedback (alarm loop) |
| ❸ + ❹ (connected internally) → feedback (alarm loop) | black → GND |
| | red → + 24 V |

The terminating module AM 142 is **not** suitable for Ex areas and must therefore not be installed in the ORS 142 Ex..

9.4 FSZ Pro - operation

The FSZ Pro can be operated according to the requirements of DIBt and/or to the requirements of DIN EN 14637. The DIP switches in the FSZ Pro must be set accordingly.

The DIP switches allow configuring the alarm storage and line surveillance features as well as using stubs with smoke switches.

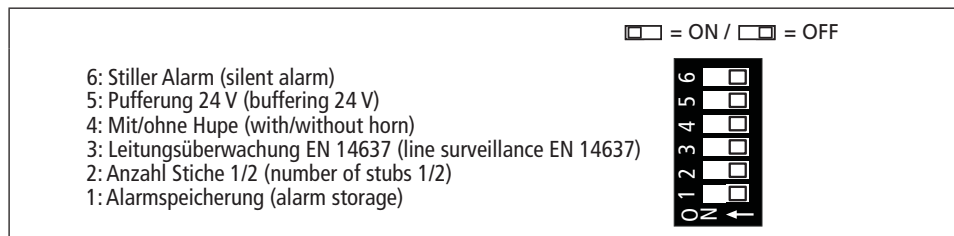


Fig. 4: DIP switches for FSZ Pro configuration

Alarm storage – DIP 1

| | |
|-----|--|
| OFF | The FSZ Pro does not store an incoming alarm. If the releasing smoke switch resets itself or if the manual release button is no longer actuated, the FSZ Pro returns to the operating state. |
| ON | <p>The FSZ Pro stores an incoming alarm. This alarm must be reset manually via the integrated or an external reset button.</p> <p>After a loss of power, the FSZ base returns to the previous operating state after the voltage is on again. If the previous operating state was an alarm, this alarm is again signalled. If the previous operating state was a fault or operation, the fault is indicated. After a power failure, the FSZ Pro must be reset to operate again.</p> |

2 stubs – DIP 2

DIP switch 2 is only evaluated if DIP switch 3 is set to “ON” at the same time.
The connection of an external manual button is not considered to be a stub.

| | |
|-----|---|
| OFF | Only one stub with smoke switches is connected to the FSZ Pro. The termination module AM 142 resp. a magnet must be installed in the last smoke switch (see Fig. 7). |
| ON | Two stubs with smoke switches are connected to the FSZ Pro. The termination module AM 142 must be installed in the last smoke switch of each of the two stubs (see Fig. 9). |

Line surveillance – DIP 3

If the FSZ Pro is used according to DIN EN 14637, this DIP switch must be set to “ON”.
If the FSZ Pro is used according to DIBt, the system can be used with and without line surveillance.
Irrespective of the type of use, the respective specifications in chapter 8 must be observed!

| | |
|-----|--|
| OFF | The FSZ Pro is operated without line surveillance. A wire jumper is set across contacts 1 and 5 in the last smoke switch (see chapter 6.1 section). |
| ON | The FSZ Pro is operated with line surveillance. The termination module AM 142 resp. a magnet must be installed in the last smoke switch of a stub and at the external manual release button. |

With/without horn – DIP 4

| | |
|-----|---|
| OFF | Horn OFF |
| ON | Horn ON - The internal piezo signals in case of alarm/fault. It is buffered for 60 seconds in the event of a power failure. |

Buffering 24 V – DIP 5

OFF **Buffering 24 V deactivated - (FSZ Pro with ESM Pro)**

All outputs are buffered for max. 3 seconds.

If the buffer time has expired, the voltage at all outputs drops simultaneously. The internal piezo is controlled simultaneously with the voltage drop of the THM. The fault mains failure or operation via ESM Pro is signalled via the fault LED (yellow).

If the mains voltage returns after 3 seconds, with the alarm storage function switched off, all relays are energised again, the THM is energised and the fault LED and the piezo remain off. The 24 V supply voltage is switched on again.

If the alarm storage is switched on, all relays and the THM remain switched off. The 24 V supply voltage is switched on again.

The fault LED lights up and the piezo remains off.

The fault must be reset manually, only then does the system return to the operating state.

If the mains voltage returns during the buffer time, the FSZ Pro returns directly to the operating state without a reset. The fault LED is switched off, all other outputs remain energized or switched on.

The setting with or without alarm storage is not relevant.

ON **Buffering 24 V activated - (FSZ Pro with ESM Pro)**

Only the 24 V supply voltage is buffered until the energy store is emptied.

This means that in the event of a power failure, the smoke switches will continue to be supplied with power and devices connected to relay 1, such as the acoustic/optical signaling device (ROLP).

The alarm can be forwarded externally via relay 2.

When the operating voltage fails, the internal piezo is controlled simultaneously and signals the power failure acoustically.

The fault mains failure or operation via ESM Pro is indicated via the fault LED (yellow).

When the alarm storage function is switched on, a manual reset must always be carried out after the mains voltage returns, regardless of during discharging the ESM Pro or after discharging the ESM Pro.

