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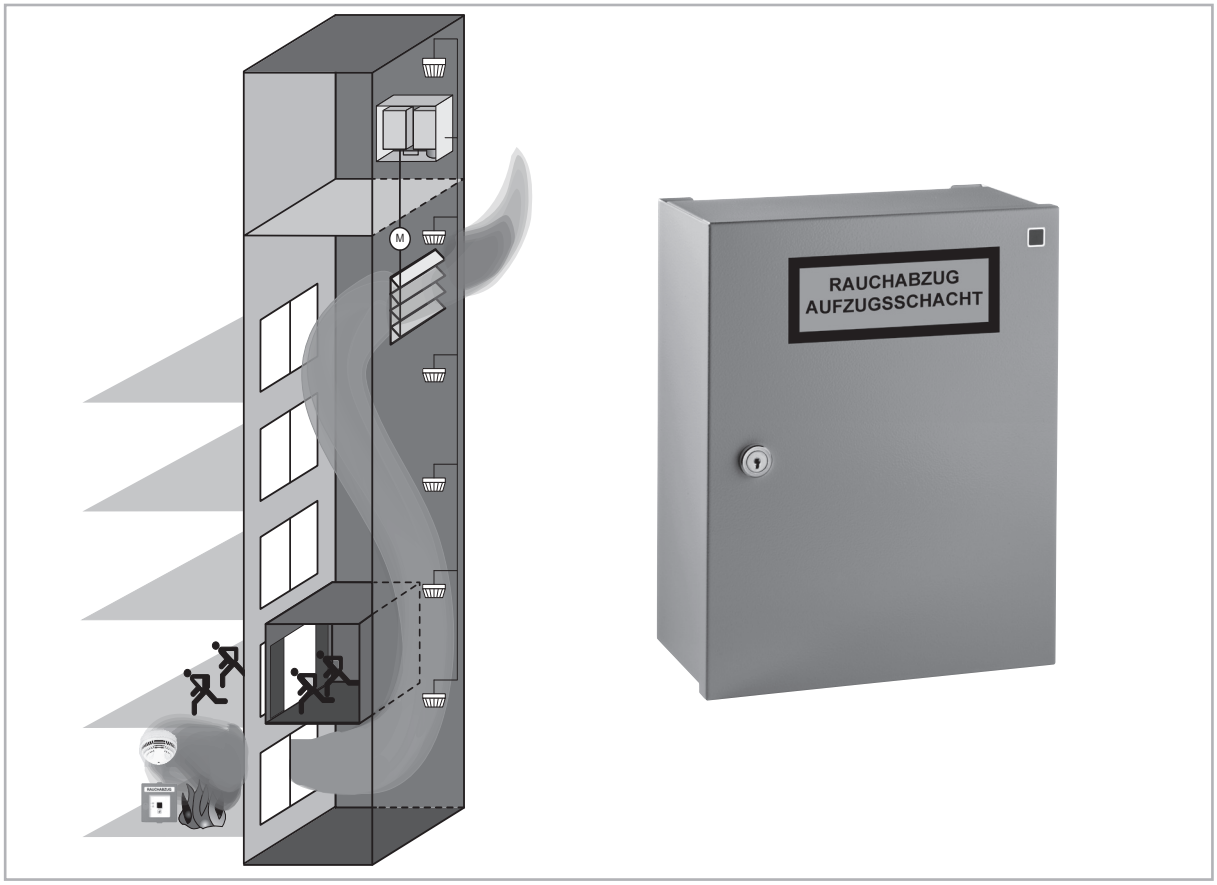
Instructions for Installation, Operation and Maintenance

SYSTEM LIFT-SMOKE-FREE

Fire detection by smoke detector



with Control Unit LSF 7000

Building product and design for smoke removal from elevator shafts

„General building inspection approval“ (abZ)

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Contents

Abbreviations

Index of abbreviations	
The following abbreviations are used throughout these instructions. All units of measurement in the instructions are in mm, unless otherwise stated. General tolerances according to DIN ISO 2768-m.	
aP	Surface mounted
WxHxD	Width x Height x Depth
COM	Common connection
DIN	German Institute for Standardisation
EN	European Standard
FACU	Fire alarm control unit
FAS	Fire alarm system
IN	Input
NRWG	Natural smoke and heat exhaust ventilation
OUT	Output
PS	Power supply
RAL	Central European Colour Standard
RWA	Smoke and heat exhaust
uP	Flush Mounting

Scale Units	
°C	Degrees Celcius
A	Ampere
Ah	Ampere hour
kg	Kilogramme
m	Metre
min	Minutes
mm	Millimetres
N	Newton
s	Seconds
Stck. (Pcs.)	Pieces
V	Volt
VE (PU)	Packaging Unit
Vpp	Residual Ripple (Voltage peak-to-peak)
W	Watt
Ω / k Ω	Ohm / Kilo-Ohm

General Symbols	
AC	Alternating Current (50Hz / 60Hz)
DC	Direct Current
I	Electric Current
L	Length
ME	Module Space Unit (1 ME = 23 mm)
NC	Contact „closed" (normally closed)
NO	Contact „opened" (normally opened)
P	Electric Power
R	Electrical Resistance
U	Electric voltage
Um	Change-over switch

Colour abbreviation according to IEC 60757					
BK	black	GY	grey	VT	violet
BN	brown	OG	orange	WH	white
BU	blue	PK	pink	YE	yellow
GN	green	RD	red		

Warning and Safety Symbols in these Instructions:

The symbols used in the instructions must be strictly observed and have the following meanings:

⚠ DANGER Failure to comply with these warnings may result in permanent injury or death.

⚠ WARNING Failure to comply with these warnings may result in permanent injury or death.

⚠ CAUTION Failure to comply with these warnings may result in minor or moderate (reversible) injuries.

NOTE Failure to comply with these notes may result in property damage.

Useful Note
for optimal installation.

Note regarding system configuration
using the free software of the Control Unit manufacturer (USB connection).

Caution / Warning
Danger from electric current.

Attention / Warning
Risk of damage / destruction of Control Units, drives and / or windows.

Attention / Warning
Risk of damage to / destruction of drives and / or windows.

Target Group

These instructions are intended for qualified electricians and skilled operators of systems for natural smoke ventilation (NRA / RWA) systems and natural ventilation via windows, who are knowledgeable of operating modes and remaining risks of the system.

NOTE

Despite the greatest possible care, no liability can be accepted for the content of this publication. All information given is not to be considered as assured properties according to §434 BGB.

⚠ WARNING

The installer of the **LIFT-SMOKE-FREE** or smoke exhaustion from lift shafts must hand over these instructions to the end user after installation and commissioning. The end user must keep these instructions in a safe place and use them when necessary.

⚠ WARNING

This system is not intended for use by persons (including children) with limited physical, sensory or mental abilities, or lack of experience and/or knowledge.

Intended Use

Area of Application / Scope of Application

The **LIFT-SMOKE-FREE** elevator shaft smoke exhaustion system is used for the exhaustion of smoke from elevator shafts inside buildings and for ventilation. The main task of the system and its components is the removal of hot smoke and fumes in the event of a fire, therefore saving human lives and protecting the property. Furthermore, the system can be used for ventilation purposes in the elevator shaft.

As the manufacturer, we are fully aware of our duty and responsibility regarding the development, production and marketing of safety-related systems and consistently implement them. Ultimately, however, we have no direct influence on the usage of our products. We therefore point to the following as a precaution:

- For the manufacture and use of the **LIFT-SMOKE-FREE** elevator shaft exhaustion system with the VdS approved Control Unit **LSF 7000**, **AUMÜLLER** has a certificate of suitability under building law in the form of a combined "general building supervision approval" (abZ), issued by the German Institute for Building Technology (DIBt).
- Only components and functions that are covered by the combined abZ may be used in the assembly and configuration of the system.
- The installer of the **LIFT-SMOKE-FREE** elevator shaft smoke exhaustion system must issue an installation certificate and a declaration of conformity of the system with the requirements of the abZ.
- If functions of the **LIFT-SMOKE-FREE** elevator shaft smoke exhaustion system are connected to the Control Unit of the elevator, a function test of the lift system must be carried out and documented by a qualified person in accordance with the Ordinance on Industrial Health and Safety.

NOTE

We recommend exclusively using components from **AUMÜLLER** as their compatibility is carefully checked at the factory and they are covered by the abZ.
AUMÜLLER accepts no responsibility for the system compatible operation of third party external components. The use of applications and components other than those explicitly stated in these instructions require express written consent from **AUMÜLLER**. The use of applications and components not specifically authorised by **AUMÜLLER** are also considered non-compliant, even if their proper functioning can be verified during commissioning (e.g. by acceptance under building law).

Safety Instructions

⚠ WARNING

It is important to follow these instructions for the safety of all persons. These instructions should be stored carefully for the entire life cycle of the products.

Danger of crushing or entrapment! Windows operated by electric can close automatically!
The compressive force is sufficient to crush fingers when careless.

Area of Application

The system components must be used exclusively in accordance with their intended use. For further applications, please contact the manufacturer or an authorised dealer.

Installation

These instructions are aimed at experts and safety-conscious and/or qualified personnel with knowledge of the electrical and mechanical installation of drives and control systems.

NOTE

When mounting and connecting the system components, the product specific assembly and installation instructions, as well as the connection diagram of the **LSF 7000** Control Unit, must be observed.

Mounting Material

The required fixing materials must be matched to the load that occurs.

Crush and Shear Points

In order to prevent injury, **Crush and Shear Points** between movable and fixed components of windows, louvre windows and skylights **up to an installation height of 2.5 metres above the floor**, must be protected against **pinching** by suitable measures. For example, this can be achieved by means of contact or non-contact anti-trap safety devices that bring the movement to a standstill when touched or interrupted by a person. A warning sign on the opening element must clearly indicate this.

Routing Cables and Electrical Connection

The laying or installation of electric cables and connections may only occur through approved specialist companies. Never operate the drives, Control Units, operating elements and sensors on operating voltages and connections contrary to the specifications of the manufacturer.

NOTE

he planning and calculation of the cable network is the responsibility of of the building owner, their designated agents or the commissioned installer and must be carried out in accordance with the statutory regulations.

Both installations are to observe all relevant regulations, in particular:

- VDE 0100 erection of power installations up to 1000 V
- VDE 0815 installation cables and wires
- Model Pipeline Installation Guideline (MLAR)
- Elevator Directive (ARL).

The main power line of the Control Unit must be secured separately by the customer and provided with all pole isolators. After the opening of the system housing, live components are exposed. The system must be disconnected from the mains supply and battery voltage before any work is carried out on the Control Unit.

The types of cable, cable lengths and cross-sections are in accordance with the manufacturers' technical data. If necessary, the cable types must be agreed with the responsible local authorities and energy supply companies. Low-voltage lines (24 V DC) must be laid separately from high-voltage lines. Flexible cables may not be flush- mounted. Freely suspended cables must be equipped with tension relief devices.

Cables must be laid in such a way that they are not sheared off, twisted or bent during operation. It is recommended to carry out an insulation measurement of the line network of the system and to document it.

Clamping points must be checked for tightness of screw connections and cable ends. The accessibility of the junction boxes, terminal points and external drive controls for maintenance work must be ensured.

Commissioning, operation and maintenance
After the installation and after every change in the structure / layout, all functions must be checked by a test run. After completion of the system the end user must be instructed on all important operating steps. If necessary, they must be advised of any remaining risks or dangers. The end user is to clarify the intended use of the system and, if applicable, the safety instructions.

NOTE Post warning signs!

When correctly assembling system components, attaching them to components by the customer or connecting them to Control Units, the interfaces resulting from the mechanical and electrical performance features of the individual elements must be observed.

⚠ WARNING The information in the assembly instructions of the individual components must be observed and adhered to!
Incorect installation can lead to serious injuries!

⚠ CAUTION Other persons must be kept away from moving parts of the installation if a movable part is closing, such as a window sash which has been opened by a smoke and heat exhaustion system!

Before working on the system, it must be completely disconnected from the mains power supply and the emergency power supply (e.g. batteries) and secured against unintentional reconnection. When working in the Control Unit, the workstation must be secured against unauthorised access. It must be ensured that unauthorised persons are unable to open the Control Unit.

The assembly instructions of the system components (smoke detector, NRWG, drives, etc.) are part of the documentation of the whole system and, like the installation and operating instructions of the Control Unit, must be kept accessible to authorised specialists for the lifetime of the system.

⚠ WARNING All functions of the system must be carefully checked before releasing for operation.

NOTE All components of the system must be **freely accessible** at all times during their entire service life for maintenance and repair work!

Software terms & conditions
The Control Unit is configured at the factory for its intended use (standard configuration). The software, specially developed for this Control Unit, allows quick and easy adjustment of the factory settings to the respective requirements. In addition, the system status can be saved, recalled and printed out.

Changeable standard configurations are highlighted in these instructions. The Software is included in the delivery of the Control Unit. The functional range of this licence-free version can be extended by a fee-based licence activation.

The system requirements (see chapter „System Configuration via Software") must be checked before the installation. The „software clause for the provision of standard software as part of the delivery" of the ZVEI (Central Association of the Electrical Engineering and Electronics Industry) is considered to be legally binding upon installation.

See our homepage:
AUMÜLLER AUMATIC GmbH
(www.aumueller-gmbh.de)

The configuration software of the Control Unit largely excludes damage caused by incorrect settings. As a precautionary measure, we would like to point out that **AUMÜLLER**, as a manufacturer, cannot assume liability for damages resulting from the use of the configuration software, because **AUMÜLLER** itself has no influence on a perfect system environment or object-specific system configuration.

Therefore, we recommend the operating system and the software of the system to be adequately protected against unauthorised access (e.g. by password) and that training be attended by the manufacturer.

Spare parts
System components can only be replaced with parts from the same manufacturer. When third-party products are used, the manufacturer's liability, warranty and service are void. Only original spare parts from the manufacturer are to be used for extensions.

Environmental Conditions
The product must not be subjected to impacts or falls, nor to vibrations, moisture, aggressive vapours or other harmful environments, unless they are approved for one or more of these environmental conditions by the manufacturer.

- **Operation:**
  Ambient Temperature: -5 °C … +40°C
  Relative Humiditiy: < 90% to 20°C;
  < 50% bis 40°C;
  No formation of condensation
- **Transport / Storage:**
  Storage Temperature: 0°C … +30°C
  Relative Humidity: < 60%

Accident prevention regulations and trade association guidelines
When working on or in a building or part of a building, the specifications and instructions of the respective accident prevention regulations (UVV) and guidelines of the employers' liability insurance association (BGR / ASR) must be observed and adhered to.

Declaration of conformity
The Control Unit and system components are manufactured and tested for their respective intended use according to European guidelines. The corresponding declarations of conformity and performance of the individual components are available for the whole **Lift-Smoke-Free** system, as well as the „general building approval" (abZ) issued by the DIBt. If the use or operation of the system components deviates from their intended use or the scope of the respective approval, the approval loses its validity.

Guidelines and Standards

During the assembly and the electrical connection
it is absolutely necessary to adhere to the latest country-specific laws, ordinances, regulations and standards.

For example, these are:

State building regulations
with special construction regulations

MLAR - Model Pipeline System Guideline

Regulations of the fire protection authorities

TAB (technical connection conditions) **of Energy supply companies**

Trade association regulations, such as:
- ASR A1.6 and 1.7 (replacement for BGR 232)

Further standards and guidelines, such as:

EN 81-1 / -2 / -20 / -73	Safety rules for lifts
VDI 6017	Lift controls in case of fire
EN 60335-2-103	Safety of electrical devices
EN 12101-10 / prEN 12101-9	Smoke and heat exhaust
VDE 0833-2	Hazard detection systems Fire alarm systems
EN 14675	Fire alarm systems
DIN 4102-12	Function maintenance of Electrical cable systems
VDE 0100	Erection of power instllations up to 1000 V
EN 50441 / VDE 0815	Installation cables and Installation lines
EN 50565-1	Cables and wires
VDE 0298-3	Use of cables

Accident prevention regulations, in particular:

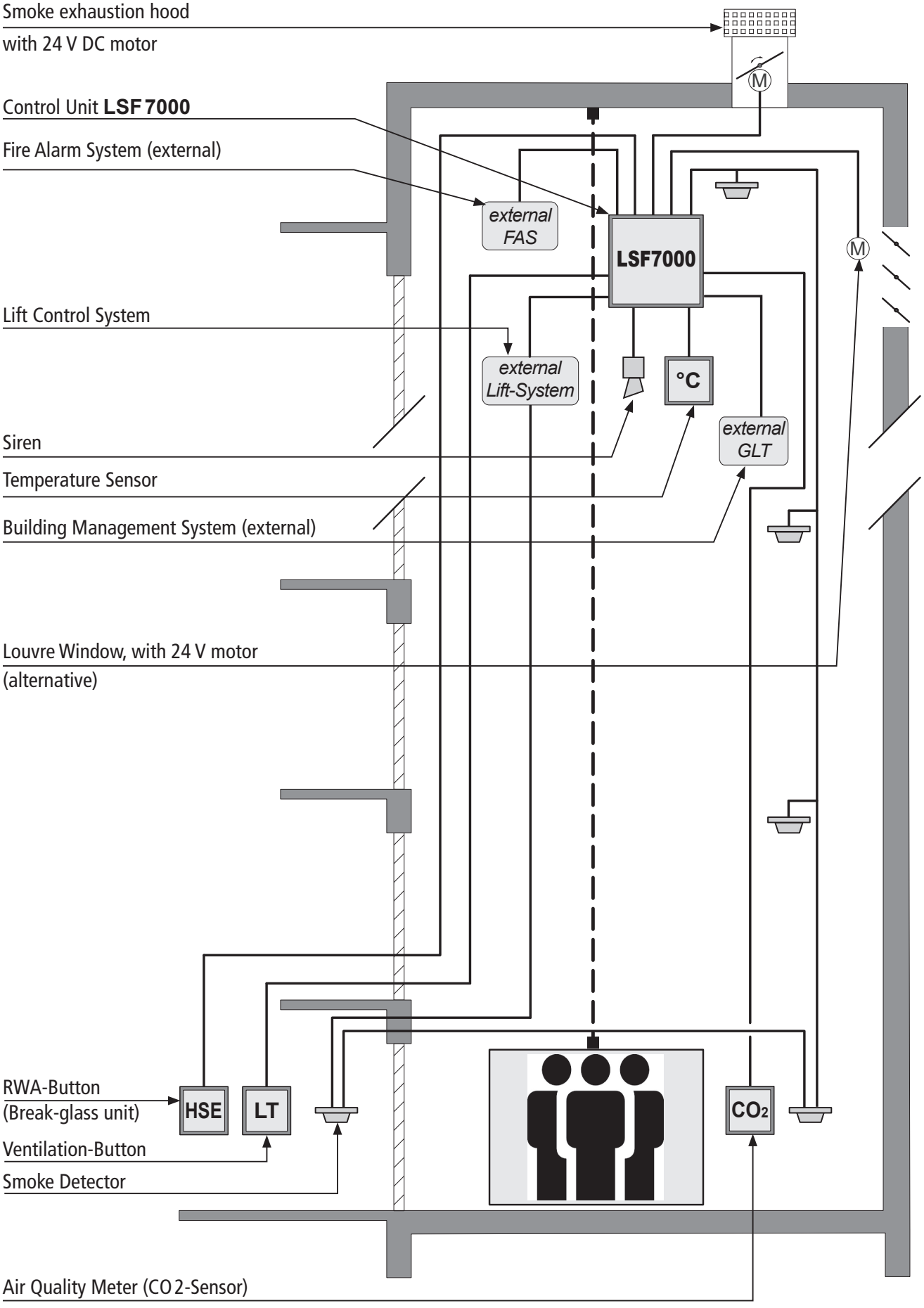
DGUV Regulation 1 (previously VBG 1)	Principles of prevention
DGUV Regulation 3 (previously VBG 4)	Electrical installation and equipment
DGUV Regulation 38 (previously BGV C22)	Accident prevention regulations for construction work
DGUV Information 209-053 (previously BGI 779)	Activities on lifts

The relevant national laws, regulations and safety provisions apply to the placing on the market, installation and commissioning outside of Germany. .

The installer is responsible for the proper assembly or commissioning as well as for the preparation of the declaration of conformity and marketing of the products in accordance with EU directives.

02

System Overview



System Description

Building Code and GEG
Elevator shafts are important construction phases which are subject to many requirements. Ventilation and smoke removal must be ensured in the event of a fire.

The most important requirements for the natural smoke exhaustion of lift shafts result from the respective state building regulations. The lift shaft must be ventilated and provided with smoke exhaustion openings. The smoke exhaustion openings must generally have a size equal to 2.5% of the floor area of the lift shaft, but at least 0.1 m².

With the introduction of the Building Energy Act (GEG), the permanently attached opening, as it is still frequently used today [Fig. 1], is no longer justifiable from an energy and legal point of view. A building must be constructed in such a way that the heat-transferring enclosure surface - including the joints - is permanently impermeable to air. sealed in accordance with the recognized rules of technology (GEG §13).

Therefore, the openings required by building law for the smoke removal and ventilation of the lift shaft can be sealed, if it is ensured that they are able to open for ventilation requirements or in the case of a fire.

Fire detection via smoke detector
The challenge is to detect fire smoke in the lift shaft accurately and largely without any false alarms. As long as the fire protection concept of the building does not provide otherwise, the lift shaft smoke detector according to DIN EN 54 Part 7 can be installed for fire detection, as shown in the example [**Fig. 2**]. With this type of design, the smoke detectors are distributed in the lift shaft in accordance with the fire protection concept or **Aumüller** project planning proposal and the requirements of "general building approval" (abZ).

On-Site fire alarm system (FAS)
A fire alarm system provided by the customer according to DIN EN 54-2 can also be used for monitoring the shaft, if, for example, in the event of an alarm, the lift shaft exhaust is activated via a smoke exhaustion system in the lift shaft [**Fig. 3**]. This application is covered by the general type approval of the **Lift-Smoke-Free** system in compliance with the applicable standards for fire alarm control panels.

Manual Alarm Activation
As well as the automatic activation, it is possible to manually activate the smoke exhaust system via the RWA button in the main access area of the lift [**Fig. 4**]. Further optional RWA buttons can be used on other levels. The RWA buttons are also used to display various alarm and operating statuses, and to reset the entire system.

Fire Control according to DIN EN 81-73
The Control Unit **LSF 7000** provides a potential-free Contact, e.g. for lift control. If the fire protection concept of the building allows it, the lift controller initiates the "evacuation run" of the lift shaft according to DIN EN 81-73 and travels to the previously determined main destination [**Fig. 5**]. his is usually the main access area. Here the users can leave the lift shaft. The lift control system prevents further movements until the lift is released.

Extended Static Fire Control (VDI 6017)
The system allows for the optional extended static fire control according to VDI 6017, whereby a fire in the area of the main destination stop is detected by an optional smoke detector and reported to the lift controller. The control system carries out the evacuation run tot he Break-glass unit destination stop. Here, the users can leave the shaft [**Fig. 6**]. The lift control system prevents further trips until the lift is released.

Vertical Smoke Exhaustion via Louvre Windows
The vertically installed louvre window is a tested NRWG according to DIN EN 1210-2. It is normally closed and is only moved to the open position by a 24 V DC motor in the event of a fire, or if ventilation is required [**Fig. 7**]. Aside from the two standard sizes, special sizes are also available on request. For renovations, assembly mounting frames are available for subsequent installation of louvre windows.

Horizontal Smoke Exhaustion via Ventilation and Smoke Exhaust Hood
A stainless teel exhaust hood made from stainless steel is available for the smoke exhaustion via the roof. This is suitable if the installation of a vertical louvre window is not possible for structural reasons [**Fig. 8**]. A thermally insulated louvre window with a 24 V DC drive is integrated into the upstand of the ventilation and smoke exhaustion hood as an NRWG according to DIN EN 12101-2. The drive does not protrude into the safety area of the lift shaft. The hood has insect protection, ensures smoke exhaustion regardless of wind direction and is rainproof even when open.

External Controls
Optional visual or audible alarms can be connected directly to the Control Unit to alert residents of the building [**Fig. 9**]. It is possible for the connection with other fire protection systems, e.g. fire alarm systems.

02

Manual and Automatic Ventilation

For the ventilation of the lift shaft, the Control Unit can be controlled by authorised persons via a manual ventilation key switch [**Fig. 10**]. The louvre window or the ventilation and smoke exhaustion hood are opened or closed manually as required. The ventilation function can also be controlled by other building control systems or by thermostats or sensors installed in the shaft. To ensure the air quality in the lift shaft, the smoke exhaustion flap can be opened via an optional CO2 air quality sensor if necessary.

NOTE

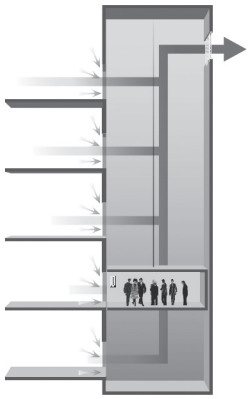
The ventilation switch inputs of the **LSF 7000** are not intended as interfaces for devices for the detection and evaluation of the shaft movement or the presence of persons in the lift shaft.

Approvals (abZ /aBG)

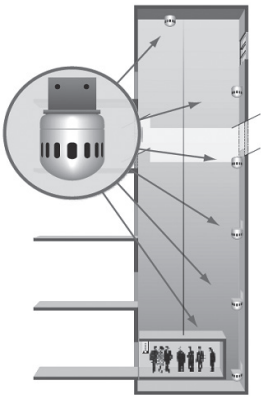
The use of a lift smoke exhaustion system, which normally keeps the „smoke exhaustion opening" of the lift shaft closed for the purpose of energy saving, as required by building law, requires proof of use in accordance with the model building regulations (MBO). The **LIFE-SMOKE-FREE** system possesses this proof in the form of a combined „general building supervision approval" (abZ) with a „general type approval" (aBG).

Example Illustrations

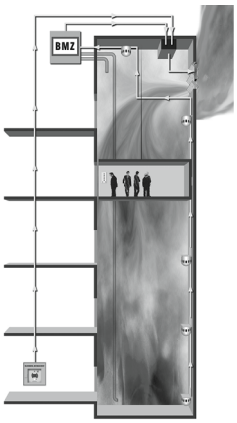
Picture 1



Picture 2



Picture 3



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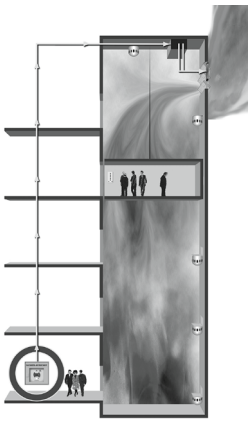
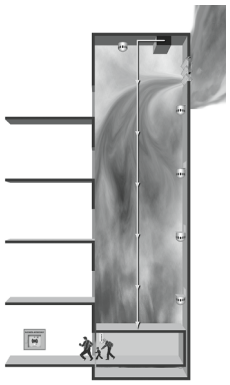
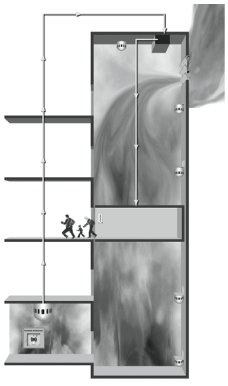


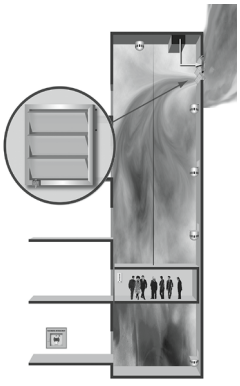
Picture 5



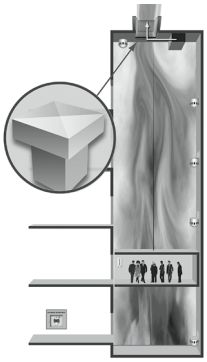
Picture 6



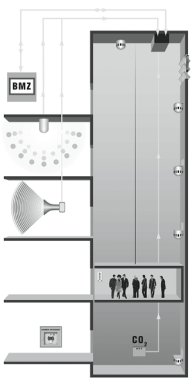
Picture 7



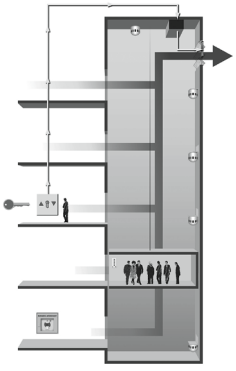
Picture 8



Picture 9



Picture 10



Mark of Conformity

In Germany, the "general building supervision approval" is issued for such building products within the range of application of the building regulations of the federal states for which there are no generally recognised rules of technology, in particular EN or DIN standards, or deviate substantially from them.

„General building type approval" (aBG) is issued for system installation whereby several building products are combined to form a building structure.

Building products or building types that have been issued with an abZ or aBG by the German Institute for Building Technology (DIBt) may be provided with a mark of conformity (Ü mark) by the manufacturer as proof of usability under building law **Aumüller** has received a combination of abZ / aBG for the **Lift-Smoke-Free** System.

The usability of the building products will be regulated in the building codes of the federal states (LBO). Proof of usability for building products is optional:

- A declaration of performance and CE-marking according to the Construction Products Regulation.
- A general technical approval (abZ) or general type approval (aBG) and Declaration of Conformity.
- An approval of the building supervisory authorities in individual cases (ZiE).

The procedure for issuing and maintaining a combination abZ / aBG is specified by DIBt. It includes, among other things, the testing of the building products, the initial and further bi-annual external monitoring of the manufacturer's production processes by a monitoring body appointed and certified by DIBt (VdS Loss Prevention). After successful testing, the certificate of conformity is provided.

The certificates of conformity are available to download from the homepage of the **Aumüller** website. **The year of manufacture is coded in the QS number of the respective device and can be requested from the manufacturer at any time.**

The cross-sectional area of the smoke exhaustion unit is indicated on a sticker.

The Declaration of Conformity documents as a visible sign that the use of the building product **Lift-Smoke-Free** is permitted in the respective safety relevant area.

Control Unit **LSF 7000**

Description / Technical Data

The **LSF 7000** Control Unit with integrated energy supply according to DIN EN 12101-10 is the core element of the elevator shaft smoke exhaustion system **Lift-Smoke-Free**.

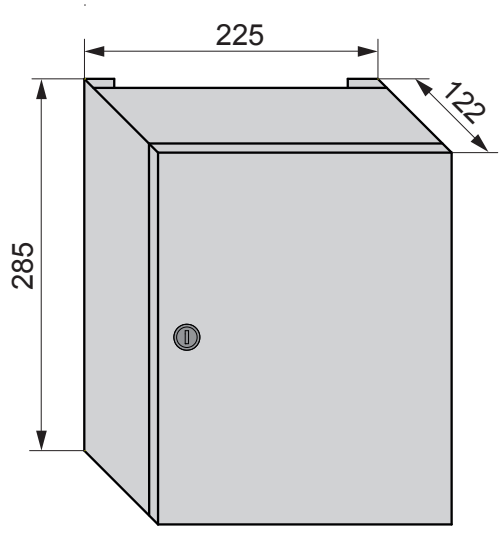
It receives the commands from the connected manual or automatic sensors, processes them and controls the electric drives of the smoke exhaustion systems in case of fire and for ventilation purposes.

The Control Unit and its functions in the **Lift-Smoke-Free** System have been tested by VdS. The VdS also carries out the regular production monitoring prescribed in the abZ / aBG. The declaration of performance of the energy supply and the abZ / aBG of the **Lift-Smoke-Free** System serve as proof of usability under building law.

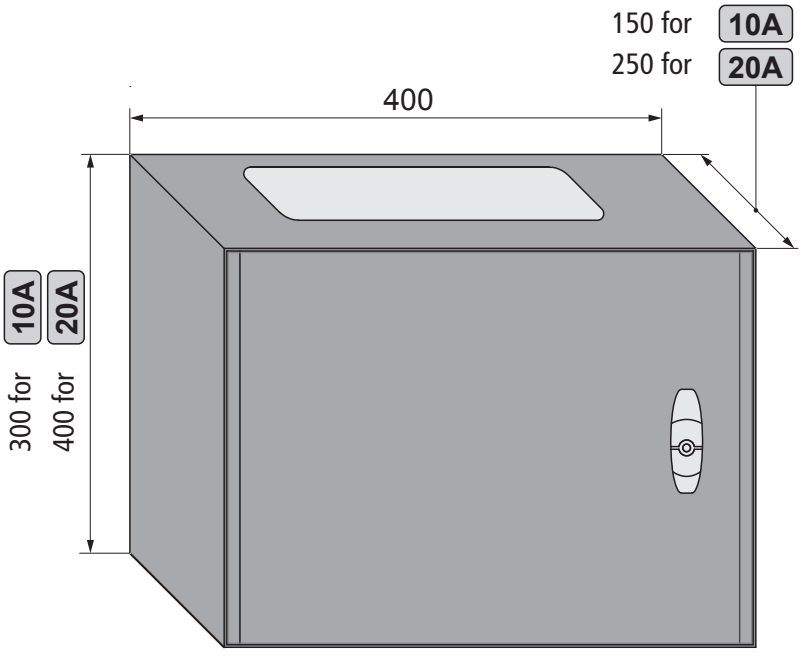
The Control Unit is available in the following versions:				
Description	Part Number	RWA group	Ventilation group	2x Batteries
LSF 7000 2,5 A - 0101	511220	1	1	12 V / 2,3 Ah
LSF 7000 5 A - 0101	511221	1	1	12 V / 2,3 Ah
LSF 7000 10 A - 0101	511223	1	1	12 V / 7 Ah
LSF 7000 10 A - 0102	511224	1	2	12 V / 7 Ah
LSF 7000 20 A - 0102	511225	1	2	12 V / 7 Ah

Control Unit Dimensions

LSF 7000 2,5A and LSF 7000-5A

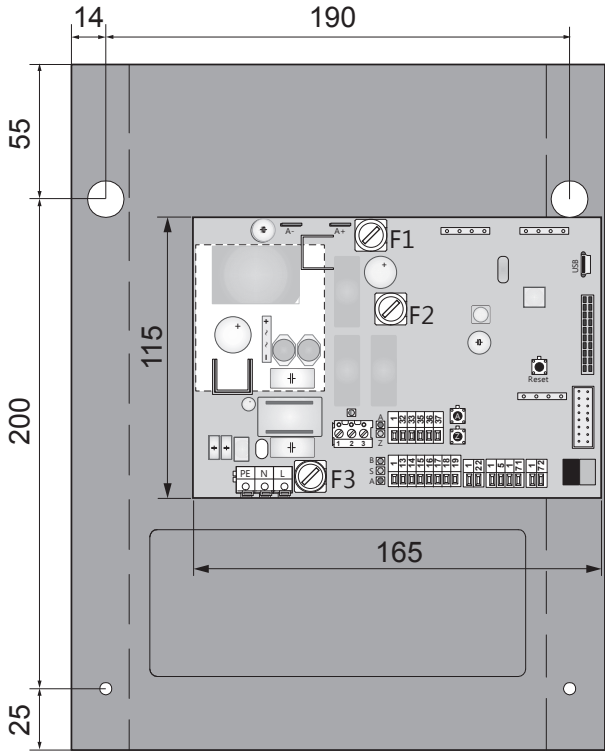


LSF 7000-10A and LSF 7000-20A

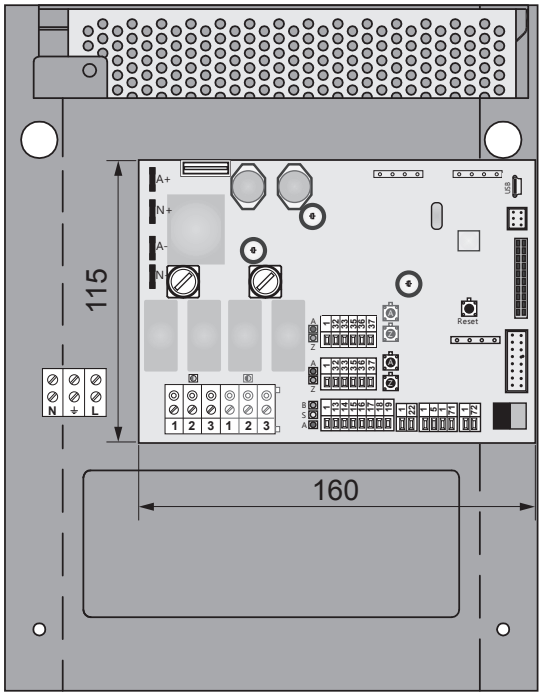


Drilling pattern for mounting the Control Units

LSF 7000-2,5A

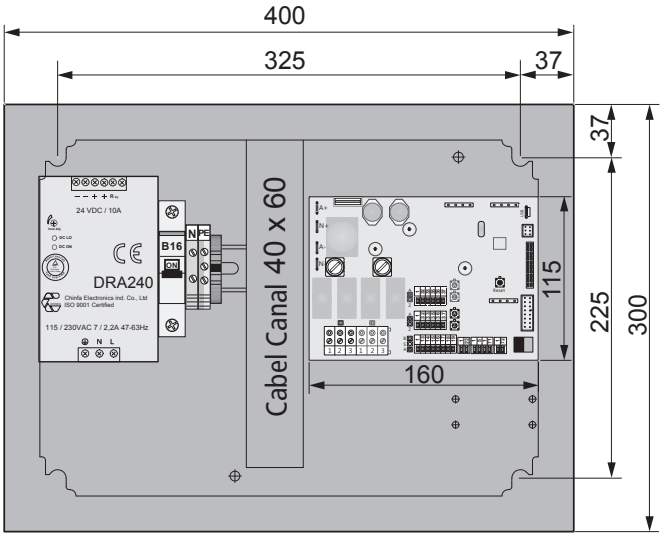


LSF 7000-5A

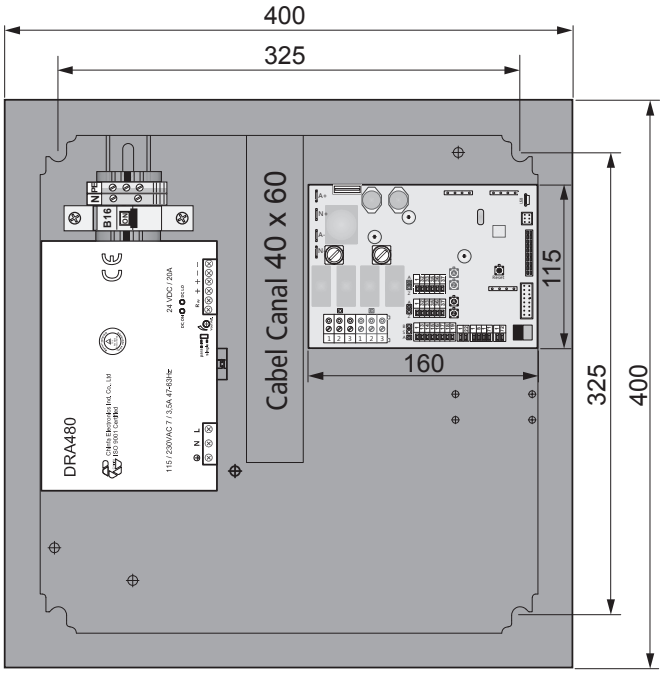


Drilling pattern for mounting the Control Units

LSF 7000-10A



LSF 7000-20A



Basic Functions of the **LSF 7000** Control Unit

- Control of electromotive window drives for smoke and heat exhaustion in case of a fire and for natural ventilation.
- Evaluation of activation signals from manual and automatic smoke detectors and fire alarm systems.
- Emergency power supply by rechargeable batteries to maintain the safety functions in the event of a fire when the mains supply is interrupted.
- Monitoring the power supply of all important connections for faults.
- Signal transmission of all important operating states for external evaluation (may require additional components).
- Convenient configuration and parameterisation of the controller via PC software.
- If required, integration into external data bus systems via additional modules.

Electrical Data and Connection Values	
Primary Power Supply:	195…..253 V AC
Frequency:	50….60 Hz
Nominal Current (secondary) / Power Consumption (primary):	Version 2,5 A: **– 2,5 A / 0,3 A** Version 5,0 A: **– 5 A / 0,6 A** Version 10 A: **– 10 A / 1,2 A** Version 20 A: **– 20 A / 2,5 A**
Power Output (short time:	Nominal current max. 30 % ED (depending on version)
Continuous Power Consumption:	max. 30 % of the nominal current
Output Voltage of the Drive:	24 V DC (20….28 V DC)
Residual Ripples:	max. 0,5 Vpp
Quantity of Detectors (manual / automatic):	10 pieces per detector line
Line Output:	18….26 V (Detector voltage)
Battery Voltage:	2 x 12 V
Battery Nominal Capacity:	Version 2,5 A: **– 2,5 A / 2,3 Ah** Version 5,0 A: **– 5 A / 2,3 Ah** Version 10 A: **– 10 A / 7 Ah** Version 20 A: **– 20 A / 7 Ah**

The internal emergency power supply (batteries) of the Control Unit ensures that the connected drives can be moved at least 3 times from end position to end position after max. 72 hours of power failure.

Ambient Temperature (Operation)	
Ambient temperature range:	-5…+40 °C (EN 12101 class 1)
Max. relative air humidity:	75 % (Average value over entire service life) 90 % (for max. 96 hours)
Mechanical Data	
Surface mounting housing:	Painted sheet steel in RAL 7035
Protection:	IP 30
Housing Dimensions:	See figure on previous pages

Installation of the Control Unit

The location for installation of the housing can be freely chosen, taking the cable routes into account. Installation in the shaft head is recommended.

To attach, open the housing of the Control Unit using the key supplied. Mark the fixing points at the desired installation location and drill the holes for the fixing materials used. Fix the central unit casing and ensure that it is horizontal.

Insert the cables into the central housing and connect them to the terminals of the control panel according to the wiring diagrams.

NOTE If a terminal is connected twice, make sure that the contact is perfect! If necessary use an additional terminal block!

Marking of the LSF-System

- **Every „LIFT-SMOKE-FREE“ System must be marked by the installer with the attached label.**
- **The missing information on the sign must be added by the installer in their own handwriting.**
- **The sign must be permanently and visibly affixed to the control centre or to the adjoining component.**

ELEVATOR SHAFT SMOKE EXHAUTION SYSTEM „LIFT-SMOKE-FREE“

For smoke removal from elevator shafts

aumüller
Z-78.12-206
VdS

A_G Smoke exhaust system _____ m^2

Installer: _____

_____

DIBt Approval Number: Z-78.12-206

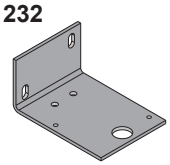
Year of Manufacture: _____

9000032260_V0.1_KW20/19

Smoke detection in Elevator Shaft

Description

The smoke detectors work according to the optical scattered light principle without radioactive compounds. They are building products tested according to DIN EN 54-7. The proof of usability under building law is the declaration of performance of the respective manufacturer and the abZ / aBG of the **LIFT-SMOKE-FREE** Systems.

Optical Smoke Detector	
Point smoke detector with base tested according to EN 54-7.	
Part.-No.: 531520 Optical smoke detector with base - for direct ceiling mounting	Picture: **531520** or **531526** 
Part.-No.: 511232 Mounting bracket for optical smoke detector for shaft wall mounting	Picture: **511232** 
Part.-No.: 531526 Optical smoke detector with base and relay - main evacuation level	

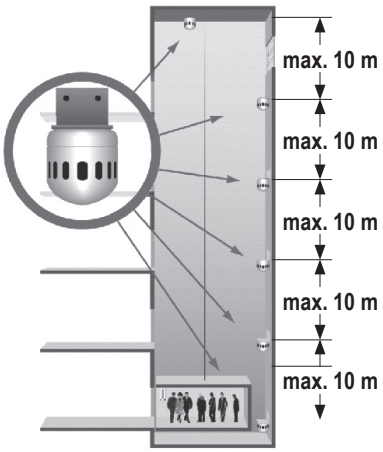
Project planning smoke detector arrangement

The primary goal of saving human lives is at the forefront of the project planning of the smoke detectors in the elevator shaft. If applicable, the requirements of the combined „general building supervision approval" (abZ) with a „general type approval" (aBG), as well as DIN VDE 0833-2 and the fire protection concept, can be met with the following project planning proposal.

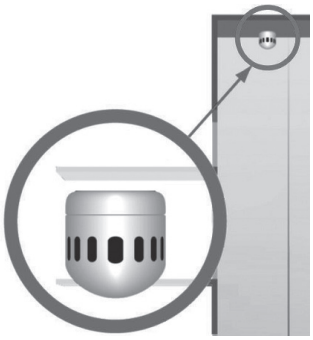
NOTE The conditions of the Fire Protection Authority are to be adhered to as a matter of principle.

The locations of the smoke detectors are to be determined according to the fire protection concept, project planning or in coordination with the site management. Please consult the manufacturer if specific problems are not dealt with in sufficient detail in the operating instructions.