If this is done, all relays are energized again, the THM is energized again, the fault LED and the piezo go out again.

The 24 V supply voltage is reactivated when the mains voltage is switched on.

When the alarm storage function is switched off, the relays switch when the voltage returns, regardless of whether during discharging the ESM Pro or after discharging the ESM Pro, the THM switches on again, the 24 V supply voltage is reactivated, the fault LED and the piezo switch off.

Example buffer times: When using 6 ORS 142 smoke switches and a optical and acoustic signal device ROLP, the ESM Pro provides a buffer of typically 25 seconds.

Silent alarm – DIP 6

If the „silent alarm“ DIP switch 6 „ON“ is activated, alarm forwarding via the two relays is prevented when the internal and external manual buttons are triggered. If the external alarm input is triggered, alarm forwarding is not prevented! If the horn has not been deactivated, an alarm is always acoustically signalled at the FSZ Pro. The magnet output is always switched off.

| | |
|-----|------------------|
| OFF | Silent alarm OFF |
| ON | Silent alarm ON |



The „silent alarm“ has the function to enable the closing of the door with a manual button without triggering an alarm via the optical/acoustic alarm devices.

If „silent alarm“ is activated, **no** hold-open system **may** be activated via relay 1 and relay 2.

9.5 Hold-open system according to DIN EN 14637

Any hold-open system set up and operated according to DIN EN 14637 must be classified by the installer. Classification is based on a 6-digit code, of which the 2nd and 6th places must be entered on site according to the hold-open device used. Places 1, 4 and 5 are specified by DIN EN 14637 and place 3 by the respective type approval.

Classification of a Hekatron hold-open system according to DIN EN 14637:

| Hold-open system | DIN EN 14637 | 3 | 5 | 1/2/4 | 1 | 1 | 3 |
|------------------|--------------|---|---|-------|---|---|---|
| Digit | | 1 | 2 | 3 | 4 | 5 | 6 |

Digit 1 – Application class:

Class 3: Frequent use by the public and other persons with a low inclination to care and diligence, i.e. cases where misuse is probable to a certain degree.

Digit 2 – Stress test of the hold-open device:

Class 5: 50,000 test cycles
Hekatron's electromagnetic door retainers comply with this class.

Digit 3 – Door type:

Class 1: Swing doors
Class 2: Sliding gates/doors
Class 4: Automatic swing doors

Digit 4 – Use on fire/smoke control doors

Class 1: Suitable for use on fire/smoke control doors.

Digit 5 – Safety:

Class 1: All hold-open systems must fulfil a critical safety function for which reason no other class than the highest one is defined for using this standard.

Digit 6 – Corrosion resistance:

Class 3: High resistance
Hekatron's electromagnetic door retainers comply with this class.

9.6 Connection configurations according to DIBt and DIN EN 14637



The module is loaded after initial commissioning! If the FSZ Pro is to be disconnected from the mains for installation purposes, wait until the „green LED“ (see page 32) has extinguished before changing the wiring.

9.6.1 Connection without line surveillance (DIP 3 OFF)

The system is operated with a smoke switch stub, an external manual release button and an external reset button.

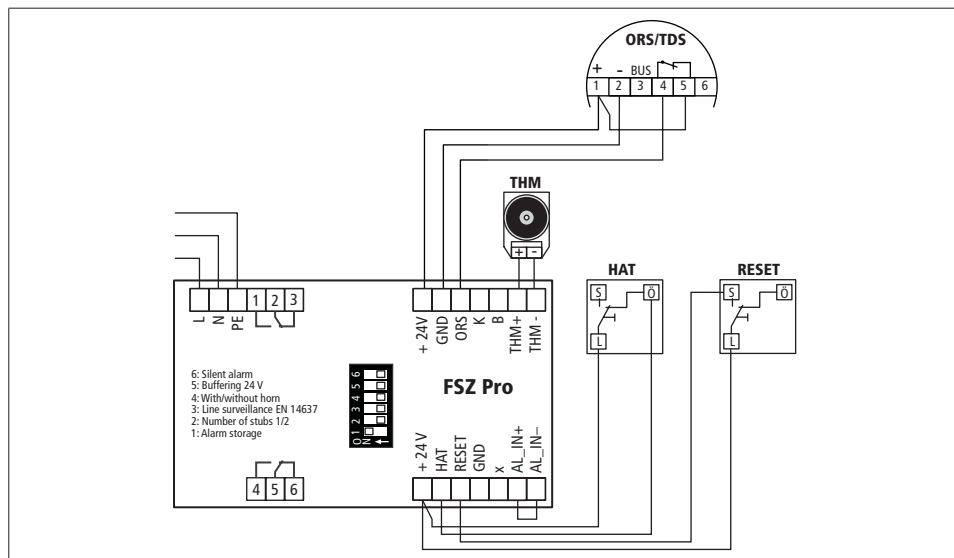


Fig. 5: Example connection according DIBt without line surveillance

9.6.2 Connection without line surveillance (DIP 3 OFF)

The system is operated with a smoke switch stub (several smoke switches) without external manual release button. The system is connected to the FACP. The manual button must be simulated by a jumper.