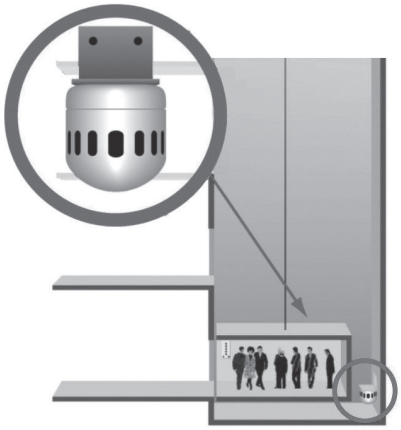
Project Planning Proposal



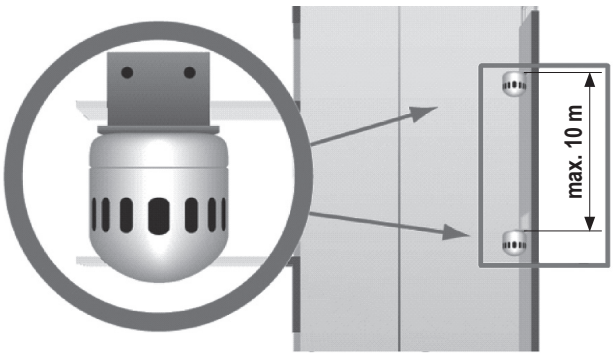
A smoke detector on the shaft ceiling without console



A smoke detector with console below the cabin floor level



For shaft heights of more than 10 metres, the distance between 2 smoke detectors must not exceed 10 metres



Smoke detector in the lift shaft
Mount the base of the smoke detector in a suitable place. Connect the cables according to wiring diagram.

Insert a line terminating resistor in the last detector of a line. Screw the detector insert into the base in a clockwise direction until it engages.

Connection of the Smoke Detector Technical Data

Technical Data

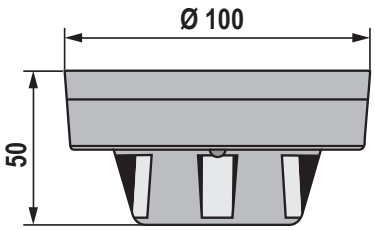
Principle:	opt. Limit indicator
Voltage Range:	9 V ... 33 V DC
Closed Current Consumption:	30 mA ... 50 mA
Temperature Range:	-20 °C ... + 60 °C
Air Humidity: :	0 % ... 90 %
Protection Rating:	IP23D
VdS Recognition:	G200017
Tested according to:	EN54-7

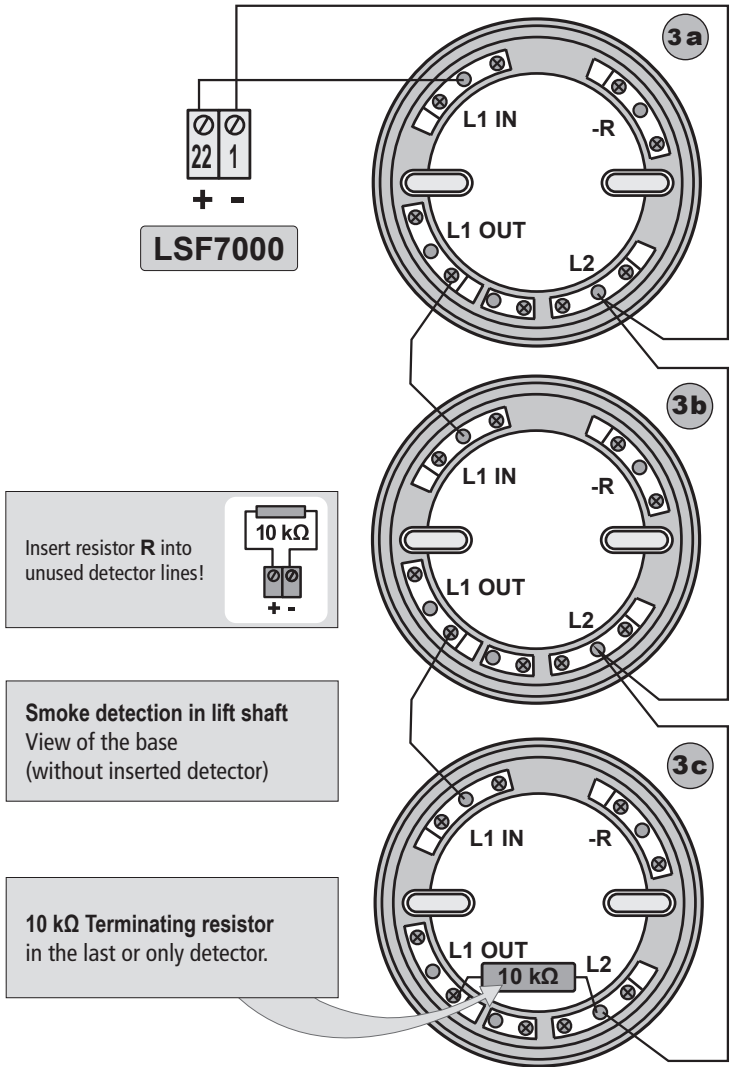
Description of the use of abbreviations:

L1 IN	=	L1 Input
L1 OUT	=	L1 Output
L2	=	Common input and output terminal
-R	=	MUST NOT BE OCCUPIED!!

(3a) = Smoke detector in shaft ceiling without console
(3b) = Smoke detector in shaft ceiling with console
(3c) = Smoke detector in shaft pit with console

Smoke detector with relay in base





Insert resistor **R** into unused detector lines!

Smoke detection in lift shaft
View of the base
(without inserted detector)

10 kΩ Terminating resistor
in the last or only detector.

LED Display on the Smoke Detector

Display		Status
red light	- permanent	Alarm activation
red blinking	- 1x per second	Check mode
yellow blinking	- every 4 seconds	Fault
yellow blinking	- 1x per second	Standby mode tracking Degree of contamination: 75 %

Important note for detector testing:
If the voltage of the detector line is interrupted by disconnecting and reconnecting, or by pressing the reset button in the control panel, the detectors react 4 minutes later by testing with test gas. The test mode is indicated by the red flashing of the display. A yellow flashing every 4 seconds indicates a fault in the detector (replace detector if necessary).

NOTE

If the LED in a smoke detector is lit, the automatic detector has triggered the alarm. The activation is carried out via the "Close Reset" button in an HSE button or via the "Reset / EMERGENCY CLOSE" in the Control Unit is reset. (see "Displays and Operating Elements").

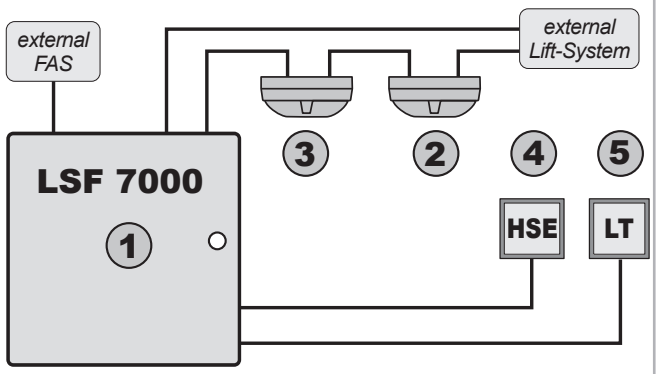
Control and Release Units

Description / Technical Data

The control and release units can be used to activate additional functions of the **Lift-Smoke-Free** System for safe smoke exhaustion and ventilation of the lift shaft as required.

Key
(1) Control Unit **LSF7000**
(2) Smoke detector (**RM**) in main destination stop
(3) Smoke detector (**RM**) (max. 10 pieces)
(4) Break-glass unit (**HSE** button) (max. 10 pieces)
(5) Ventilation Line 1 (max. 10 buttons)
External Fire Alarm System (FAS)
External Lift System

Connection: Control and Release Units in the **LSF 7000**



HSE Push Button

The **LSF 7000** Control Unit has two detector lines for the connection of automatic and manual smoke detectors or a trigger contact of a customer's FACP (Fire Alarm Control Panel). The smoke exhaustion is manually triggered and reset via main control devices (HSE buttons). Resetting is only possible if the connected smoke detectors are smoke-free or if there is no longer a FACP signal.

For displays in the HSE button, see the chapter "Meaning of Displays".

HSE 7000 / HSE 7000-N
Break-Glass Unit

Application: Manual call point for manual control of the EMERGENCY-OPEN functions on **LSF 7000** Control Unit.

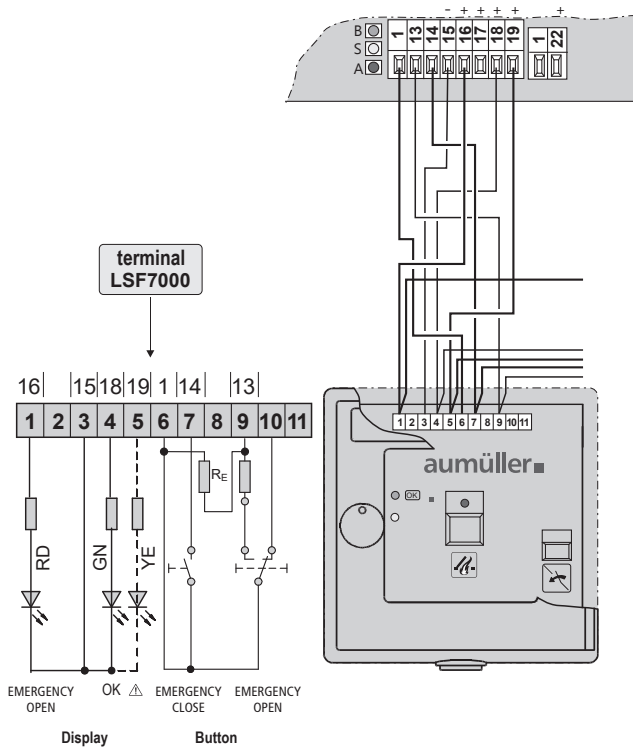
Operating voltage:	24 V DC (16 – 30 V DC)
Ambient temperature range:	- 5°C … + 40°C
Housing:	Surface mounting, plastic (ABS)
Dimensions (B x H x D):	130 x 130 x 32 mm
Connection:	Screw terminal, 1,0 mm² (rigid wire)
Protection rating:	IP30
Displays:	EMERGENCY OPEN, operation, fault
Operating elements:	button EMERGENCY OPEN, button CLOSE

Feature / Equipment:
- Lockable, glazed door (incl. Key)
- Connection to the **detector line input**

Variants

HSE 7000 / HSE 700-N orange	similar to RAL 2011	**511042**
HSE 7000 / HSE 700-N yellow	similar to RAL 1018	**511044**

Connection of the **HSE** to the Control Unit **LSF 7000**



Smoke detectors in the main destination stop

There is an "extended static fire control system" according to VDI guideline 6017 integrated into the **Lift-Smoke-Free** System. The lift control system must be designed to activate this function.

The specified fire exit of the lift shaft (the exit which is automatically accessed in case of fire) is monitored by a smoke detector. If this smoke detector has been activated in case of fire, the lift shaft will be shut down on another specified floor with open doors. The smoke detector in the main destination stop is connected to the detection line of the shaft smoke detectors and simultaneously triggers an RWA alarm of the lift shaft smoke exhaustion system.

Point-type smoke detector with relay in base

Part.-No.: 531526
Optical smoke detector with base and relay - main destination stop

Optional mounting bracket for shaft wall-mounting (Part.-No.: **511232**)

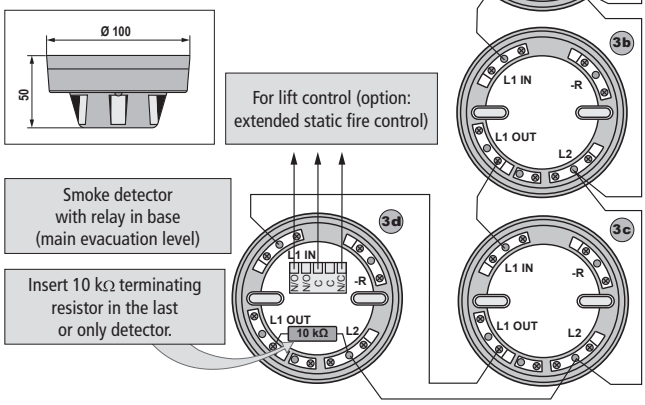
Insert resistor **R** into unused detector lines!

3a = Smoke detector shaft ceiling without console
3b = Smoke detector shaft wall with console
3c = Smoke detector shaft pit with console
3d = moke detector in main destination stop

Tested according to EN54-7
See technical data:
Smoke detector in the lift shaft.
Contact: max. 48 V DC / 1 A

Description of the abbreviations used

L1 IN	=	L1 Input
L1 OUT	=	L1 Output
L2	=	common input and output terminal
-R	=	MUST NOT BE USED!
C	=	Common Reference point
N/O	=	normally open
N/C	=	normally closed



The detector is connected via the internal relay contact in the base directly to the lift controller, which initiates the evacuation travel when triggered.

The smoke detector must be mounted horizontally under the ceiling at the level of the main evacuation level, near the lift door, but at least 50 cm from the nearest wall.

If the LED in a smoke detector is lit, this automatic detector has triggered the alarm. Triggering is reset via the "Close Reset" button in an HSE button or via the " Reset / EMERGENCY CLOSE" button in the control centre (see "Displays and Operating Elements").

Ventilation Key Switch

The **LSF 7000** system allows the smoke exhaustion unit to be used for ventilation purposes as well. A ventilation key switch or a potential-free switch contact of another control device can be used for this purpose. By programming the Control Unit, it is possible to program various ventilation functions such as time-controlled automatic closing. The **LSF 7000** Control Unit is pre-programmed with an automatically time-controlled ventilation function.

Note

Approximately every 8 hours, the smoke Exhaustion system is opened for approx. 10 minutes to ensure regular ventilation of the lift shaft. This function can be deactivated via the **LSF 7000** Software . The ventilation function is blocked in case of any malfunction.

⚠ Warning

If the time-controlled ventilation function deactivated, the air quality in the lift sha ft may deteriorate, especially in summer time.

Ventilation Key Switch
With half profile cylinder and 3 keys

Part.-No.: **511255**
Application: Ventilation key switch for connection to the ventilation push button inputs of Control Unit / and / or ventilation control panels.
Execution: **Surface mounting**

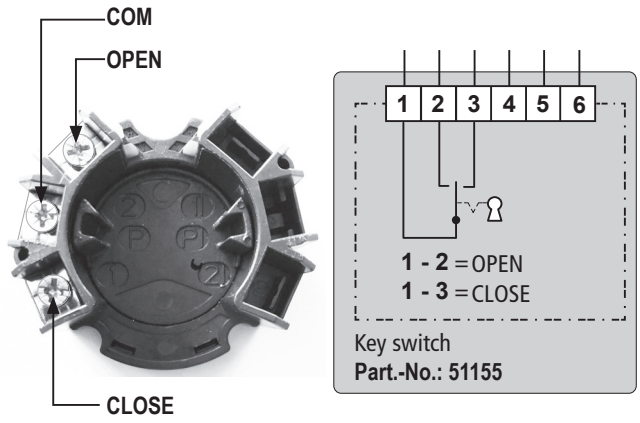
Contact type: :	2x turnkey (NO)
Switching capacity:	max. 230 V AC / 5 A
Housing:	Metal housing, light grey (similar to RAL 7035)
Dimensions (BxHxD):	**75 x 75 x 52 mm**
Connections:	Screw terminals 1,5 mm² (rigid wire)
Protection rating:	IP54
Key function:	OPEN – CLOSE
Push button:	with half profile cylinder and 3 keys
Ambient temperature range:	-5°C ... +45°C

A ventilation key switch allows only authorised persons to intervene in the ventilation of lift shaft. For example, it allows the smoke exhaustion system to be opened during maintenance work in the lift shaft.

The function of the ventilation switch is subordinate to the room thermostat and the CO2 sensor. In case of high temperatures or poor air quality in the lift shaft, the smoke exhaustion device is open.

Determine the installation location of the ventilation key-operated switch in consultation with the site management or the operator.

Connection:
Ventilation key switch in the LSF 7000



Key switch
Part.-No.: 51155

Room Thermostat

Using the bimetal technology with thermal feedback room thermostat, the temperature in the shaft and/or machine room can be monitored or the smoke exhaustion system can be opened as required to exhaust the heat. The function of the room thermostat is secondary to that of the CO2 sensor and superior to that of the ventilation switch.

Room Thermostat

Part.-No.: **483200**
Application: Thermostat as two-point controller for recording the room temperature.

Temperature range:	5 … 30 °C
Operating voltage:	230 V AC 50 / 60 Hz
Contact:	1 Changer
Switch current:	10 mA… 5 A
Hysteresis:	~ 0,5 K
Protection rating / Protection class:	IP 30 / insulated
Housing:	pure white, similar to RAL 9010
Dimensions:	75 x 75 x 25.5 mm

Assembly
The room thermostat should preferably be installed in the shaft head at an accessible location in order to measure the temperature in the machine room or the waste heat of the lift system. The installation is surface-mounted or mounted directly on a flash mounting-box with vertical mounting holes. Range limitation in the adjustment dial.

Air quality meter (CO2 Sensor)

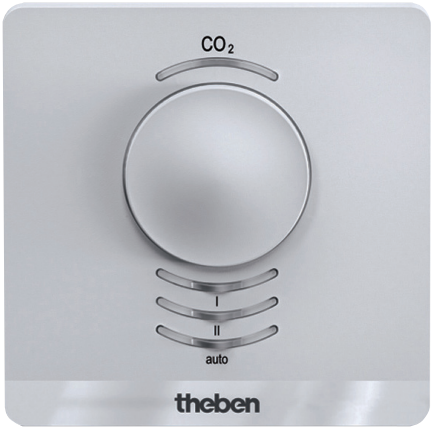
When working in the lift shaft or In the event of a prolonged malfunction with people trapped in the cabin, carbon dioxide (CO2) collects in the lower part of the shaft. To prevent personal injury, the **Lift-Smoke-Free** System offers the possibility of connecting a standard CO2 sensor in the shaft pit. This sensor triggers the opening of the smoke exhaustion system when the CO2 concentration in the shaft rises. The CO2 switch for room mounting is based on non-dispersive infrared technology (NDIR). The switching threshold and hysteresis can be adjusted by a potentiometer on the board.

The permanent contact in the CO2 sensor ensures that the smoke extraction system is not closed as long as it has been triggered.
The CO2 sensor has the highest priority in the ventilation function.

Assembly

The air quality sensor should be installed in the area of the shaft pit, protected from dust if possible. The connection to the **LSF 7000** is made according to the wiring diagram. The permanent contact in the CO2 sensor ensures that the smoke exhaustion system is not closed as long as it is triggered.

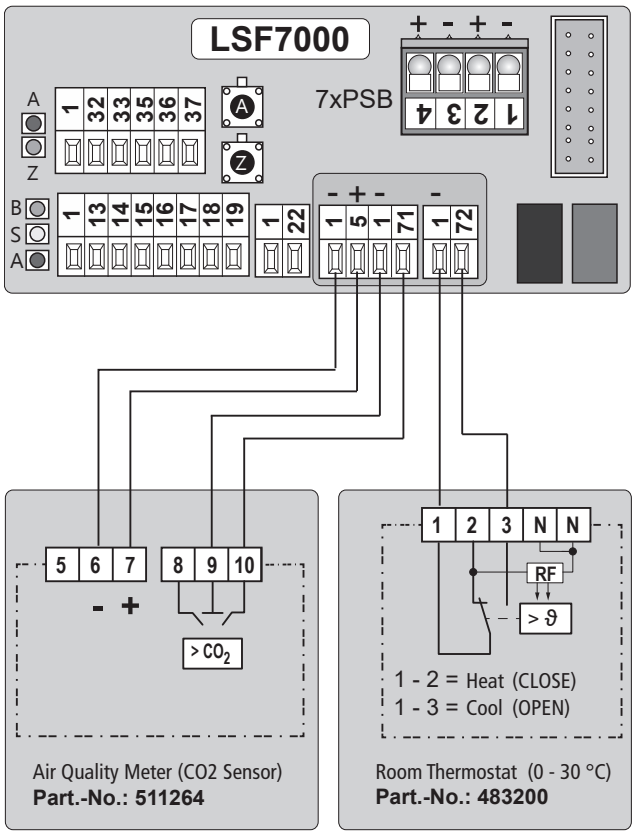
Air Quality Meter (CO2 Sensor)



Part.-No.: **511264**
Application: Sensor for the detection and evaluation of the CO2 concentration in the air of elevator shafts.

Operating voltage:	24 V DC
Current consumption:	14 - 25 mA
Ambient temperature range:	+5 … +40°C
Housing:	Surface mounted
Dimensions:	89 x 89 x 28 mm
Connections:	Screw terminal, 1,5 mm²
Protection rating:	IP20
Measuring range:	0 - 2000 ppm ; 0 - 5000 ppm
Hysteresis:	30 - 80%
Switching capacity:	5 A (24 V DC)

Connection: Air Quality Meter (CO2 Sensor) and Room thermostat in the **LSF 7000**



Siren

The electronic siren is used as an alarm in case of fire (RWA alarm). The warning tone sounds at approx. 90 dB as long as the alarm is active. Depending on the type of connection, the piezo horn emits a falling or continuous tone.

NOTE

The siren can only be activated by the alarm relay of the **LSF 7000** Control Unit if the relay contact is not used for fire control according to DIN EN 81-73!

Siren

Part.-No.: **45000**
Application: Electronic siren for alarm in case of fire (RWA alarm approx. 90 dB).

Operating voltage:	10 V … 28 V
Power consumption:	30 mA (24 V DC)
Volume:	95 dB (A)
Ton (DIN 33 404):	V1 - descending 1200-500Hz at a 1Hz-rate (DIP 11000) or V2 - continuous tone 95 dB (DIP 10001)
Protection rating / Protection class:	IP 54
Housing colour:	signal red
Dimensions:	∅100 x 110 mm
Approval:	VdS G206019

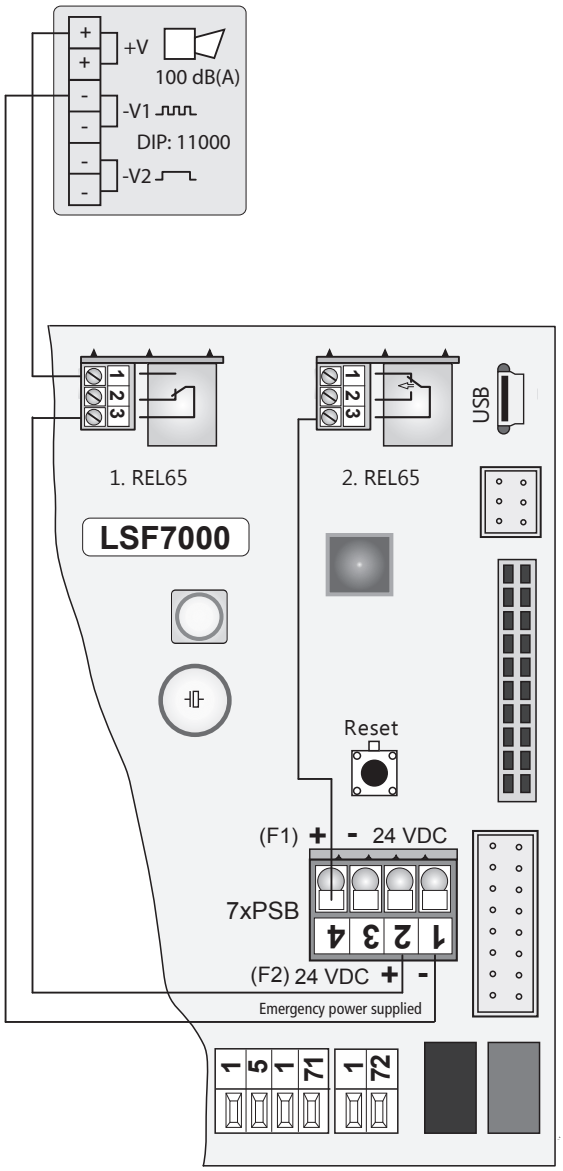
Assembly

The siren should be installed at a central location that is free from environmental influences, e.g. in the stairwell. The acoustic alarm must not be hindered by structural conditions.

NOTE

For connection to the **LSF 7000** system, the plug-in module 7xPSB (Part.-No.: **683256**) and a REL65 (Part.-No.: **650200**) are required. It should be connected to the emergency power supply, so that even in the event of a power failure, the siren is still active in case of fire.

Connection: Siren in the **LSF 7000**

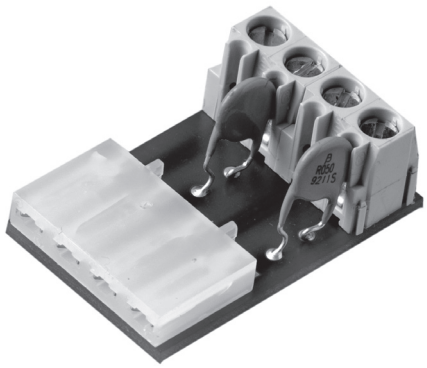


External Power Supply (7xPSB)

The connection for external devices is used to supply power to devices, e.g. signal transmitters (siren). This connection has two outputs, one of which is supplied with emergency power. The signal transmitters can be connected via the potential-free contacts of the REL65 for "RWA alarm" and / or "fault" can be controlled.

NOTE The siren is switched off by pressing the „CLOSE RESET" button in the HSE button or on the motherboard of the **LSF 7000**.

Plug-in card 7xPSB

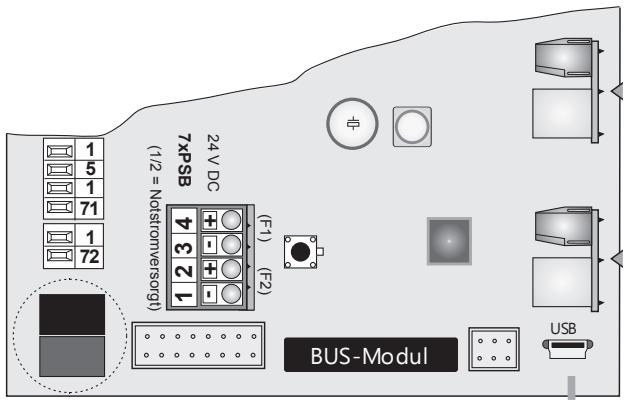


Part.-No.: **683256**
Application: Plug-in card for the **LSF 7000** Control Unit to tap the 24 V DC control voltage for external consumers.

Rated voltage:	24 V DC
Ambient temperature range:	-5°C … + 40°C
Output Current:	0,5 A
Housing:	without (assembled circuit board)
Dimensions (BxHxD):	20 x 32 x 13 mm
Connection terminals:	4x 1,5 mm² (rigid wire)
Voltage tap:	2 terminals 24 V DC emergency power supply 2 terminals 24 V DC mains voltage

Attention: The current consumption for external consumers must be taken into account when designing the total current requirement.

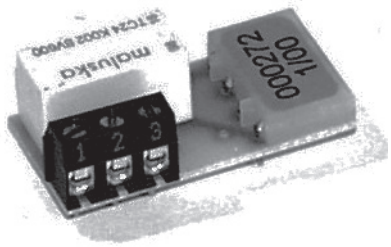
Connection: Plug-in card 7xPSB in **LSF 7000**



Potential-free Contact for e.g. GLT / Elevator system

The potential-free relay contacts of the two REL65 can optionally be used to forward the signals to a customer's BMS.

REL 65 (Relais)



Part.-No.: **650200**
Application: Plug-in card for Control Units **LSF 7000** with relay for transmitting the „EMERGENCY OPEN" signals „fault".

Operating voltage:	24 V DC
Ambient temperature range:	-5°C … + 40°C
Housing:	without (assembled circuit board)
Dimensions (BxHxD):	20 x 40 x 13 mm
Potenzialfreier Kontakt:	1x Change-over switch, max. 48 V / 1A
Connection terminals:	3x 1,5 mm² (rigid wire)

Feature / Equipment:
- Connector for plugging the relay card onto the motherboard.

Lift control system

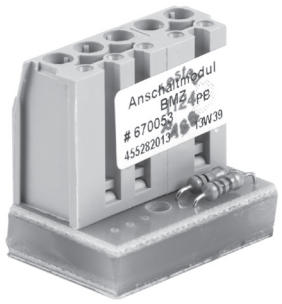
The fire Control Unit according to DIN EN 81-73 is connected to the lift system via the potential-free contact of an additional relay REL 65 (Part.-No.: **650200**) in the **LSF 7000**.
The REL 65 is plugged onto the terminals of the first slot of the control board (alarm triggering / EMERGENCY OPEN).
The signal for the „extended static fire control" is taken directly from the potential-free contact in the base of the smoke detector at the main destination stop (see connection in chapter "Smoke detector in the main evacuation level").

NOTE If the fire control is used, no siren can be connected to the alarm relay of the **LSF 7000**!

Control of FAS

A RWA alarm can also be activated via a potential-free contact of a FAS. To monitor the line between the FAS and the **LSF 7000** Control Unit, a FACP module (Part.-No. **670053**) is installed in the FAS and connected to the terminals of the smoke detector line.

FACU – Connector Module



Part.-No.: **670053**
Application: Module for automatic triggering of the EMERGENCY OPEN function of a **LSF 7000** via a potential contact of the fire alarm system.

Operating voltage:	24 V DC
Standby current consumption:	<10 mA
Ambient temperature range:	0 ... +40 °C
Housing:	without (assembled circuit board)
Dimensions (BxHxD):	27 x 19 x 13 mm
Connections:	Screw terminals 1,5 mm² (rigid wire)
FACU contact:	Normally open contact (NO) on alarm triggering

Feature / Equipment:

- Connection to the detector line input, line monitoring between Control Unit and module.

Smoke extraction system

Description

Smoke exhaustion equipment is used to extract smoke from the lift shaft and to ventilate it.

They can be installed in the vertical facade or in the roof area. Only building products with approval as natural smoke and heat exhaust ventilators (NRWG) according to DIN EN 12101-2 may be used as smoke extraction openings. The proof of usability under building law is the manufacturer's declaration of performance for the respective NRWG or the abZ / aBG of the **Lift-Smoke-Free** system.

Note

Smoke exhaustion from the lift shaft via the roof must be ensured regardless of the wind direction. NRWG whose declaration of performance or product label indicates their use in roof areas with cross-wind effects are suitable for this purpose.

The electrically operated **louvre windows** have a frame of 65 mm. They are made of thermally separated aluminium profiles with insulated inserts of glass or composite panels. The number of louvres depends on the dimensions of the louvre window. Customer specific solutions are possible. The electromotive drives are operated with 24 V DC. Various mounting frames for standard and special dimensions are available for retrofitting the louvre windows.

The electrically powered **ventilation and smoke exhaustion hoods** for the roof area are supplied as a ready-to-install building product. A motorised, thermally insulated louvre window tested according to DIN EN 12101-2 is integrated horizontally into the vertical duct of the stainless steel hood. The nominal sizes or structural openings depend on the geometric smoke exhaustion area of the installed louvre window. The electric motor drives are operated with 24 V DC. The hoods are fully resistant to rain and wind even when the louvre window is open, and their design ensures that they cannot be broken through.

Note

The electrical performance features of the drives are given in the technical data sheets of the respective louvre windows or on the product labels.

Note

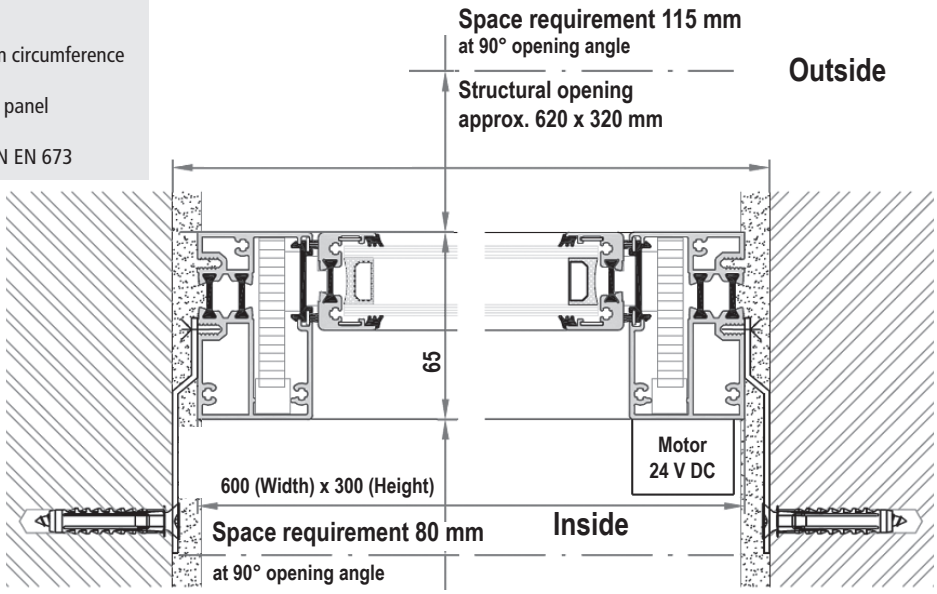
On the **LSF 7000** Control Unit, the override function is activated as standard in the event of a RWA emergency release. After release, the drives are actuated at regular intervals over a period of 30 minutes in the CLOSE direction and then again in the OPEN direction in order to open smoke exhaustion devices that may have been blocked by the cold. This function can be deactivated via the **LSF 7000** software.

Louvre windows LF01L - Part.-No. 511235 - with mounting frame for reveal / brickwork

Application: Louvre windows with electric motor drive for the removal of fire gases and for ventilation purposes.
Made from thermally separated aluminum profiles and thermally insulated inserts.
Optimal ventilation when open and good thermal insulation when closed.

Technical Data

Nominal voltage:	24 V DC
Shutdown current:	0,65 A
Nominal size (W x H):	600 x 300 mm
Structural opening:	Nominal size + 10 mm circumference
Version:	1 louvre
Glazing:	24 mm alu-composite panel
Geometric free exhaust surface:	0,1 m²
UP value (Heat transfer coefficient):	1,4 / DIN EN 673



Mounting options

- Installation with wall anchors in the reveal — **Part.-No.: 511077**
- Mounted with surface mounting frame — **Part.-No.: 511237**

Mounting frame MR01 - Part.-No. 511237 - for surface mounting of a louvre window LF01

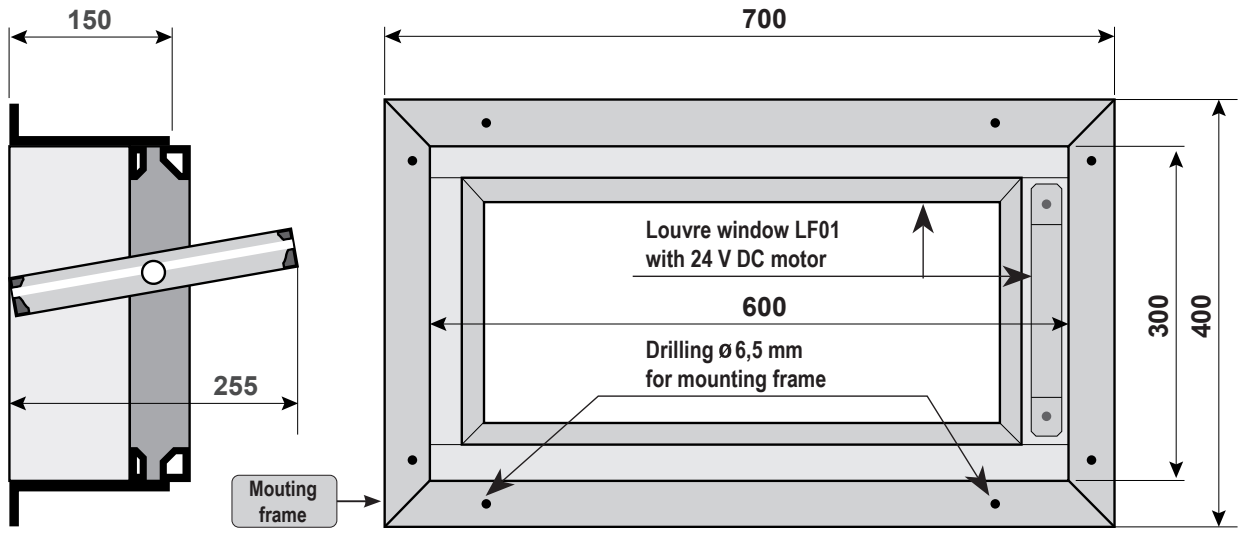
Application: The installation frame is used when the Louvre window can be set from the inside via an existing smoke outlet opening.
The Louvre windows are not installed in the masonry.
It is delivered attached to the Louvre window at the factory.

Technical Data

Nominal size (W x H):	600 x 300 mm
Structural opening:	Nominal size +20 / -0 mm circumference
Wall thickness:	min. 240 mm

Representation example

Observe the installation height or the position of the open Louvre window in the life shaft!



Feature/Equipment

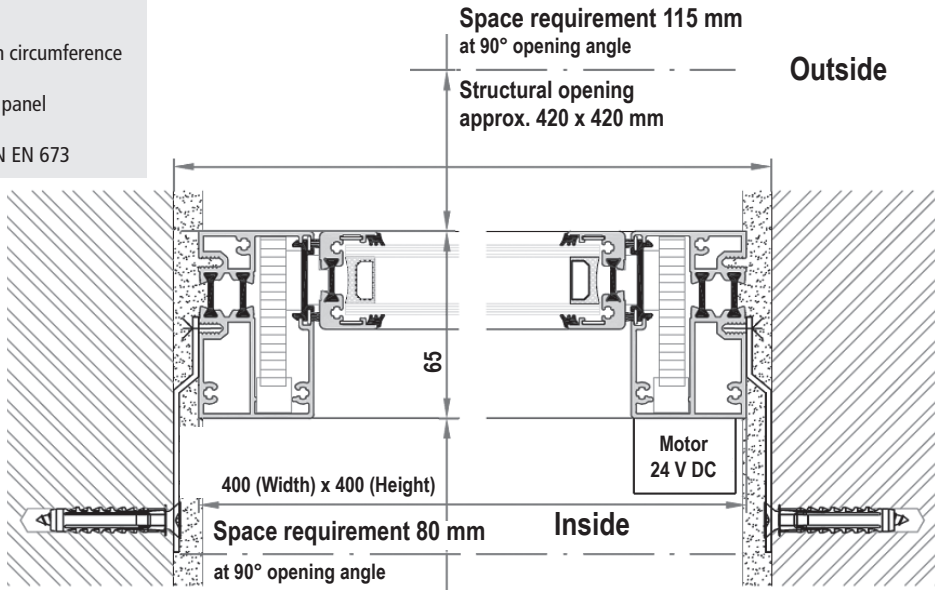
- For surface mounting of a Louvre window

Louvre windows LF02L - Part.-No. 511228 - with mounting frame for reveal / brickwork

Application: Louvre windows with electric motor drive for the removal of fire gases and for ventilation purposes.
Made from thermally separated aluminum profiles and thermally insulated inserts.
Optimal ventilation when open and good thermal insulation when closed.

Technical Data

Nominal voltage:	24 V DC
Shutdown current:	0,65 A
Nominal size (W x H):	400 x 400 mm
Structural opening:	Nominal size + 10 mm circumference
Version:	1 louvre
Glazing:	24 mm alu-composite panel
Geometric free exhaust surface:	0,1 m²
UP value (Heat transfer coefficient):	1,4 / DIN EN 673



Mounting options

- ■ Installation with wall anchors in the reveal — **Part.-No.: 511077**
- ■ Mounted with surface mounting frame — **Part.-No.: 511227**

Mounting frame MR02 - Part.-No. 511227 - for surface mounting of a lourre window LF02

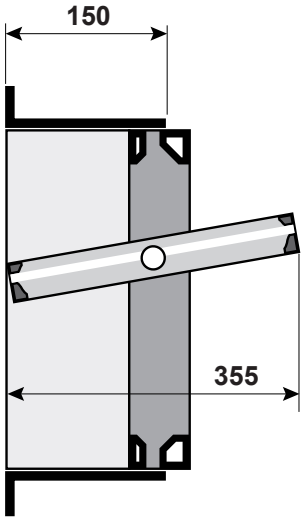
Application: The installation frame is used when the Louvre window can be set from the inside via an existing smoke outlet opening.
The Louvre windows are not installed in the masonry.
It is delivered attached to the Louvre window at the factory

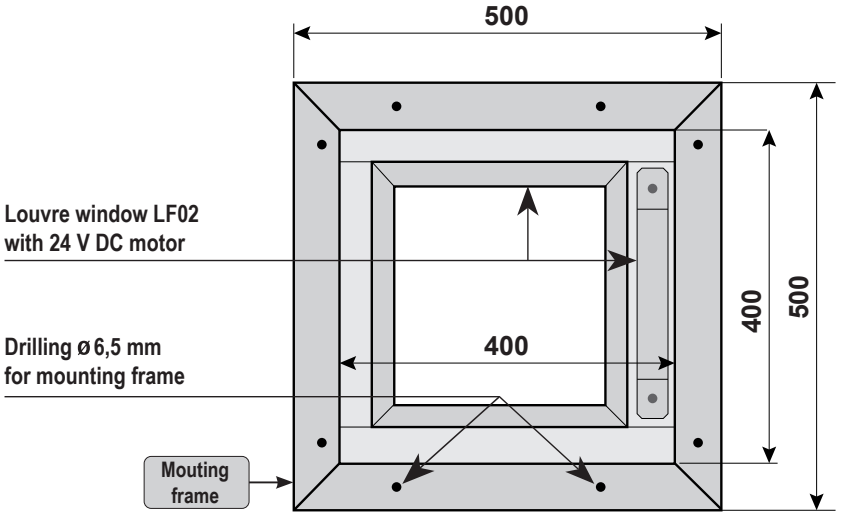
Technical Data

Nominal size (W x H):	400 x 400 mm
Structural opening:	Nominal size +20 / -0 mm circumference
Wall thickness:	min. 240 mm

Representation example

Observe the installation height or the position of the open Louvre window in the life shaft!





Feature/Equipment

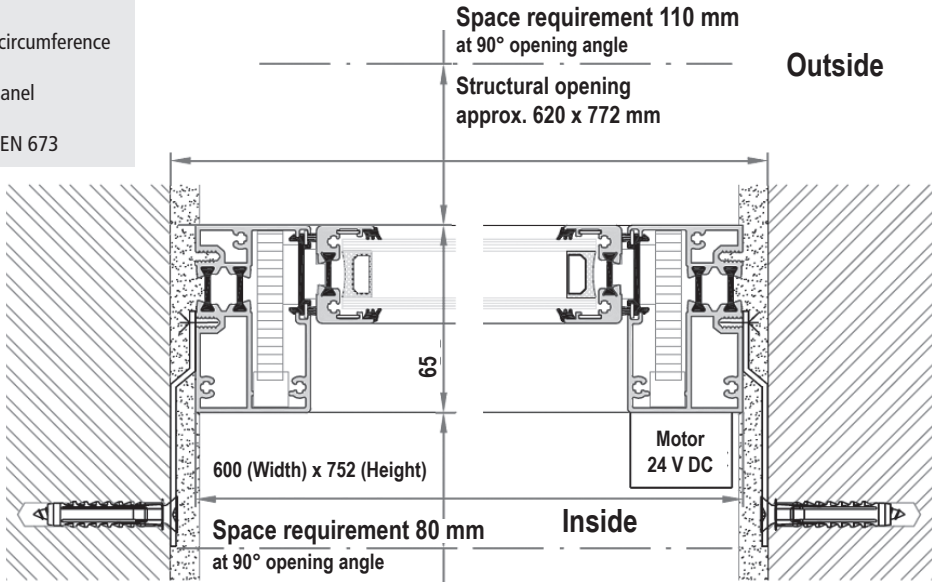
- ■ For surface mounting of a Louvre window

Louvre windows LF03L - Part.-No. 511236 - with mounting frame for reveal / brickwork

Application: Louvre windows with electric motor drive for the removal of fire gases and for ventilation purposes.
Made from thermally separated aluminum profiles and thermally insulated inserts.
Optimal ventilation when open and good thermal insulation when closed.

Technical Data

Nominal voltage:	24 V DC
Shutdown current:	0,65 A
Nominal size (W x H):	600 x 752 mm
Structural opening:	Nominal size + 10 mm circumference
Version:	3 louvres
Glazing:	24 mm alu-composite panel
Geometric free exhaust surface:	0,3 m²
UP value (Heat transfer coefficient):	1,4 / DIN EN 673



Mounting options

- Installation with wall anchors in the reveal — **Part.-No.: 511077**
- Mounted with surface mounting frame — **Part.-No.: 511238**

Mounting frame MR03 - Part.-No. 511238 - for durface mounting of a louvre window LF03

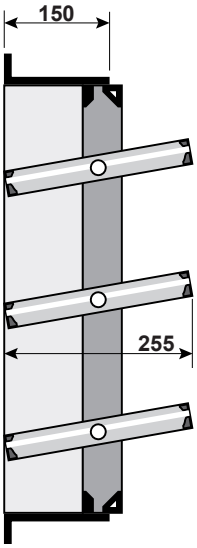
Application: The installation frame is used when the Louvre window can be set from the inside via an existing smoke outlet opening.
The Louvre windows are not installed in the masonry.
It is delivered attached to the Louvre window at the factory.