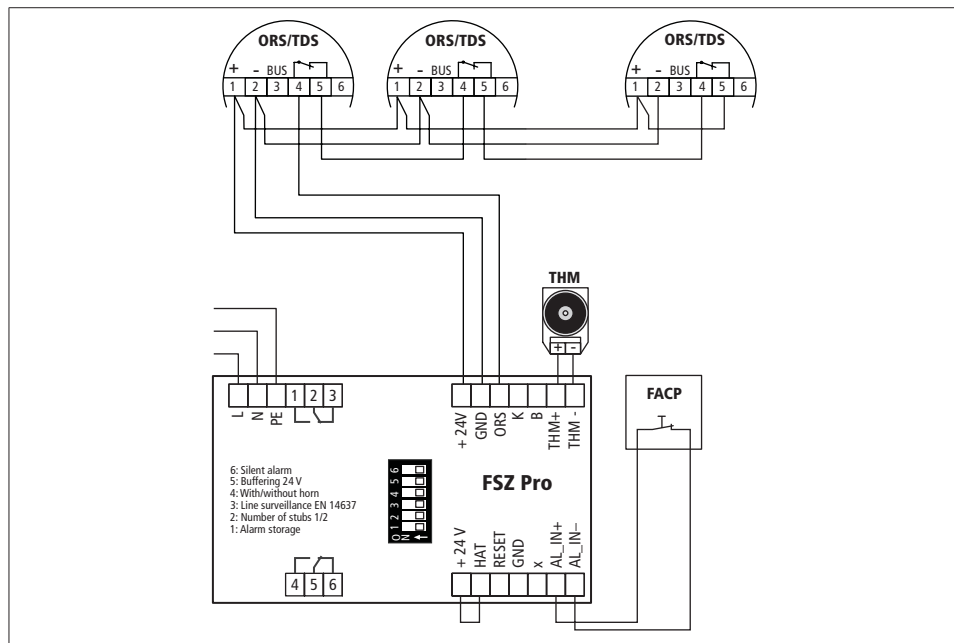


Fig. 6: Example connection according DIBt without line surveillance

9.6.3 Connection with line surveillance (DIP 3 ON)

The system is operated with a smoke switch stub and an external manual release button. A line surveillance unit with termination module (AM 142) is installed according to DIN EN 14637. DIP switch 3 must be set to ON.

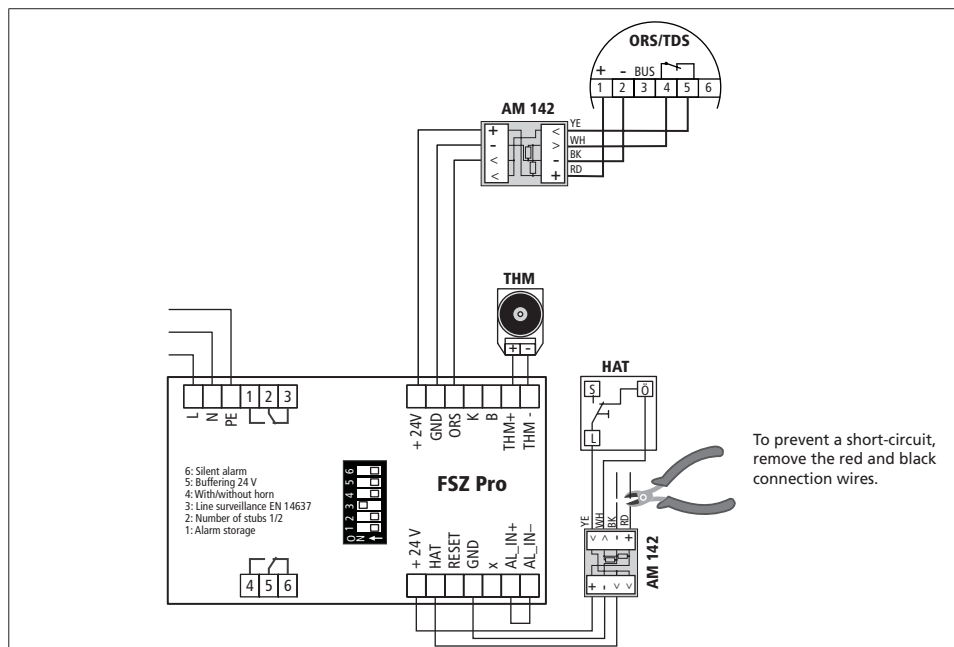


Fig. 7: Example connection according to DIN EN 14637 with line surveillance

9.6.4 Connection with line surveillance (DIP 3 ON)

The system is operated with a smoke switch stub (several smoke switches) and without an external manual release button. A line surveillance unit with magnet is installed according to DIN EN 14637. DIP switch 3 must be set to ON. The manual button must be simulated by an AM 142.

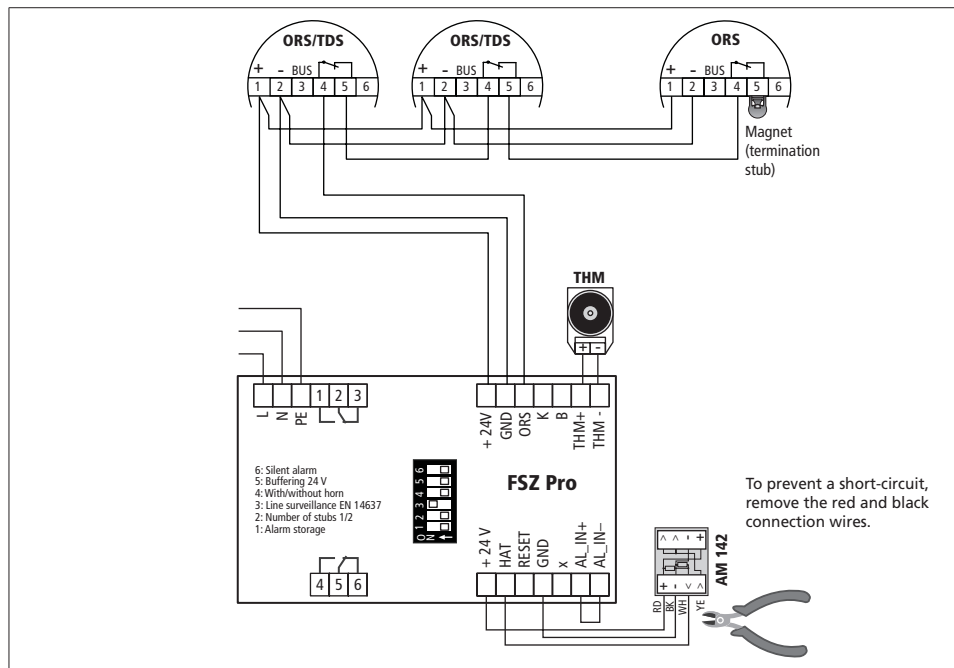


Fig. 8: Example connection according to DIN EN 14637 or DIBt with line surveillance

9.6.5 Connection with line surveillance (DIP 3 ON) and two detector stubs (DIP 2 ON)

The system is operated with two smoke switch stubs and with an external manual button. A line surveillance unit with termination module AM 142 and a magnet are installed according to DIN EN 14637. DIP switches 2 and 3 must be set to ON.

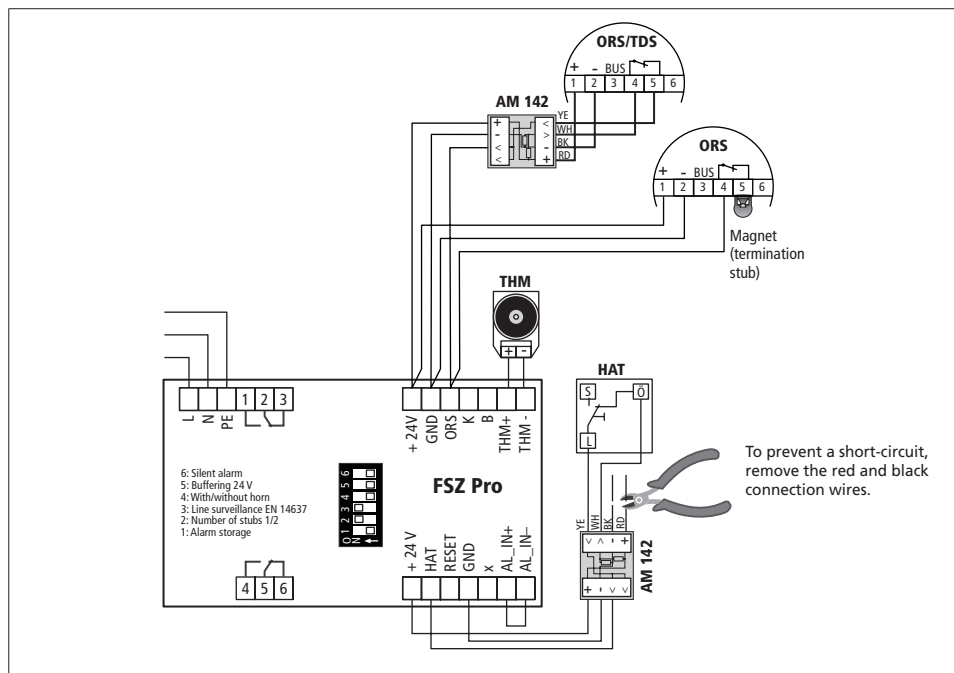


Fig. 9: Example connection according to DIN EN 14637 or DIBt with line surveillance

9.6.6 Connection without line surveillance (DIP 3 OFF - DIP 5 ON)

The system is operated with a smoke switch stub, with an external manual button, with external manual release button and a ESM Pro. In the event of a power failure, the optical/acoustic alarm device signals until the ESM Pro is discharged.