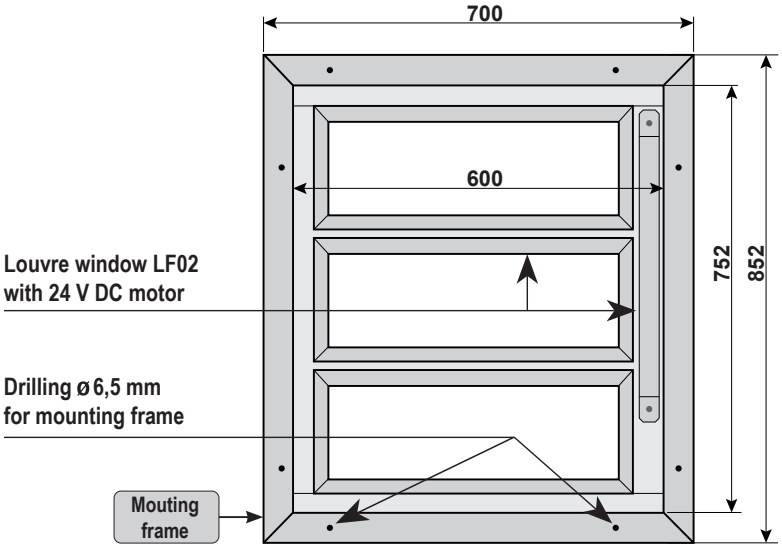
Technical Data

Nominal size (W x H):	600 x 752 mm
Structural opening:	Nominal size +20 / -0 mm circumference
Wall thickness:	min. 240 mm

Representation example

Observe the installation height or the position of the open Louvre window in the life shaft!





Feature/Equipment

- For surface mounting of a Louvre window

Wall anchor set

Part.-No.: **511077**
Application: For mounting the louvre windows LF01L / LF02L / LF03L in the reveal. The window is installed by screwing the wall anchor onto the window profile.

Material:	galvanized steel
Dimensions (H x W x D):	160 x 25 x 1,25 mm
Version:	with two predetermined bending points
Set consists of:	8x wall anchor

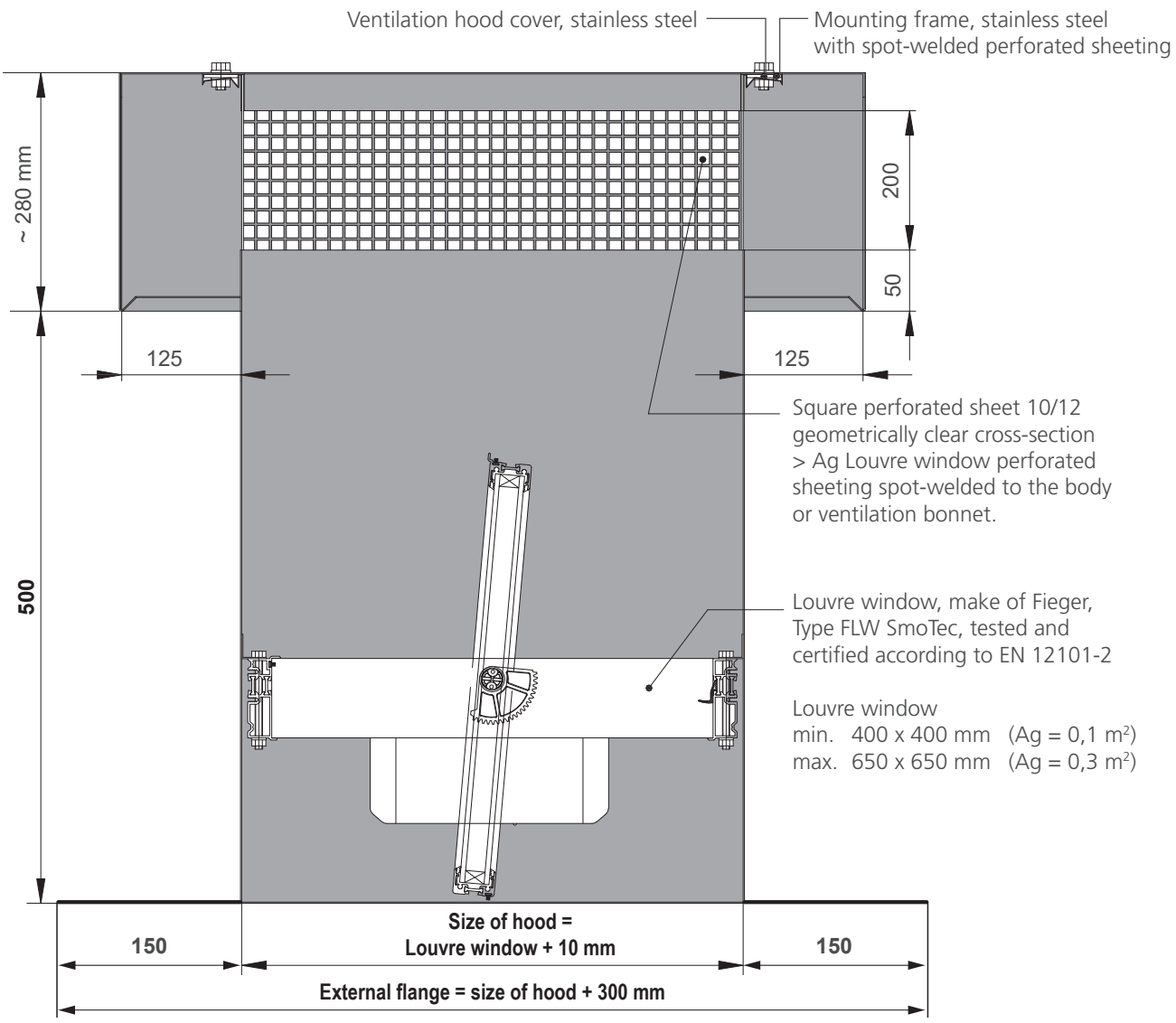
Feature/Equipment:
- Set consists of 8x wall anchors

Smoke Exhaustion Hood

Application: Smoke Exhaustion Hood with an electric motor drive for the removal of combustion gases and for ventilation purposes.

Technical Data

Nominal size (W x H):	**EH01**: 410 x 410 mm
	EH03: 660 x 660 mm
Structural opening:	Nominal size +50 / -0 mm circumference
Version:	**EH01**: 1 louvre
	EH03: 2 louvres
Glazing:	24 mm alu-composite panel
Geometric free exhaust surface:	**EH01**: 0,1 m²
	EH03: 0,3 m²
Roof slope:	Max. 30°
Connection data:	24 V DC / 0,65 A



Feature/Equipment

- Stainless steel hood is supplied ready for installation with pre-mounted louvre window, as a NSHEV according to DIN EN 12101-2.
- Rainproof even in open position.
- Ventilation and smoke extraction independent of wind direction - wind-rain control can be omitted.
- Integrated bird and insect protection.

Versions

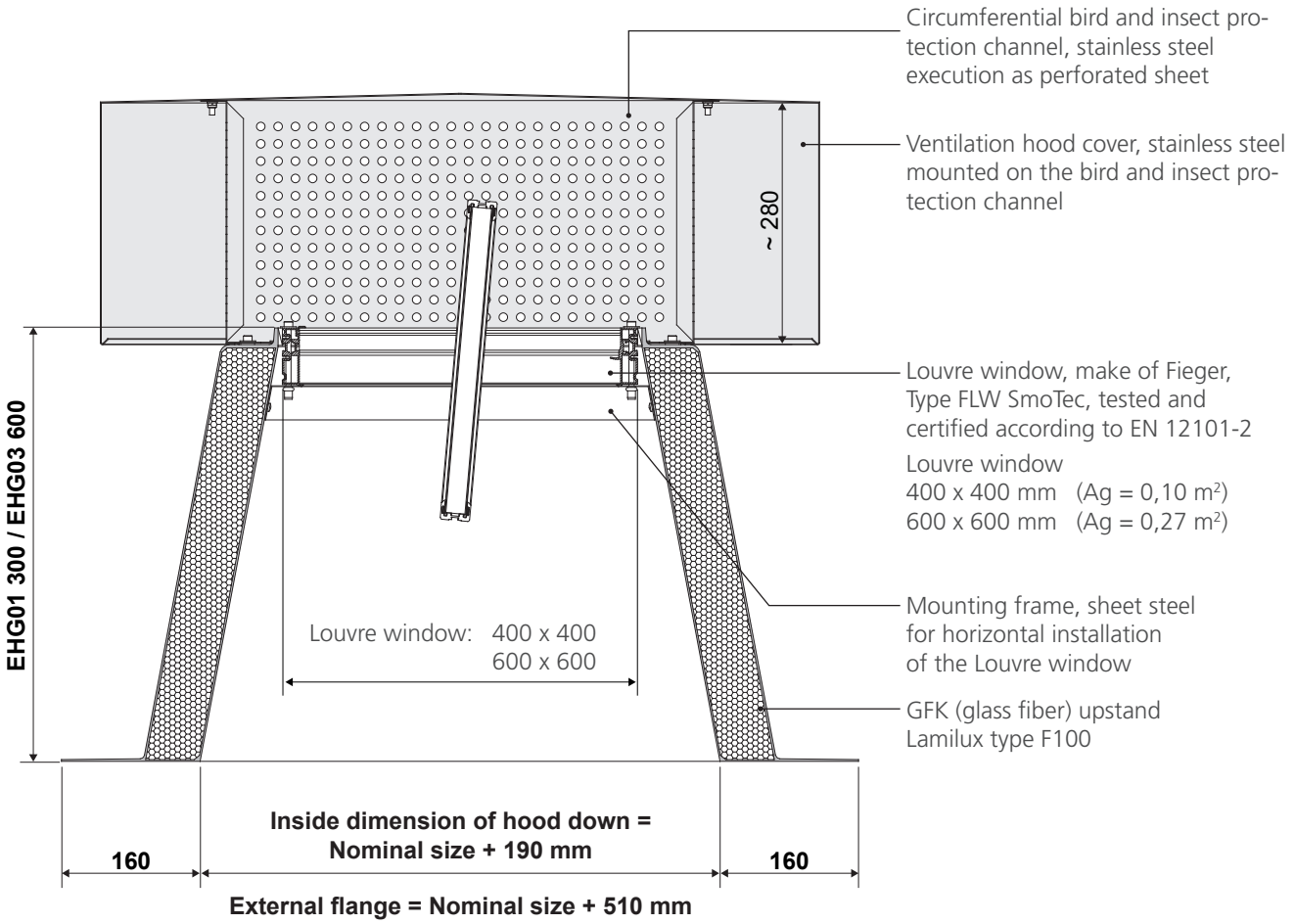
Smoke Exhaustion Hood **EH01 - 410 x 410 mm** - with Louvre window (0,1 m²)	**511233**
Smoke Exhaustion Hood **EH03 - 660 x 660 mm** - with Louvre window (0,3 m²)	**511234**

Smoke Exhaustion Hood Thermally Insulated

Application: Smoke Exhaustion Hood with an electric motor drive for the removal of combustion gases and for ventilation purposes.

Technical Data

Nominal size (W x H):	**EHG01**:	410 x 410 mm
	EHG03:	660 x 660 mm
Dimensions Louvre window (W x H):	**EHG01**:	400 x 400 mm
	EHG03:	600 x 600 mm
Innside dimensions hood down: (W x H)	**EHG01**:	600 x 600 mm
	EHG03:	800 x 800 mm
Structural opening:	Nominal size +50 / -0 mm circumference	
Version:	**EHG01**:	1 louvre
	EHG03:	2 louvre
Glazing:	24 mm alu-composite panel	
Geometric free exhaust surface:	**EHG01**:	0,10 m²
	EHG03:	0,27 m²
Roof slope:	Max. 30°	
Connection data:	24 V DC / 0,65 A	



Feature/Equipment

- Stainless steel hood is supplied ready for installation with pre-mounted louvre window, as a NSHEV according to DIN EN 12101-2.
- Rainproof even in open position.
- Ventilation and smoke extraction independent of wind direction - wind-rain control can be omitted.
- Integrated bird and insect protection.

Versions

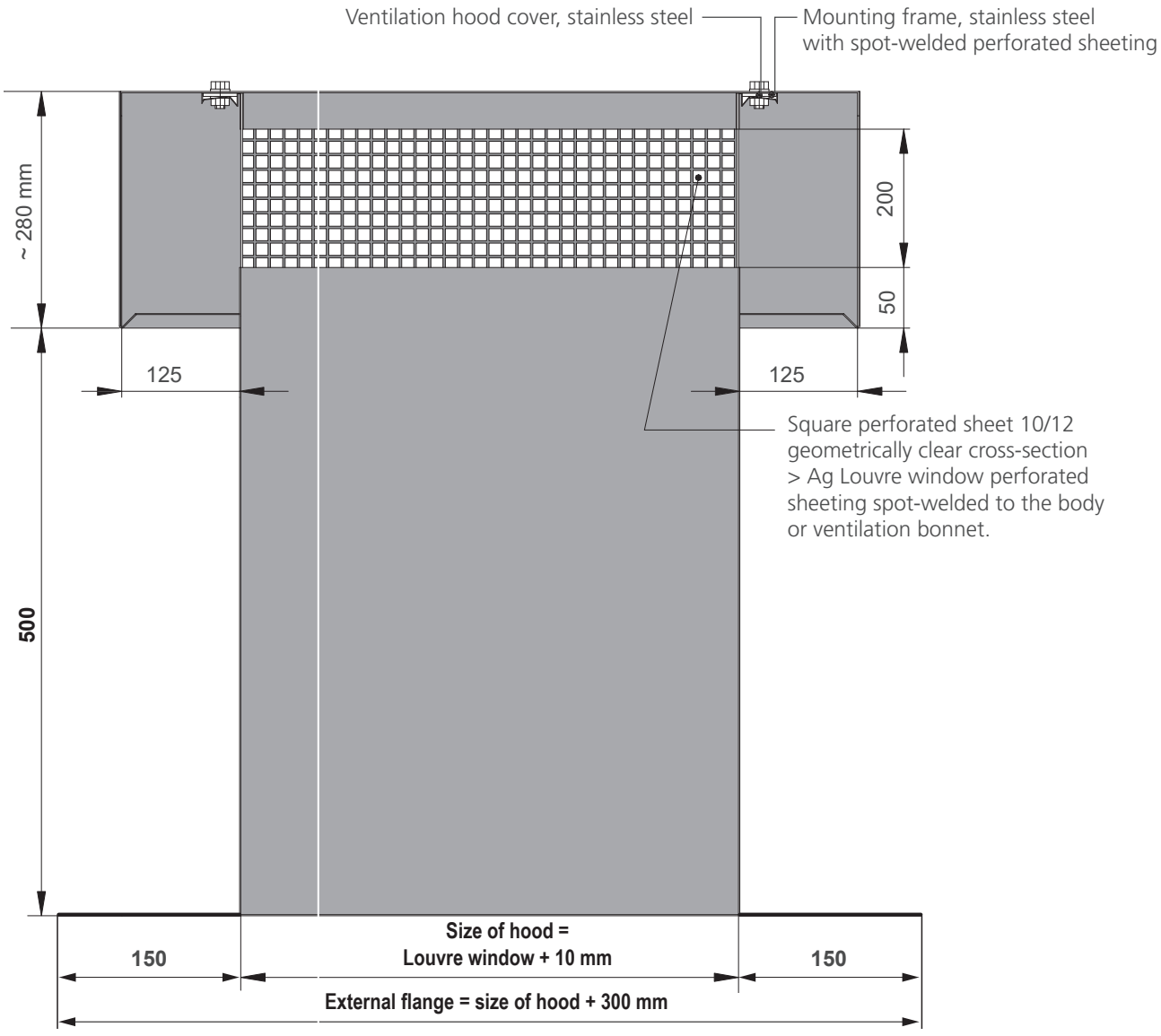
Smoke Exhaustion Hood Thermally Insulated **EHG01 - 410 x 410 mm** - with Louvre window (0,10 m²)	**511258**
Smoke Exhaustion Hood Thermally Insulated **EHG03 - 660 x 660 mm** - with Louvre window (0,27 m²)	**511259**

Weather Protection Hood

Application: Serves to protect against external influences, such as insects, rain showers and light wind.

Technical Data

Nominal size (W x H):	**WH01**: 410 x 410 mm **WH03**: 660 x 660 mm
Structural opening:	Nominal size +50 / -0 mm circumference
Version:	**WH01**: with geometric free exhaust surface **0,1 m²** **WH03**: with geometric free exhaust surface **0,3 m²**
Roof slope:	Max. 30°



Feature/Equipment

- The hood made of stainless steel is delivered ready for installation.
- Integrated bird and insect protection.

Versions

Weather Protection Hood **WH01 - 410 x 410 mm**	**511260**
Weather Protection Hood **WH03 - 660 x 660 mm**	**511261**

Installation of the smoke exhaustion system

When installing the smoke exhaustion system, the relevant technical rules must be adhered to. The installation work is to be carried out by specialists from the roofing and window construction trade.

The louvre window must always be installed vertically. No mechanical tension may be applied on the louvre window during installation.

The ventilation and smoke exhaustion hood is mounted on the respective substructure using suitable fixing materials. The gasket must be installed as far as possible underneath the smoke exhaustion opening holes. If insulation or roofing sheeting provided by the customer is installed, fastening screws (e.g. for cap strips) must not protrude more than 20 mm into the duct of the smoke exhaustion hood. The opening of the ventilation hood cover must not be reduced in size.

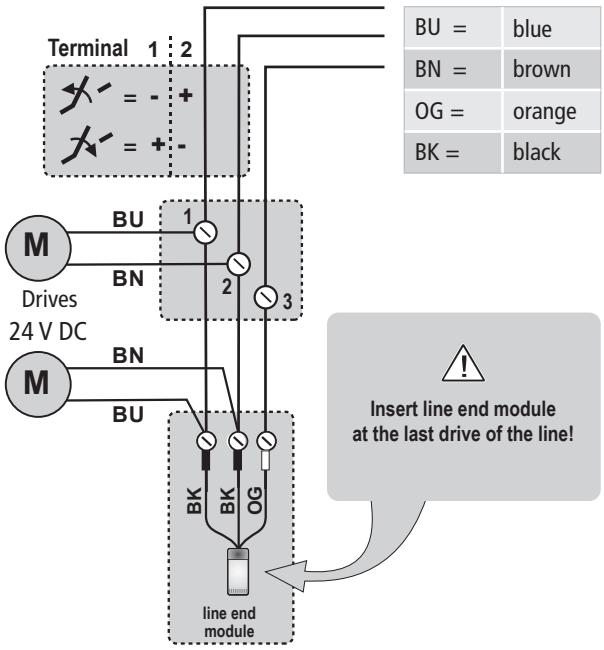
The relevant roofing guidelines and any lightning protection requirements must be adhered to! When installing the ventilation and smoke extraction bonnet, please observe the flat roof guidelines of the Central Association of the German Roofing Trade.

Furthermore, the installer must have a qualification in the field of the trade association guidelines for power-operated windows, doors and gates. In addition, they must be familiar with the relevant work regulations, accident prevention regulations and generally recognised rules of technology (e.g. VDE regulations, DIN standards, etc.) to such an extent that they can put the system into a safe working condition.

WARNING The smoke exhaustion system must not be subjected to shocks, jolts or vibrations. Unauthorised changes to the system are prohibited. The manufacturer is not liable for damages resulting from unauthorised changes.

NOTE During installation and storage on site, the smoke exhaustion system must be protected against moisture, such as weather.

Connection of the Smoke Exhaustion System



Cable length and cross-section depend on the drive type and number of drives. Cable length and cross-section can be calculated with the following formula:

Calculation formula

For required core cross section of a supply cable

$$A\ mm^2 = \frac{I_{A\ (Total)} \times L_{m\ (Length\ of\ supply\ line)} \times 2}{\Delta U_{V\ (Voltage\ drop)} \times 56\ m / (\Omega * mm^2)}$$

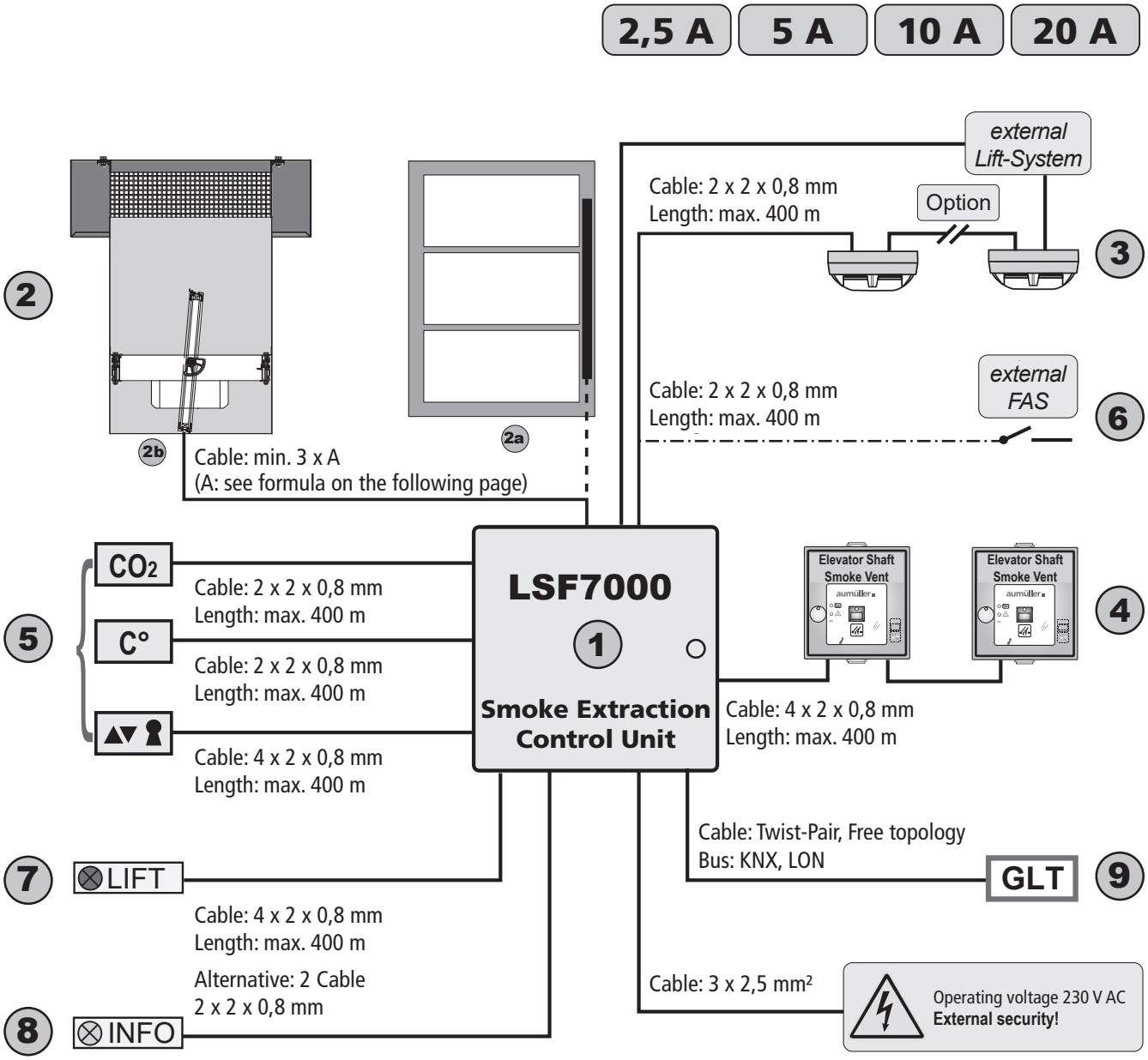
A = Cable cross section in mm^2
L = Cable length in m
I = Current of the connected drives in A
ΔU = Voltage drop on the line = 2 V DC

The drive line is monitored for line breaks and short circuits via a line end module.

Connect the device whilst it is voltage-free! Switch off the power supply and secure it against being switched on again!

NOTE The electrical performance features of the drives are specified in the technical data sheets of the respective louvre windows or on the product labels of the drives. They must be compared with the performance features of the Control Units and adapted accordingly.

Connection Options / Cabling



Key	
①	Control Unit **LSF7000**
②	Drive Line 1, 24 V DC for smoke and heat exhaustion and ventilation
③	Smoke detector (max. 10 pieces)
④	Break-glass unit (HSE button) (max. 10 pieces)
⑤	Ventilation line 1 (max. 10 switches)
⑥	Trigger signal from external fire alarm system (connection alternativ) to smoke detector
⑦	External signal transmission 1 (REL 65 plug-in card required) alarm triggering
⑧	External signal transmission 2 (REL 65 plug-in card required) collective fault
⑨	Integration in network (additional module required)

These instructions contain an overview (see chapter „Overview of all external connections - to be filled in") with all connection possibilites in which the installer can write down their connections.

INSTALLATION STEP 1: Connection of the Drives and Ventilation buttons

Connect the device whilst it is voltage-free! Switch off the power supply and secure it against being switched on again!

With the system software, you can:
- can be switched from „dead man's mode" (standard) to "self-retaining" ,
- The monitoring of the drive line can be switched off (default = on)
- an automatic closing mechanism can be set.

Before changing the operating mode, the hazard zones in the lift shaft must be checked and adhered to!

The cables must be laid in accordance with the current legal regulations. The terminal cross-section is designed for the drive connection:

LSF 7000 - 2,5A - 0101 max. 4,0 mm² (flexible)
LSF 7000 - 5A - 0101 max. 6,0 mm² (finely stranded)

LSF 7000 - 10A - 0101
LSF 7000 - 10A - 0102
LSF 7000 - 20A - 0102

Cable length and cross-section depend on the drive type and number of drives. Cable length and cross-section can be calculated with the following formula:

Calculation formula
For required core cross section of a supply cable

$$A\ mm^2 = \frac{I_{A\ (Total)} \times L_{m\ (Length\ of\ supply\ line)} \times 2}{\Delta U_{V\ (Voltage\ drop)} \times 56\ m / (\Omega * mm^2)}$$

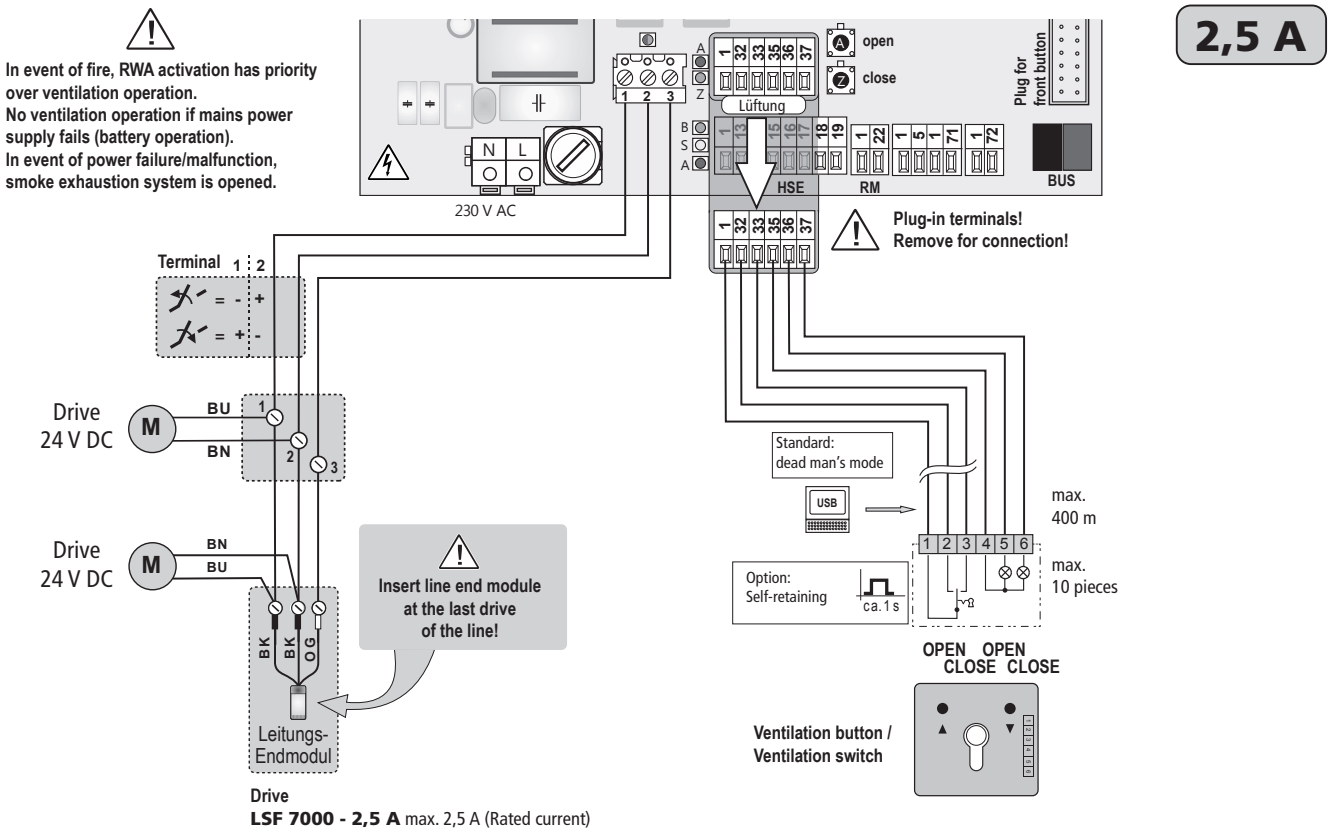
A = Cable cross section in mm²
L = Cable length in m
I = Current of the connected drives in A
ΔU = Voltage drop on the line = 2 V DC

The drive line is monitored for line breaks and short circuits via a line end module.

Connection of the drives and ventilation buttons: Control Unit version LSF 7000-2,5A-0101

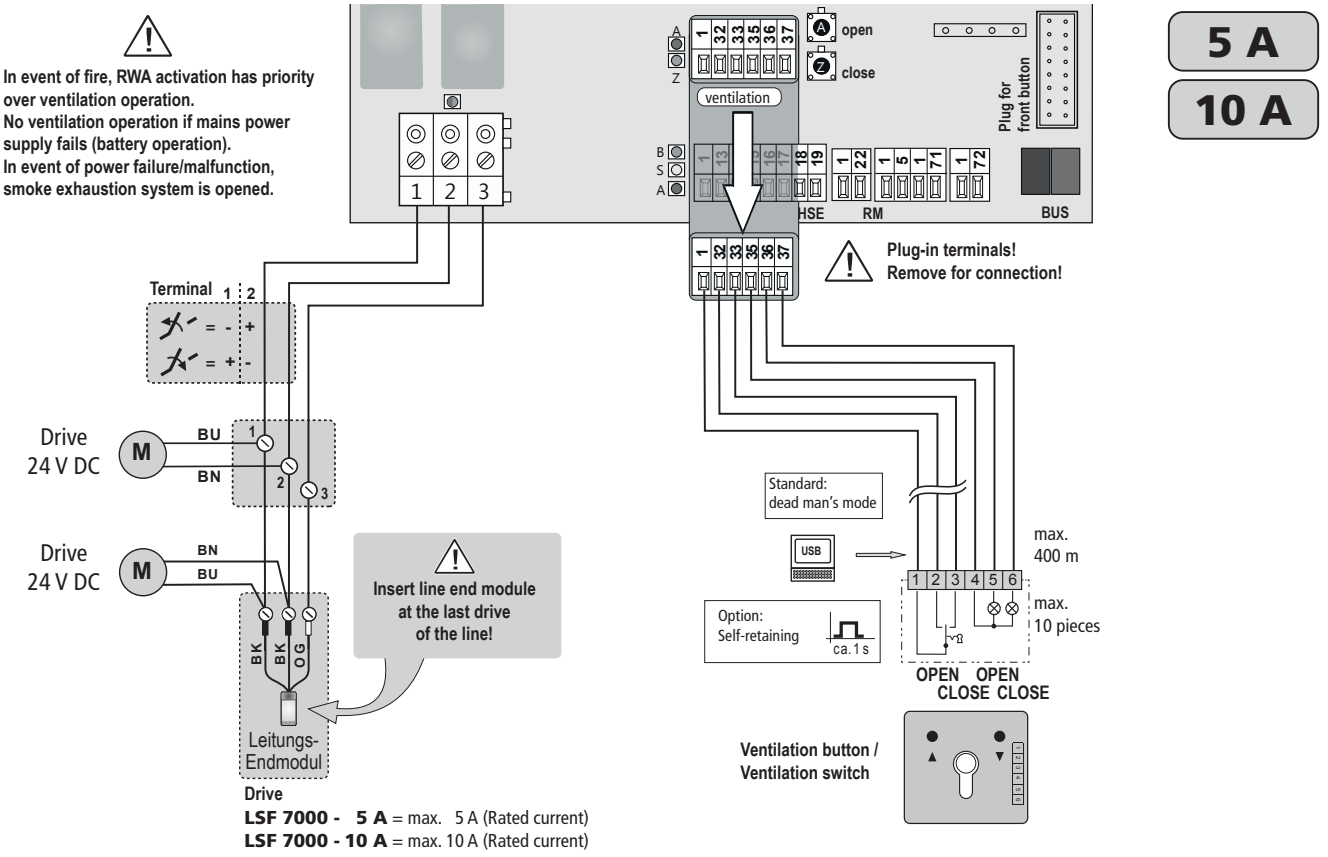
2,5 A

In event of fire, RWA activation has priority over ventilation operation.
No ventilation operation if mains power supply fails (battery operation).
In event of power failure/malfunction, smoke exhaustion system is opened.



Connection of the drives and ventilation buttons: Control Unit version **LSF 7000-5A-0101** and **LSF 7000-10A-0101**

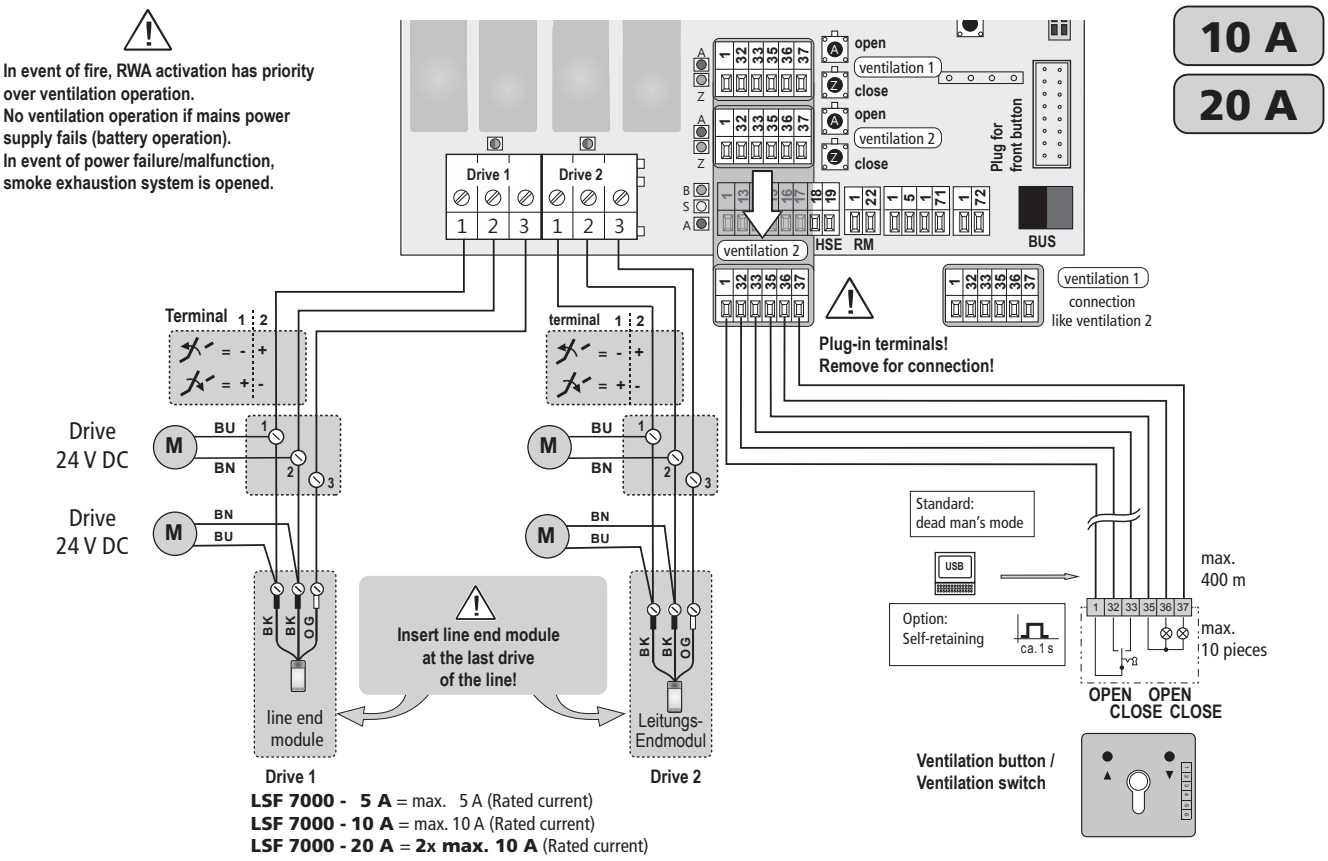
5 A
10 A



Drive
LSF 7000 - 5 A = max. 5 A (Rated current)
LSF 7000 - 10 A = max. 10 A (Rated current)

Connection of the drives and ventilation buttons: Control Unit version **LSF 7000-10A-0102** and **LSF 7000-20A-0102**

10 A
20 A



Drive 1 **Drive 2**
LSF 7000 - 5 A = max. 5 A (Rated current)
LSF 7000 - 10 A = max. 10 A (Rated current)
LSF 7000 - 20 A = **2x max. 10 A** (Rated current)

INSTALLATION STEP 2: Connection of the automatic and manual smoke detectors / Break-glass units (HSE)

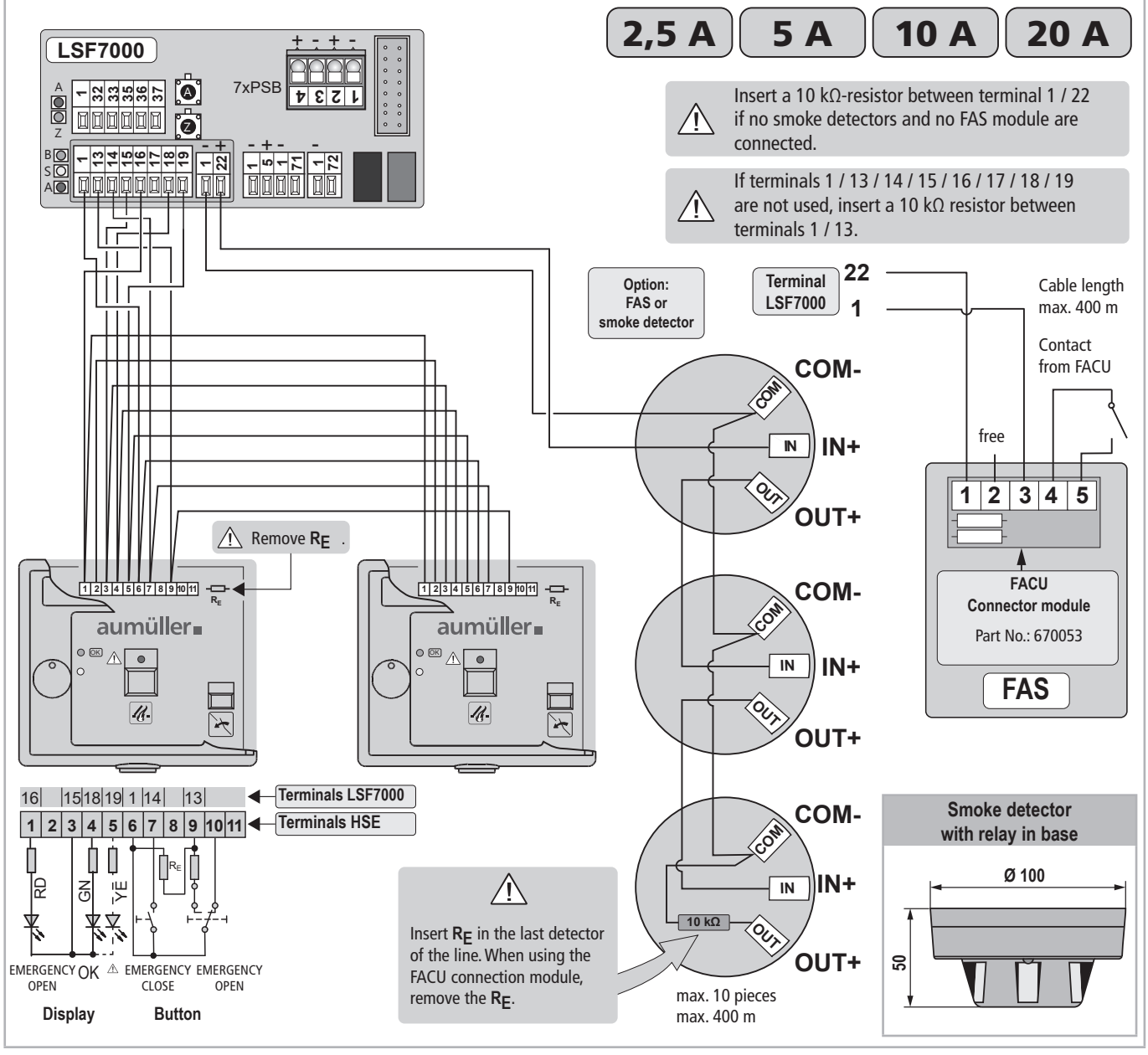
Connect the device whilst it is voltage-free! Switch off the power supply and secure it against being switched on again!

Instead of a smoke detector, a connection module (external NO contact) for EMERGENCY OPEN from an external fire alarm system (FAS) can also be connected to terminal 1 /22.

The cables must be laid in accordance with the current legal regulations. The terminal cross-section for connecting the detectors is max. 1,5 mm², minimum 0,5 mm².

The connection of the manual and automatic smoke detectors is monitored for line faults. Therefore, both the last smoke detector and the last manual Control Unit (HSE) in the line must be equipped with a 10kΩ resistor (RE). If the fire alarm line is not used, attach the 10 kΩ resistor to terminal 1/22 (smoke alarm line) or terminal 1/13 (manual alarm line) in the Control Unit. If not, the yellow display "**S**" indicates a fault.

Connection of the automatic and manual smoke detectors / Break-glass units (HSE) / FACU



Installation Step 3: Installation of the relay card REL and BUS connection

Connect the device while it is voltage free! Switch off the power supply and secure it against being switched on again!

The motherboard has two slots for the use of one **REL 65** (Part.-No.: **650200**) each, so that messages can be externally transmitted via a potential-free contact (1 x change-over switches, max. 42 V, 0.5 A).

The cables must be laid in accordance with the current legal regulations. The terminal cross-section must be at least 0.5 mm² (max. 1,5 mm²). The cable length is max. 400m.

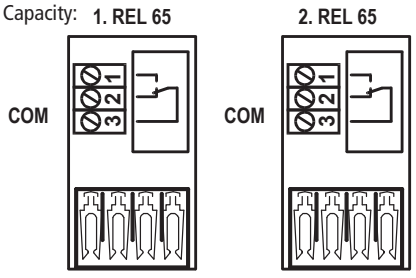
USB

The function of the relay cards is factory-set: :
1. REL 65 = alarm activation / EMERGENCY OPEN
2. REL 65 = collective fault
Modification to these settings is only possible after the system software has been activated by licence. Likewise, the network integration requires activation which is subject to a licence fee.

Installation and Replacement of the relay / bus cards:
The following steps must be followed:
1. First disconnect the Control Unit from the mains and battery power.
2. Carefully insert the plug-in card in the correct direction.
3. When correctly inserted, reconnect the power supply.