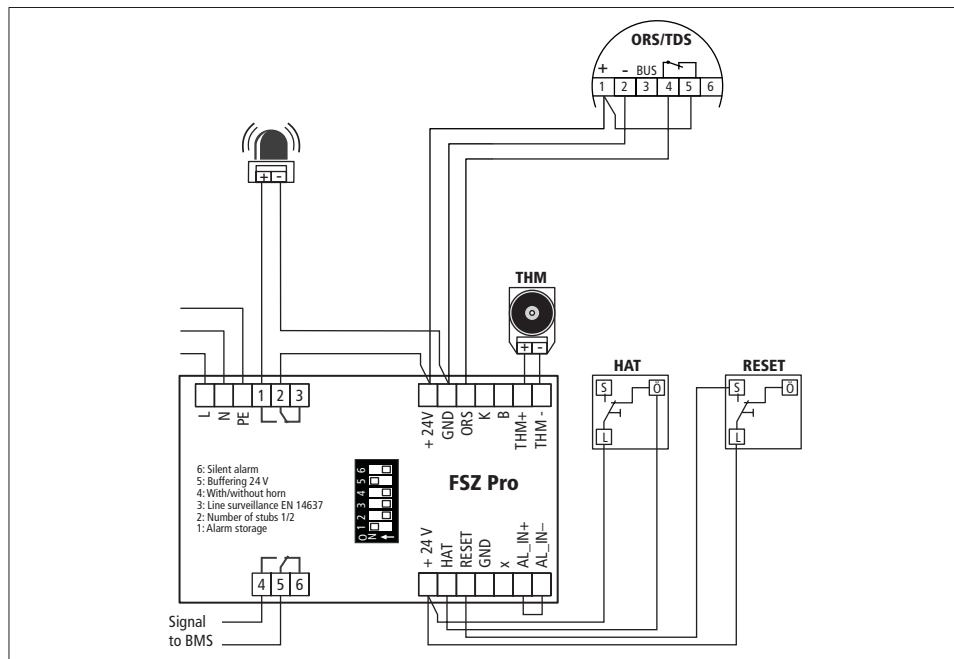


Fig. 10: Example connection according DIBt without line surveillance

9.7 Signalling of the FSZ Pro

The keypad features three LEDs which signal the status of the system.

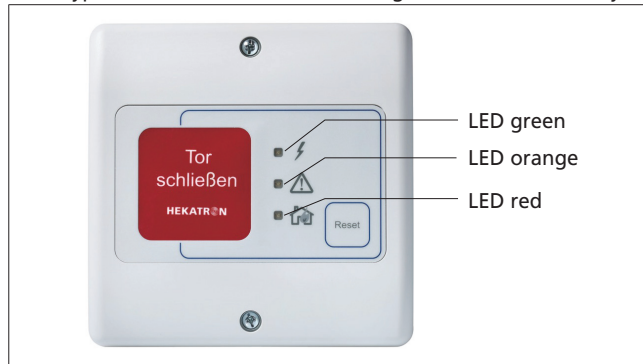


Fig. 11: FSZ Pro keypad

9.7.1 Flashing sequences

The LEDs feature different flashing sequences to indicate the different statuses.

Every flashing sequence starts with a long pulse (1.5 sec) followed by a short pause (0.5 sec), Fig. 12. If flashing sequences comprise several pulses, the long pulse includes the following short pulses (0.5 sec), Fig. 13.

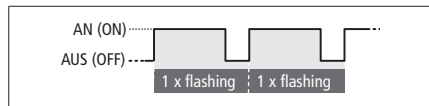


Fig. 12: Example flashing sequence:
1 x flashing

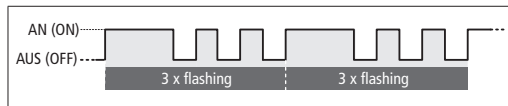


Fig. 13: Example flashing sequence:
3 x flashing

The table below shows the statuses that may be indicated and their meaning.

| LED green | LED orange | LED red | THM | Relay | Condition | Possible cause | Remedy |
|--------------|----------------|----------------|-----|-------|--|--|--|
| ON | OFF | OFF | ON | ON | Operation | | |
| Flashes | OFF | OFF | ON | ON | Operation | ESM Pro is loading (up to 15 minutes) | |
| ON | OFF | ON | OFF | OFF | Alarm Smoke switch | Automatic release or fault of termination module AM 142 (if installed). | |
| ON | OFF | Flashes 1 x | OFF | OFF | Alarm Internal manual release button | Actuation of the internal manual release button | |
| ON | OFF | Flashes 2 x | OFF | OFF | Alarm External manual release button | Actuation of the external manual release button; fault of termination module AM 142 | |
| ON | OFF | Flashes 3 x | OFF | OFF | Alarm Externer alarm input | Alarm of an external alarm device, e.g. a fire alarm system | |
| ON | ON | OFF | OFF | OFF | Fault at FSZ Pro | Fault at FSZ Pro | Replace the device |
| ON | Flashes 2 x | OFF | OFF | OFF | Fault in smoke switch stub (ORS) | System with line surveillance: Missing termination module AM 142 or wrong DIP switch setting or shortcircuit of the connection line of the ORS. System without line surveillance: Termination module was connected in the ORS | System with line surveillance: Connect the termination module AM 142 or set the DIP switches according to the circuit configuration or check and reconnect the lines. System without line surveillance: Remove the termination module and insert the bridge into the last detector. |

| LED green | LED orange | LED red | THM | Relay | Condition | Possible cause | Remedy |
|--------------|------------------|------------------|-----|-------|--|---|--|
| ON | Flashes 3 x | OFF | OFF | OFF | Fault in the manual release button loop | System with line surveillance: Missing termination module AM 142 or wrong DIP switch setting or shortcircuit of the connection line of the external HAT. System without line surveillance: Termination module built into HAT | System with line surveillance: Connect the termination module AM 142 or set the DIP switches according to the circuit configuration or check and reconnect the lines. System without line surveillance: Remove the termination module and rewire HAT. |
| ON | Flashes 4 x | OFF | OFF | OFF | Excess temperature in FSZ Pro | Ambient temperature too high | Reduce the ambient temperature, install cooling if necessary |
| ON | Flashes 5 x | OFF | OFF | OFF | Fault in the loop of the electromagnetic door retainer | Short-circuit of the connection line of the THM | Check and reconnect the lines |
| ON | Flashes 6 x * | Flashes 6 x * | OFF | OFF | Fault Keypad | The keypad is improperly connected | Pull off the plug from the keypad and reconnect it |
| ON | Flashes 9 x | OFF | OFF | OFF | Fault Output current | Number of connected consumers too high | Recalculate the total current of the consumers and re-erect the system |
| ON | Flashes 10 x | OFF | OFF | OFF | Fault at FSZ Pro | Short-circuit of the 24-V supply | Check the wiring |

* Whether only one LED or both LEDs are flashing, depends on how the keypad is improperly connected.

10 Certificate of conformity

The contract firm which has installed the hold-open device must provide a declaration of the conformity of the design type with the general building type approval for each construction project. It must be in writing and must also contain at least the following information:

- Z-No. of the building type approval used
- Designation of the object of the general building type approval
- Name and address of the contract firm
- Designation of the building object
- Date of construction/completion
- Place and date of issue of the declaration and signature of the person responsible

The certificate of conformity must be handed over to the client for any necessary forwarding to the responsible building supervisory authority.

11 Commissioning and acceptance

11.1 Acceptance testing according building type approval

After a hold-open system has been installed ready for operation at the place of use, its proper function and installation according to instructions must be verified in an acceptance test.

The applicant for the general building type approval must point out that this test must be performed. The test must be initiated by the owner/operator.

The acceptance test of hold-open systems at fire barriers may only be carried out by qualified personnel of the applicant for the general building type approval or by qualified personnel authorised by said applicant or by qualified personnel of a testing centre accredited by the DIBt (German Institute for Structural Engineering) in the course of the general building type approval procedure.

The acceptance test must at least include the following items:

1. It must be verified that the built-in devices and device combinations of the hold-open system correspond to the devices and device combinations specified in the general building type approval.
2. It must be verified that the labelling of the built-in devices and device combinations corresponds to the labelling specified in the respective general building approval or standard.
3. The cooperation of all devices and device combinations must be verified according to the general building type approval, wherein the devices must be triggered both by simulating the characteristic fire value underlying the functional principle of the detectors and by hand.
4. It must be verified that the closure is enabled for self-closing as soon as the hold-open system is no longer functional (e.g. due to removal of a detector or failure of the energy supply).

After successful acceptance testing, a 105 mm x 52 mm sign with the inscription

hold-open system

general building type-approval number

acceptance by

(Company logo as well as month and year of acceptance)

to be supplied by the applicant for this general design approval shall be affixed to the wall by the operator in the immediate vicinity of the closure, permanently.



Fig. 14:

A certificate of successful acceptance testing shall be issued to the operator; it shall be kept by the operator.

11.2 Maintenance instructions

The applicant for the general building type approval must ensure that written maintenance instructions are included in the delivery of the respective design variant of the hold-open system (according to the devices and device combinations used). The maintenance instructions must clearly specify the activities to be carried out to ensure that the built-in hold-open system fulfils its tasks even after a long period of use.

11.3 Monthly functional test

(Extract from the general building inspectorate approvals)

It is the obligation of the owner/operator to keep the hold-open system operational at any time and to inspect the installation for correct functioning at intervals of no more than one month. If twelve functional tests that have been successively carried out at one-month intervals do not show any functional defects, the hold-open system only has to be inspected at 3-month intervals. If the quarterly functional tests show a functional defect, operability must be restored immediately and then verified by at least three successive monthly functional tests.

For the measures to be taken for testing, please refer to Section 6.1 of the DIN 14677 standard. After an adequate instruction this functional test can be carried out by any person on their own responsibility - special qualification are not required. Scope, results and time of the monthly respectively quarterly functional test must be recorded. These records must be stored by the owner/operator.