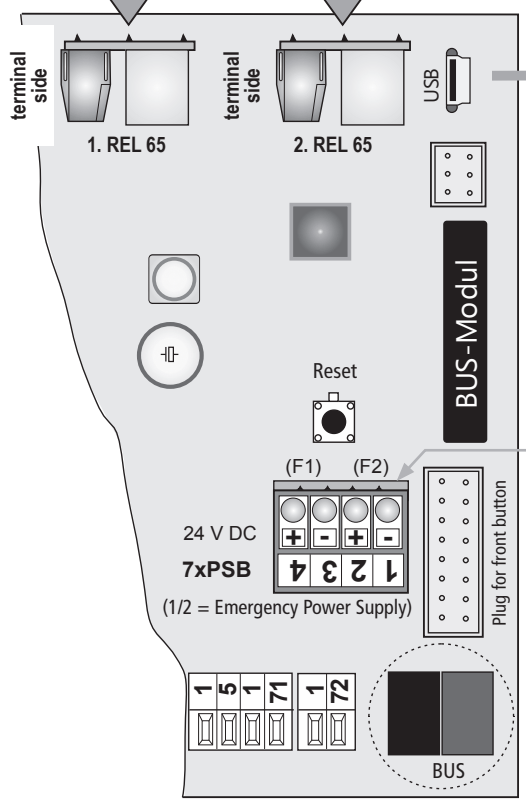
Installation of the relay card REL and BUS connection to the Control Unit **LSF 7000**

Contact Switching Capacity:
max. 42 V, 0,5 A
terminala 1,5 mm²



Factory default setting
(can only be changed via licence software)
1. REL 65 alarm activation / EMERGENCY OPEN
2. REL 65 collective fault (inverted)

2,5 A
5 A
10 A
20 A



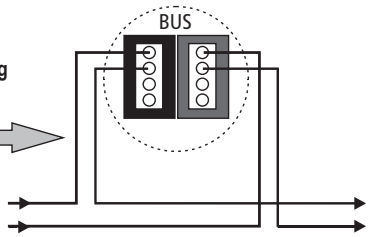
License software is required for:
- unctionality of the 1st and 2nd REL 65 different from the standard configuration
- Networkk connection

Plug-in card: 7xPSB

Part.-No.: **683256**
Application: plug-in card for **LSF 7000** for tapping the 24 V DC supply voltage for external consumers.

Connection terminals: 4x 1,5 mm² (rigid wire)
Voltage tapping-off: 2 terminals 24 V DC emergency power supply
2 terminals 24 V DC mains voltage

Remove the BUS plug for connection!



Length: max. 500 m (without repeater)
2-wire Twisted-Pair-Free-Topology BUS
(twisted copper cable)

INSTALLATION STEP 4: Connection to Power Supply

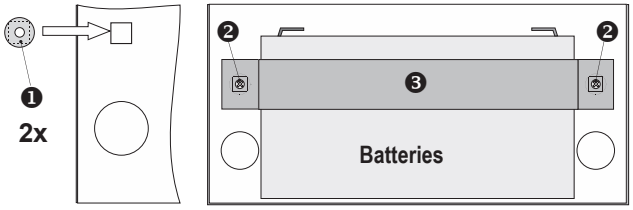
Fixing of the batteries with optional battery holder set (Part.-No.: 683250) for compact housing only

2,5 A | 5 A

The batteries can be attached to the housing with the optional battery holder set if required.

Assembly with the battery holder set:

- 2 x (right and left) Plastic Screw Plug ❶ press into the squares on the back oft he housing.
- Fasten the brackets ❸ on both the right and left in the Screw Plug ❶ with a cross-headed screw ❷.

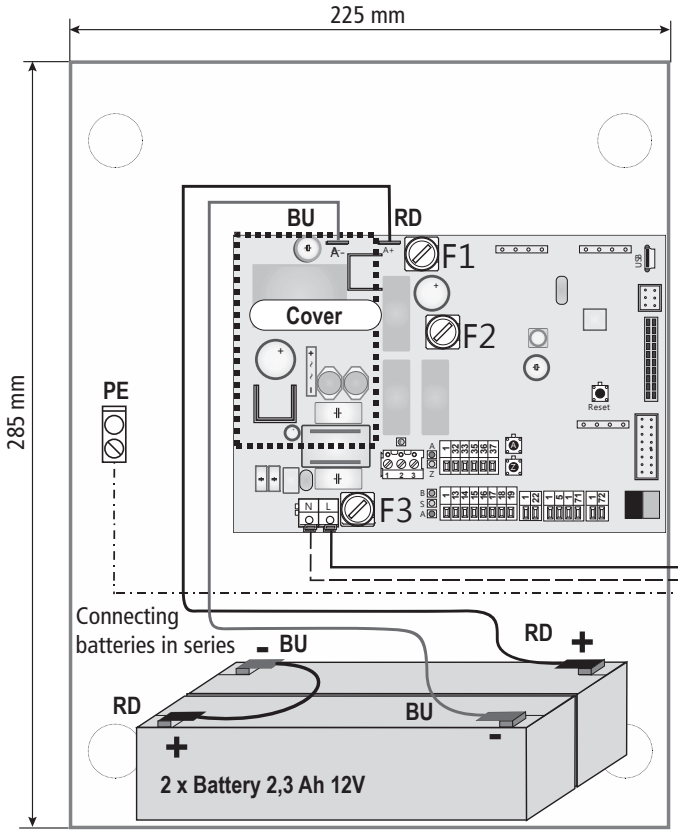


Battery Holder Set

Part.-No.:	**683250**
Material:	Steel
Colour:	RAL 9016 (white)
Suitable for:	**LSF 7000** 2,5 A **LSF 7000** 5 A

Connection of Power Supply to Control Unit **LSF 7000 - 2,5A**

2,5 A



Feed via external fuse and switching element!

Connect the power supply and batteries while it is voltage-free! Switch off the power supply and secure it against being switched on again!

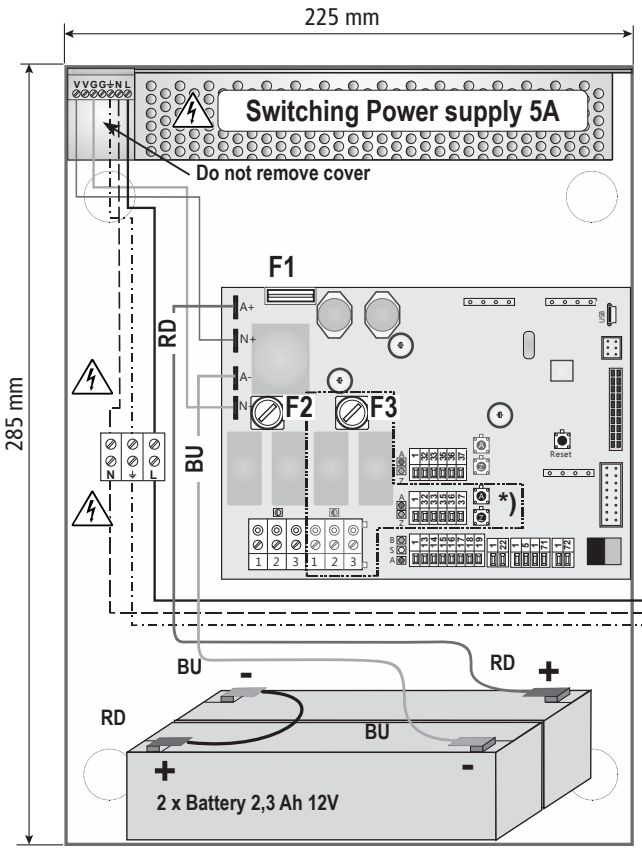
Note polarity when connecting!

⊖ = blue ⊕ = red

When connecting the batteries, make sure that the polarity is correct. Incorrectly connected batteries lead to damage to the Control Unit!

Connection of power supply to Control Unit **LSF 7000 - 5A**

5 A



Feed via external fuse and switching element!
Connect the power supply and batteries while it is voltage-free! Switch off the power supply and secure it against being switched on again!

*) only version 0102

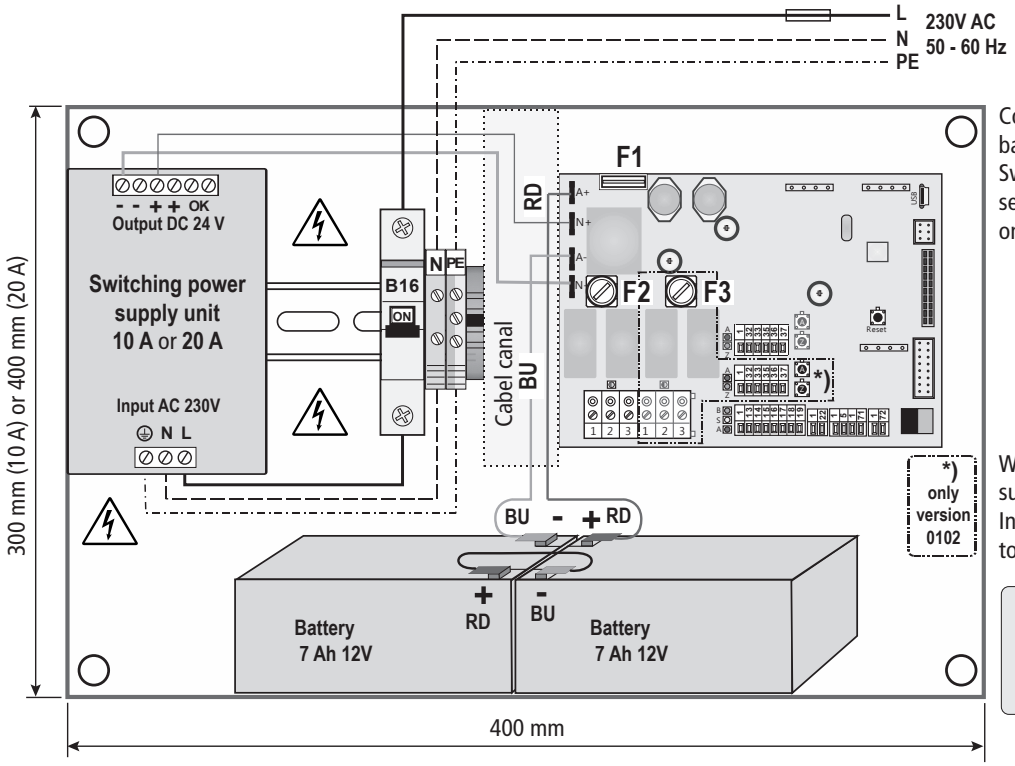
Note polarity when connecting!
⊖ = blue ⊕ = red

When connecting the batteries, make sure that the polarity is correct. Incorrectly connected batteries lead to damage to the Control Unit!

Connection of the power supply to Control Unit **LSF 7000 - 10A** and **LSF 7000 - 20A**

Feed via external fuse and switching element!

10 A **20 A**



Connect the power supply and batteries while it is voltage-free! Switch off the power supply and secure it against being switched on again!

*) only version 0102

When connecting the batteries, make sure that the polarity is correct. Incorrectly connected batteries lead to damage to the Control Unit!

Note polarity when connecting!
⊖ = blue ⊕ = red

INSTALLATION STEP 5: System configuration via software: LSF 7000

Installation

A free version of the system software (VIEW version) can be downloaded from the homepage **www.aumueller-gmbh.de** It can be installed on a computer (Notebook or Netbook). Please note the hardware and system requirements (see below).
For installation, follow the instructions on screen.

USB

The software offers many features to adapt the the system to your needs. Please note that not all available functions can be used without activating the software for a fee (licence).

If you wish to activate the software, please apply for an activation code. After this code has been entered, the paid functions can also be used.

The „Software Clause for the Provision of Standard Software as Part of Deliveries" of the ZVEI (Central Association of the Electrical and Electronics Industry e.V.) is considered to be legally binding upon installation.

System requirements

The software can be installed on a portable computer with the following features:

CPU: 1 GHz or faster.
Betriebssysteme: Microsoft® Windows 7 Microsoft® Windows 10
Memory: 512 MB RAM or more
Hard Drive: At least 100 MB free memory space required.
Accessories: USB po rt for computer connection<>Control Unit, internet connection for system installation and updates.

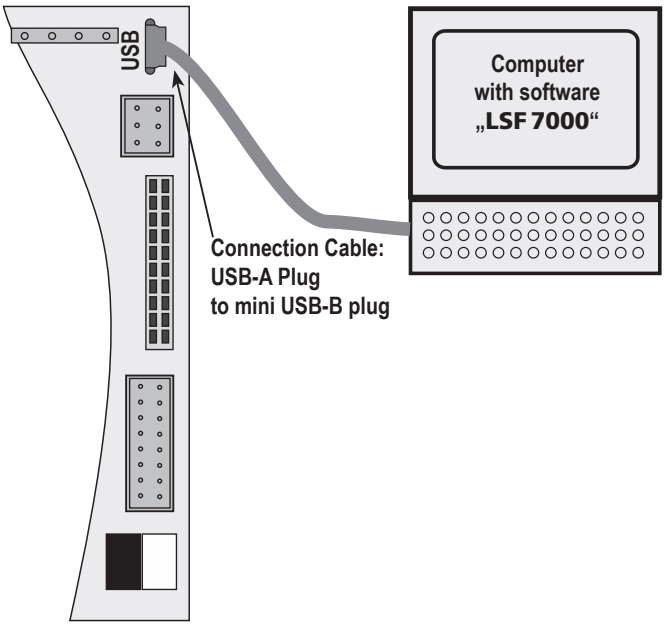
USB

Our software requires NET 2.0 Runtime™ and the Visual C 2008™ Redistribution Package for the function. These packages will be installed automatically by the installer if they are not available on the system.

Connect computer to Control Unit

- Switch on the computer and
- connect to the control panel via the USB port (see figure).
- Then start the computer with the software already installed.

To avoid data loss, the USB cable should not exceed 5 metres in length. The use of a USB hub is not recommended. In contrast to the usual USB ports, the port is not displayed in the Windows main bar.



Programme handling

The user interface of the programme enables quick and intuitive work. A HELP function provides the necessary information.

USB

The **LSF 7000** Control Unit was tested by the VdS in the standard setting (delivery status). Modifications to the central configuration may only be carried out by a recognised installer (only for VdS systems).

After each configuration of the Control Unit, check that it is functioning correctly. We cannot accept any liability for errors caused by incorrect system configuration and warranty claims must be excluded.

Functions of the licence-free software version

This overview shows the functions that are freely available with the **VIEW version**. We expressly reserve the right to make additions and changes.

- Disable monitoring of the drive line (factory default setting = active)
- EMERGENCY OPEN on fault active (factory default setting)
- Set time-controlled automatic closing (factory default setting = not active)
- Deactivate time-controlled ventilation function (10 min every 8 h) (factory default setting = active)
- Displaying, saving and printing the machine status
- Firmware update

Functions of the licensed software version

This overview shows the functions that can only be carried out with the license version after it has been activated for a fee. We expressly reserve the right to make additions and changes.

- Set service/maintenance time (setting is protected by password)
- Switching off the drives in the event of RWA EMERGENCY OPEN
- FAS function for line smoke detectors
- Switch-off time drive line(s) (factory default setting 300 s)
- Set / select functions of the REL 65 relay card

Installation Step 6: Release for operation and commissioning RWA systems with Control Unit **LSF7000**

Before the Control Unit can be released for operation by the installer, the complete functional range of the system must be carefully checked. The section „help in case of malfunctions or repair" provides assistance for the localisation of possible errors and faults. On the last inside page of these instructions you will find an overview of the external connections. Enter the current assignment of the external connections in this list.

Modifications to the system with the system software should only be made after the Control Unit has been completely installed and all components have been connected. The system configuration and the system status can be saved with the system software if required.

In the event of a fault or malfunction of system components, the system configuration (connection of computer with system Software) must also be carefully checked if necessary.

For safety reasons, the Control Unit is supplied with a default setting of "deadman" for ventilation operation. The change to "self-retaining" can only be made via the software.

Before changing the operating mode, the hazard points in the lift shaft must be checked and observed!

It is essential to ensure that all safety-relevant requirements for the "self-locking" operating mode are met in accordance with the manufacturer's specifications for the connected opening components.

RWA systems require an operating logbook in which all important master data must be entered before the system is released and all important operating events during the operating period. The operating log is part of the system documents and must be kept accessible to qualified personnel.

Follow the instructions in chapter „Safety Instructions".

An insulation measurement of the line network should be carried out before the release for operation and the result should be recorded.

Depending on the duration of storage, the batteries need time to reach their full charge state. This can mean that the time needed to bridge the loss of mains voltage is not guaranteed as soon as the batteries are connected and that the batteries first need to be charged (min. 8 hours) in the mains power supply to reach their complete state of charge.

The Control Unit must not be released for operation unless **all** system components are functioning properly. This also applies to system components which do not fall under our manufacturer's responsibility or whose installation has not been commissioned, but which are part of the RWA system. **All** functions of the Control Unit must be carefully checked for correct operation after installation. Even if there is no fault message, this does not mean that all components are working properly.

If the factory default configuration has been changed with the system software, this must be taken into account in the user manual. If necessary, an instruction manual that is easy to understand to non-specialist users must be created.

⚠ Warning

The system saves lives in the event of fire. Therefore, any faults must be rectified immediately or must be repaired by a specialist company!

Help with malfunctions or repair

All functions and system components important for RWA operation are permanently monitored for faults. A fault message indicates the type of fault or, when the central Control Unit is put into operation, any faults in the connection of system components (e.g. batteries, detectors, drives).

The configuration of the Control Unit via the software has a significant influence on the functioning of the individual system components. For this reason, a computer with the system software must be connected for precise control.

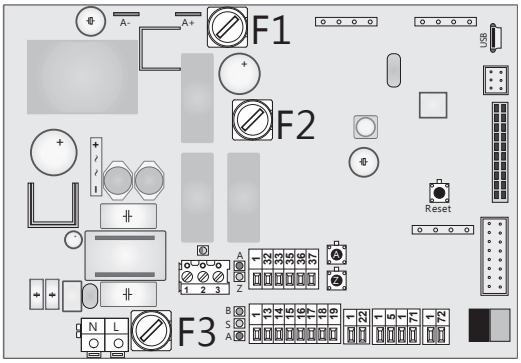
The overview below shows some of the possible faults and problems and their causes. „Display **B**" stands for the green operating display which does not light up in case of a fault. The yellow „Display **S**" indicates the type of fault. An overview of all displays can be found in the chapter „Displays and Controls".

Error / Fault	Possible causes and their possible solutions
No indicator is lit	• No mains power or fuse F1 / F2 is defective
Display „S" is flashing	• Check mains power connection
Display „S" is flashing quickly	• The batteries are not connected correctly or are not charging
Display „S" is permanently lit	• Line break or short circuit in the manual fire detection line (HSE) • Faulty line monitoring
Display „S" is blinking slowly	• Line break or short circuit in the smoke detector line • Faulty line monitoring
Display „S" is flashing 2 x	• Maintenance interval reached (display „B" (green) is lit!)
Display „S" is flashing 4 x	• Line break or short circuit in drive line 1 • Faulty line monitoring
Display „S" is flashing 5 x	• Only drive line 2, error cause analogue drive line 1
Display „S" is flashing 6 x	• The EMERGENCY CLOSE button (HSE) does not work correctly or is not recognised
Drives do not react	• Check fuse F2 / F3 • Check the connection of the drives according to their assembly instructions • Or, if the displays (red / green) do not react either: check ventilation control
Drives are running incorrectly	• The displays of the drive direction (red / green) must correspond to the actual direction. Otherwise replace the connections on terminals 1 and 2 • Check the connection of the drives according to their assembly instructions
Signal REL65 is not recognised by an external device	• Check that the REL 65 relay module is correctly inserted and correctly connected.

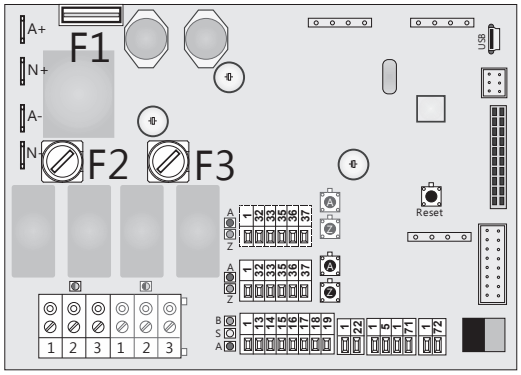
The system software allows you to check the system performance in detail. It is also helpful to have a computer with the system software ready when contacting our service department by telephone.

Fuses

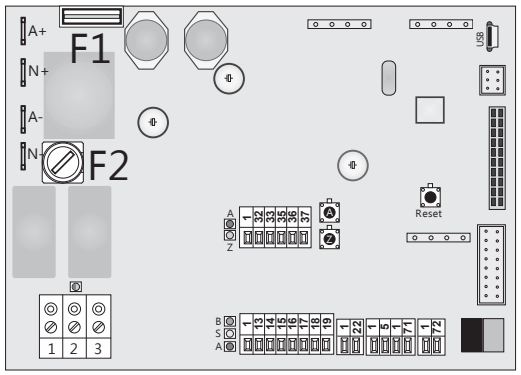
Control Unit Version						
LSF 7000 2,5A	**F1**	3,15 AT (Battery)	**F2**	3,15 AT (Drives)	**F3**	3,15 AT (primary)



Control Unit Version						
LSF 7000 5A-0102	**F1**	5 AT (Battery)	**F2**	6,3 AT (Drive 1)	**F3**	6,3 AT (Drive 2)
LSF 7000 10A-0102	**F1**	10 AT (Battery)	**F2**	10 AT (Drive 1)	**F3**	10 AT (Drive 2)
LSF 7000 20A-0102	**F1**	25 AT (Battery)	**F2**	10 AT (Drive 1)	**F3**	10 AT (Drive 2)



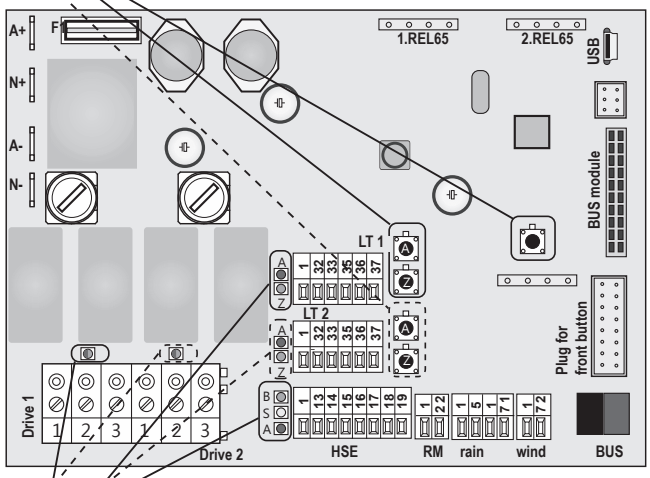
Control Unit Version						
LSF 7000 5A-0101	**F1**	5 AT (Battery)	**F2**	6,3 AT (Drives)		
LSF 7000 10A-0101	**F1**	10 AT (Battery)	**F2**	10 AT (Drives)		



Display and Control elements

Position in the Control Unit

The position of the displays and operating (buttons) is identical for all versions of the **LSF 7000** Control Unit. Only the number of ventilation lines is different.
The versions **LSF 7000** 5A-0102, **LSF 7000** 10A-0102, **LSF 7000** 20A-0102 have two displays and operating elements for the drive control (LT 1 and LT 2).