11.4 Annual testing and maintenance

Moreover, the owner/operator is obliged to carry out a test of the hold-open system for proper and trouble-free cooperation of all devices and take maintenance measures at intervals of no more than twelve months or have such tests carried out and maintenance measures taken by others. For the measures to be taken during the annual testing and maintenance work, please refer to Section 6.1 of the DIN 14677 standard. This annual test and the maintenance measures must only be carried out by an expert or a specially qualified person.

Scope, results and time of the annual test and maintenance must be recorded. These records must be stored by the owner/operator.

11.5 Functional test

The functional test of a hold-open system comprises the following checks:

- a) Manual release (manual release button or, if allowed, by manually pushing the off button)
- b) Release of the hold-open system by testing the fire detectors using the test procedures defined by the manufacturer of the fire detectors (e.g. smoke detectors by means of smoke detector testing device or heat detectors by means of heat detector testing device). Where hold-open systems of construction type 2 are concerned, it must be ensured that the only intended use of the fire detectors to be tested is controlling the particular hold-open system.
- c) Restoration of the fire detectors from the alarm state.
- d) Check whether there are environmental effects which affect the proper functioning of the installed hold-open system.
- e) Check whether the use in the immediate vicinity of the hold-open system affects the latter negatively (e. g. occurrence of dust or water vapour).
- f) Check whether the proper functioning of the hold-open system is negatively affected by structural modifications and/or interaction with other trades in the immediate vicinity of the hold-open system (e. g. subsequent installation of intermediate ceilings) and whether the position of the fire detectors complies with the directive of the DIBt (FeststellanlagenRL) and the type approval.
- g) Check whether the fire barrier and/or the smoke protection closure are released for automatic closing after triggering.

11.6 Maintenance

The maintenance of the hold-open system must comprise the elements of a functional test and, additionally, the following elements:

- a) Check for compliance with the documentation and the general building type approval;
- b) Cleaning of the functionally relevant components of the hold-open system, as far as contamination can lead to impairment;
- c) Preventive replacement of components of the hold-open system according to the manufacturer's specifications (e. g. fire detectors, accumulators and/or batteries);
- d) Check whether the hold-open system is triggered in the event of a power failure;
- e) Check whether the hold-open system triggers in case a fire detector is removed.

11.7 Obligatory documentation requirement

The functional tests that have been carried out must be documented (scope, result and date/time) and made available for the owner/operator.

For documenting the test and maintenance, we offer a commissioning and maintenance set (IW Set RS, part no. 7001949) which meets the requirements of DIBt and DIN 14677.

12 Annex

12.1 Order data

| | |
|---|------------------|
| FSZ Pro | 31-5400003-01-xx |
| ESM Pro | 31-5400004-01-xx |
| Accessories kit | 31-4100010-02-xx |
| Termination module 142 (AM 142) | 31-5700002-01-xx |
| Magnet line surveillance QUP 10 | 31-4100015-01-xx |
| Servicing and maintenance set IW Set RS | 7001949 |
| Slide-in unit FSZ QUP 10, english | 31-6800001-01-xx |
| Slide-in unit FSZ QUP 10, french | 31-6800001-02-xx |
| Slide-in unit FSZ QUP 10, russian | 31-6800001-03-xx |

12.2 Drilling template

See page 45.

12.3 Technical support and application support

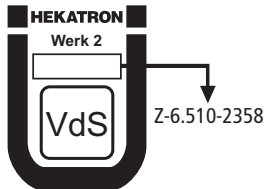
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Index

A

| | |
|--------------------------------------|----|
| Acceptance..... | 36 |
| Acceptance testing..... | 36 |
| Alarm storage – DIP 1..... | 20 |
| Annual testing and maintenance | 38 |
| Application class..... | 25 |

B

| | |
|------------------------------|----|
| Buffering 24 V | 10 |
| Building type approval | 36 |

C

| | |
|--------------------------------|----|
| Cable gland kit..... | 6 |
| Classification | 25 |
| Commissioning..... | 36 |
| Connection configurations..... | 26 |
| Connection terminals..... | 16 |
| Corrosion resistance..... | 25 |
| Current requirements | 10 |

D

| | |
|------------------------|----|
| DIN EN 14637 | 20 |
| DIP switches..... | 20 |
| Door type | 25 |
| Drilling template..... | 41 |

E

| | |
|------------------------------|----|
| Electrical Installation..... | 14 |
|------------------------------|----|

F

| | |
|-----------------------------|----|
| Flashing sequences | 32 |
| FSZ Pro | 7 |
| FSZ Pro – applications..... | 13 |
| Functional test..... | 39 |

G

| | |
|----------------------------------|---|
| General safety information | 5 |
|----------------------------------|---|

H

| | |
|------------------------------|----|
| Hold-open control unit | 7 |
| Horn | 7 |
| Horn OFF..... | 21 |

I

| | |
|------------------------------|----|
| Installing the FSZ Pro | 12 |
| IW Set..... | 40 |

L

| | |
|-------------------------|----|
| LED | 33 |
| Line length | 15 |
| Line surveillance | 21 |

M

| | |
|--------------------------------|----|
| Maintenance | 40 |
| Maintenance instructions | 37 |
| Manual release button | 7 |
| Monthly functional test | 38 |

O

| | |
|--------------------------------|----|
| Obligatory documentation | 40 |
| Order data..... | 41 |
| Output current..... | 7 |

P

| | |
|-------------------------------|----|
| Power supply | 7 |
| Power supply connection | 15 |
| Product description | 7 |

R

| | |
|-------------------|---|
| Reset button..... | 7 |
|-------------------|---|

S

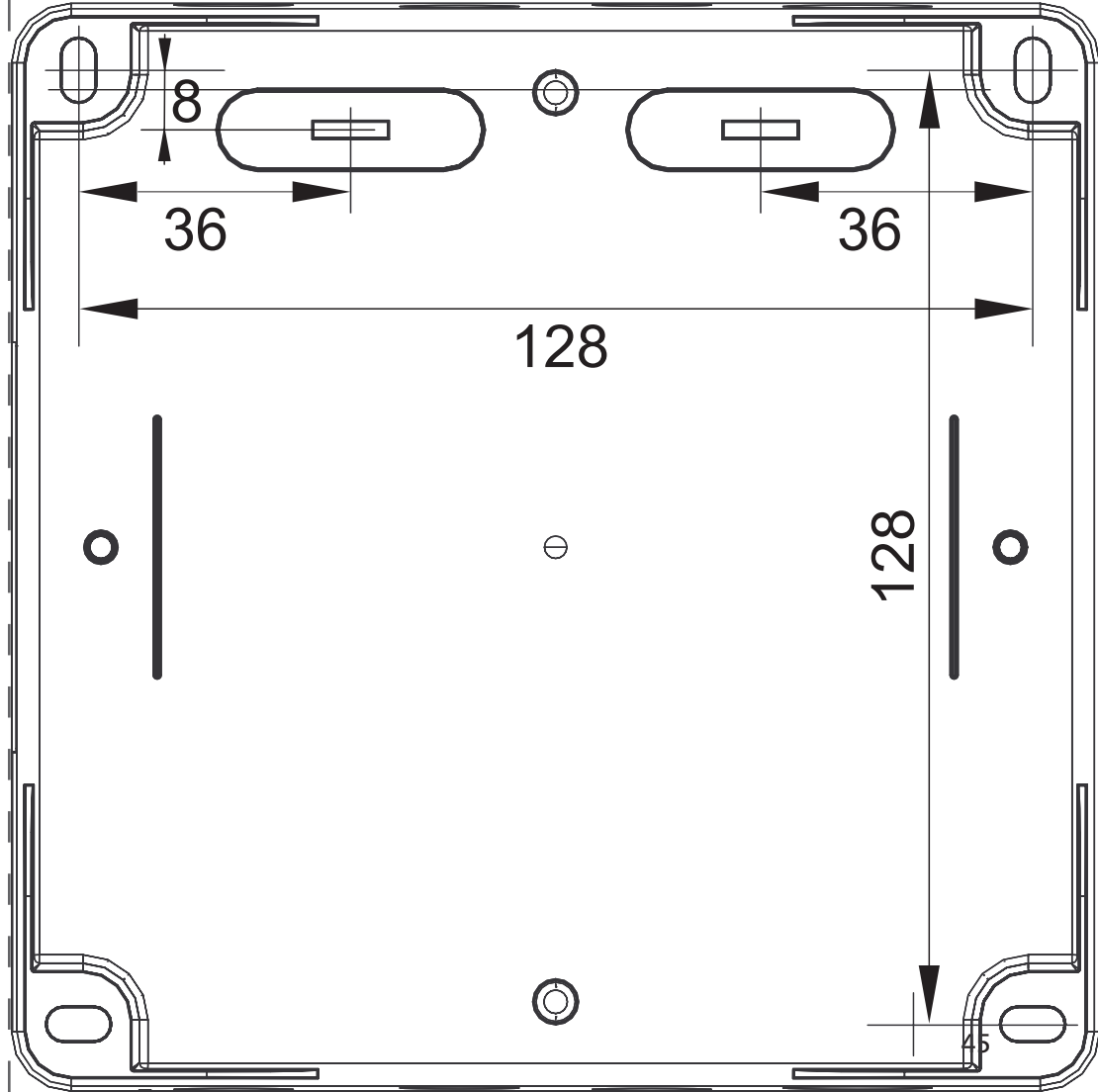
| | |
|---|----|
| Scope of delivery..... | 6 |
| Signalling | 32 |
| Silent alarm | 24 |
| Silent closure..... | 7 |
| Slide-in unit..... | 6 |
| Stress test of the hold-open device | 25 |
| Stubs | 21 |

T

| | |
|---------------------------------|----|
| Technical data | 8 |
| Technical support..... | 42 |
| Terminal assignment | 16 |
| Termination module AM 142 | 19 |

W

| | |
|----------------|---|
| Warranty | 6 |
|----------------|---|



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