Push button:

A / Z	Drive direction **A** = OPEN / **Z** = CLOSE (2 x with version 0102)
Reset	Reset / EMERGENCY CLOSE (Resetting the smoke detectors after EMERGENCY OPEN)

Displays:

B / S / A	(GN) = Operation (YE) = Fault (RD) = Alarm (EMERGENCY OPEN)
A / Z	Drive direction and position **A** = OPEN (RD) / **Z** = CLOSE (GN)
	Drive direction **A** = OPEN (RD) / **Z** = CLOSE (GN) (Duo-LED) (2 x with version 0102). The Duo-LED shows the current direction of the line tension for the duration of the set drive time.

Explanations

B / S / A	GN = green YE = yellow RD = red
- - - - - - - -	Only available for Control Unit versions: **LSF 7000** 5A-0102 **LSF 7000** 10A-0102 **LSF 7000** 20A-0102

Meaning of the displays (overview)

In principle, the green display „**B**", indicates that the Control Unit is working properly. If a yellow display „**S**", lights up, this indicates a fault which must be eliminated immediately.
As the type of fault display in the break-glass units (HSE) may differ from the fault display „**S**" in the Control Unit, the displays in the Control Unit must always be observed for precise fault determination.

Drive direction

Drives	Drives
OPEN RD *)	**CLOSE** GN *)
1 2 3 — A: on (RD) / Z: off	1 2 3 — A: off / Z: on (GN)

*) The Duo-LED only lights up for the duration of the set drive time.

Alarm activation / EMERGENCY OPEN

Network operation	Battery Operation (power failure)
EMERGENCY OPEN	**EMERGENCY OPEN**
B: on (GN) S: off (YE) A: on (RD)	B: off S: flashing (YE) A: on (RD)

Faults

Display	Meaning	Note
B: off S: flashing	Mains failure / Battery operation	
B: off S: flashing fast	Battery fault	
B: off S: on	Fault of the break-glass unit (HSE)	
B: off S: flashing slow	Smoke detector fault	
B: off S: flashes 2x	Maintenance required	Requires license software
B: off S: flashes 4x	Fault Drive linie 1	
B: off S: flashes 5x	Fault Drive linie 2	Only with version Control Unit 0102
B: off S: flashes 6x	Fault EMERGENCY-CLOSE button	Permanent contact
B: on S: A: flashing slow	The system was closed via the manual control device. Smoke detectors are still activated.	

LED displays on an break-glass unit (HSE)

Display	Status
B on S off A off	Normal operation
B on S off A on	EMERGENCY OPEN / Alarm (network operation)
B off S flashing A on	EMERGENCY OPEN / Alarm (battery operation)
B off S flashing A off	Power failure (highest priority)
B off S on A off *	Fault on Break-glass unit-lines * depending on configuration „EMERGENCY OPEN on faults" is switched on or off
B off S on A off *	Fault on smoke detector lines * depending on configuration „EMERGENCY OPEN on faults" is switched on or off
B off S flashing slowly A off *	Fault on motor line 1 or 2 * depending on configuration „EMERGENCY OPEN on faults" is switched on or off Fault on EMERGENCY CLOSE button
B off S flashing quickly A off	Battery fault (lowest priority)
B on S flashing 2x A off	Maintenance expired

B Operation S Fault A EMERGENCY OPEN LED display	⚠ The functionalities of the external LED outputs can be configured.

Faults

Display	Meaning	Note
B on S A flashing slowly	The sysem was closed via break-glass unit. Smoke detectors are still activated.	

Risk Analysis lift shaft smoke extraction LIFT-SMOKE-FREE

No.	Life phase	Short text description	Risk BEFORE	Solution	Explanation	Risk AFTER	Comment
1	I W	**Industrial safety** When working in the lift, there is a risk of slipping, tripping or falling.	5	WS	Only specially trained and authorised personnel may work in the lift shaft area. The personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be presented if necessary.	2	BGI 779 should be specially trained and observed.
2	I W	**Industrial safety** When travelling in the lift, there are crushing, catching, shearing and fall hazards.	6	WS	Only specially trained and authorised personnel may work in the lift shaft area. The personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be presented if necessary.	2	BGI 779 should be specially trained and observed.
3	I W	**Industrial safety** When working and travelling in the lift, there are crushing, catching, shearing and falling hazards with regard to the height relative to the lift ceiling.	6	WS	Only specially trained and authorised personnel may work in the lift shaft area. The personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be presented if necessary.	2	BGI 779 should be specially trained and observed.
4	I W	**Industrial safety** When working and travelling in the lift, there is a risk of being crushed, caught or sheared when approaching fixed or moving parts.	6	WS	Only specially trained and authorised personnel may work in the lift shaft area. The personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be presented if necessary.	2	BGI 779 should be specially trained and observed.
5	I	**Industrial safety** When working in the lift shaft, increased accident risks must be taken into account, e.g. sharp edges of protruding components, etc.	3	S	Only specially trained and authorised personnel may work in the lift shaft area. The personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be presented if necessary.	2	
6	I	**Industrial safety** Electrical hazard. Connecting the Control Unit to the 230 V power supply may cause an electric shock.	3	WS S	Only qualified and trained personnel should be employed for installation work on the power supply system. The installation instructions and the accident prevention regulations must be adhered to.	2	The operator's duty of care with regard to the accessibility of electrical control rooms must be guaranteed.
7	I W	**Industrial safety** Access. Access to the installation in the lift shaft involves several hazards.	2	WS	Only specially trained and authorised personnel may work in the lift shaft area. The personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be presented if necessary.	2	
8	B	**Industrial safety** The failure of the Control Unit when the ventilation flap is closed can have an impact on the air quality.	4	K	The existing door gap dimensions guarantee minimum air circulation. In particularly hot regions, a thermostat control should be installed. The specifications of the technical planner based on the ventilation concept of the building should be checked for compliance with regulations. If necessary, a CO2 air quality meter should be installed.	2	
9	B	**Industrial safety** In the event of a lift breakdown with people trapped in the lift car, optimal ventilation in shafts of low-energy properties can be vital for users.	4	K	The existing door gap dimensions guarantee minimum air circulation. In particularly hot regions, a thermostat control should be installed. The specifications of the technical planner based on the ventilation concept of the building should be checked for compliance with regulations. If necessary, a CO2 air quality meter should be installed.	2	
10	W	**Industrial safety** In the event of a lift breakdown with a technician trapped on the car roof, optimal ventilation can be vital. Poor ventilation could cause the technician to faint and put himself in a life-threatening situation.	4	K WS	The existing door gap dimensions guarantee minimum air circulation. In particularly hot regions, a thermostat control should be installed. The specifications of the technical planner based on the ventilation concept of the building should be checked for compliance with regulations. If necessary, a CO2 air quality meter should be installed.	2	
11	B	**Industrial safety** Failure of the ventilation drive when the ventilation flap is closed can have an effect on the air quality in the lift shaft. Legally required smoke exhaustion cannot be implemented.	6	WS	The probability is extremely low due to annual professional maintenance of the system. For this purpose, the personnel must have understood all **LSF** training courses and documents in advance and comply with Accident Prevention Regulations (UVV). Proof must be provided if necessary.	2	

Explanation	Life phase:	Risk:	Solution:
	I Installation / Commissioning **B** Operation **W** Maintenance / Service	**1 - 2** Low **3 - 4** significant **5 - 7** high	**K** Constructive **S** Protective equipment **WS** Warning Notice / training

Installation Certificate

Developer / Operator of the RWA system	
Name:	**Phone:**
Street:	**Fax:**
Postcode/Town:	**E-mail:**
Eingewiesene Person:	

Building	
Name:	**Phone:**
Street:	**Fax:**
Postcode/Town:	**E-mail:**

Installer	
Name:	**Phone:**
Street:	**Fax:**
Postcode/Town:	**E-mail:**

1.) Elevator Shaft (practical values)	
Floor Area:	**m^2**
Smoke exhaust opening:	**m^2**
Height of the lift shafts:	**m**

2.) Sizing (theoretical value)	
Smoke exhaustion area in the shaft: at least 0,1 m^2	**m^2**
The % value of the floor area: at least 2,5 m^2	**%**

3.) Measures to be implemented from the developer/operator (to be filled in by the installer)

No action required.

4.) Components used - **Aumüller** „Lift-Smoke-Free“ (LSF / abZ / aBG)		
Quantity:	**Components:**	**Type / Data:**
	Control Unit **LFS 7000**:	**2,5 A** - 0101 (**511220**)
		5 A - 0101 (**511221**)
		10 A - 0101 (**511223**) - 0102 (**511224**)
		20 A - 0102 (**511225**)
	Smoke detector set: mounting on the manhole cover / floor	**ORM** (**531520**)
	Smoke detector: mounting on the wall	**ORM** (**531520 + 511232**)
	HSE push button:	**HSE** orange (**511042**) **HSE** yellow (**511044**)
	Louvre windows:	**LF01L** (**511235**) **LF02L** (**511228**)
		LF03L (**511236**)
	Special louvre windows m^2 A_{geom}	**Special** Add this article number when ordering!
	Mounting frame:	**MR01** (**511237**) **MR02** (**511227**)
		MR03 (**511238**)
	Special mounting frame:	**Special** Add this article number when ordering!
	Smoke exhaustion hood:	**EH01** (**511233**) **EH03** (**511234**)
	Weather protection hood:	**WH01** (**511260**) **WH03** (**511261**)
	Smoke detector main point:	**ORM** (**511228**)
	Plug-in card 7xPSB:	**7xPSB** (**683256**)
	Ventilation key switch:	**aP** (**51155**)
	Air quality meter (CO2 sensor) :	**CO2** (**511264**)
	Room thermostat:	**Degree** (**483200**)
	External Control FAS:	**FACU** (**670053**)
	External Control of GLT:	
	Siren:	**Siren** (**45000**)

5.) Declaration by the installer

The system is fully functional.

Labelling – according to abZ / aBG - applied.

A maintenance contract was offered:

No

Yes, with

Name

Street

Postcode / Town

Remarks:

Date

Signature with company stamp of the installer

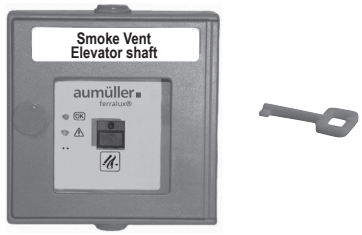
Instruction for the functional test of an external safety device

Instruction for the function test of an external safety device
Smoke removal and ventilation of lift shafts „**Lift-Smoke-Free**“ system **Basis:** Ordinance on Industrial Health & Safety-BetrSichV, Appendix 2 (on §15 and 16), Section 2, Clause 1
Location of the building in which the lift shaft smoke exhaustion system is installed **(exact description and lift number if applicable):**
Integration in the operation of the lift system or other systems (please cross): No Function in connection with the lift installation Fire Control according to EN81-73, car evacuation drive Control of other on-site systems (FAS, GLT etc.) Messages from the lift installation to the Control Unit (detailed description)
Misc:

These instructions do not replace regular maintenance of the installation, but serves to describe and check the function of this safety device which is located outside the lift.

This function test is carried out by persons with the appropriate qualification in accordance with the Operational Safety Ordinance. The test results must be documented, stored and, if required, presented to the appropriate monitoring bodies (e.g. ZÜS, Office for Occupational Health and Safety, BG).

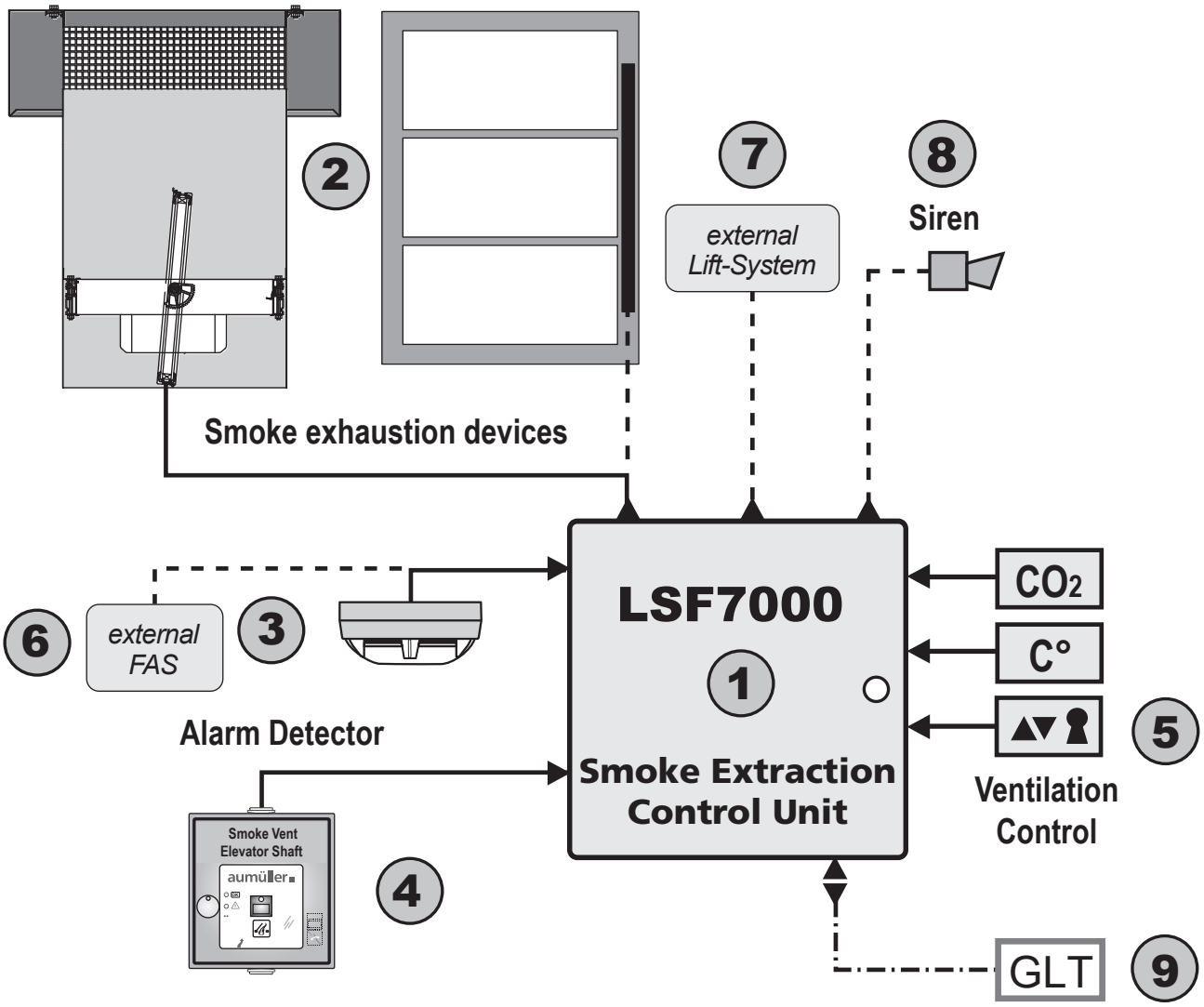
Function test according to the operational safety ordninance

Explanation	
Test 1: RWA button: **1.** Open the push button housing with the key. **2.** Press the EMERGENCY OPEN key. **3.** Red LED lights up and the smoke exhaustion opening in the shaft is activated. **4.** Press the EMERGENCY CLOSE (RESET) key. **5.** Red LED goes out and the smoke exhaust opening in the shaft is closed. **6.** Close the button housing again.	
Test 2: Ventilation key switch: **1.** Operate the push-button in the OPEN direction using the key. **2.** The smoke exhaustion opening in the shaft is activated. **3.** Operate the push-button in CLOSE direction using the key. **4.** The smoke exhaustion opening in the shaft is closed.	

Maintenance of the LIFE-SMOKE-FREE (with Control Unit LSF 7000)

Smoke exhaustion system

① Control Unit **LSF7000**	④ Break-glass unit (**HSE** push button)	⑧ Siren
② Smoke exhaustion system: smoke exhaustion hood, smoke exhaustion louvres	⑤ Ventilation switches, ventilation sensors	⑨ GLT (Integration in external network)
	⑥ External FAS (Fire Alarm System)	
③ Smoke detector lift shaft (**RM**)	⑦ External Lift System	



Important Maintenance Instructions

Lasting operation and safety of the entire system requires regular maintenance, **at least once a year** by a specialist company (legal requirements for the smoke and heat ventilation systems and requirements of the general building inspection approval).

The operator of the system must carry out or commission a visual inspection at least once between maintenance intervals (see "Maintenance / Visual inspection") and document this in writing in the operating log book.

We recommend a maintenance contract with a specialist company authorised by the manufacturer. A sample maintenance contract can be downloaded from the homepage of **Aumüller Aumatic GmbH**.

Aumüller Aumatic GmbH will be pleased to assist you with questions regarding maintenance as well as legal questions concerning preventative fire protection or official acceptance and testing.

aumüller

Aumüller Aumatic GmbH
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www.aumueller-gmbh.de
Telefon: 049 8271 8185-0 • Fax: 049 8271 8185-250

Safety instructions for maintenance

- When working in the Control Unit, the workplace must be secured against unauthorised access.
- The responsibility for maintenance lies exclusively with the specialists who carry out the maintenance.
- An operating log book is required for RWA systems, in which maintenance must be recorded. Special attention must be paid to any operating events noted in the logbook (e.g. recurring faults).
- These installation and operating instructions are part of the maintenance documents. The Control Unit may only be serviced in accordance with the information contained herein. This also applies to system additions and the replacement of components. A separate maintenance log should be prepared and attached to the maintenance documents.
- Only original parts may be used. Otherwise the warranty obligation and the product liability of the manufacturer are void.
- The installation and maintenance instructions of the manufacturers of the individual system components are binding for the maintenance of these components. If these are not available, they must be requested from the manufacturer. If special maintenance instructions are required (e.g. for NRWG according to EN 12101-2), these must also be available.

After opening the device housing, live electrical parts are exposed!
Before any maintenance or alteration to the unit's configuration (e.g. replacement of components), the mains power supply and – if available – the batteries must be disconnected at all terminals and secured against accidental reconnection (lock in disconnected position).

During the entire duration of the work, the official requirements and regulations must be adhered to, especially the accident prevention regulations. The individual work steps must be agreed with the building operator. Unauthorised changes to the system are prohibited.

System configuration must be checked and logged during every maintenance. The next maintenance date can only be set with the licence software, for which a fee is charged, and protected against unauthorised access by a password. The maintenance date is then signalled by the fault indicator "**S**" flashing twice.

Note any alarm and fault transmissions during the maintenance work.

Any faults found must be documented and eliminated in the course of maintenance.

Maintenance / Visual Inspection

To maintain the system, first carry out a visual inspection of the following components:

1. **Smoke detector**
   - fixed installation and free from damage
   - freely accessible, dust-free openings
   - connection terminals properly applied and connected
2. **Control Unit**
   - Displays on the Control Unit **LSF 7000**
   - Connection terminals properly applied and connected
3. **Smoke Exhaustion System**
   - Smoke exhaustion system and cable routing free from damage
   - Smoke exhaustion system and cable routing free from heavy contamination
4. **Control and release units**
   - Detectors, buttons and their cable routing free from damage and heavy contamination
5. **External Controls**
   - Cable routing free from damage and heavy soiling
   - No error messages from or to external controls
6. **External Alarm Transmitter**
   - Siren and its cable routing free from damage and heavy contamination

Testing and Maintenance of the Control Unit

- Check all connections on all devices for secure connection and for possible damage.
- Check all fuse links.
- Check the charge level and installation date oft he batteries and replaced them if necessary (batteries must be replaced **4 years** after installation).
- Check the drive Control Unit for proper function. Check the direction of movement of the drives. If the control is correct and the drive still does not work correctly, follow the instructions for installation and commissioning of the drive manufacturer.
- Check the function of all manual control devices and ventilation push buttons (do the drives move in the direction indicated on the push buttons?).
- Test all smoke detectors with test gas according to manufacturer's instructions.
- Remove dirty or defective detectors and send them to the manufacturer for repair or cleaning.
- If activated by an external alarm system (FAS), check that the **LSF 7000** Control Unit receives the signal correctly.
- If the Control Unit is equipped with a relay card REL 65 or a plug-in card 7xPSB, check that the plug-in cards are fitted correctly and check whether the desired signal is transmitted correctly.
- Use the machine software to check the configuration and test whether the machine operates according to the saved configuration.

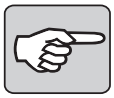
NOTE

For the maintenance of the connected components, the maintenance instructions of these components are to be followed.

Testing and maintenance on the smoke detector

During the operation of the system, dust formation in the the lift shaft can cause contamination or blockages to the openings on the smoke detectors. These must be checked during maintenance and removed if necessary.

During commissioning and maintenance (at least once a year), each smoke detector must be checked for function by means of a teast aerosol (Art. No. 280.108). Testing with smoke (e.g. cigarette smoke) is not permitted, as the detector optics are heabily contaminated.
According to DIN 14675, the detector should be replaced in the process of inspection and must be replaced after **8 years** at the latest.



After switching on, after each interruption of the power supply for longer than 1 second, or with each reset signal, the smoke detectors automatically go into an initialisation phase, which lasts about 4 minutes. During this time, the red LEDs in the smoke detector flash briefly every second. The detector then switches to normal operation.

NOTE

Press the "EMERGENCY OPEN reset" push button in the **LSF 7000** Control Unit. The detectors switch to revision mode for 4 minutes and can be activated with the test aerosol.

An evacuation run of the lift car is activated if necessary!

The following work steps must be repeated for each smoke detector:

1. Spray the test aerosol in the smoke detector and activate the alarm.
2. Check the alarm status display on the smoke detector and Control Unit.
3. Check that the smoke exhaustion system opens correctly.
4. Check alarm via connected siren if necessary.
5. Reset the alarm by pressing the „CLOSE RESET" in the HSE push button or „EMERGENCY CLOSE Reset" button in the Control Unit.

Check activation by a connected FAS / FACU

For testing the transmission path for activation by a FAS / FACU, have the system operator trigger or simulate a fire alarm and proceed as follows:

Do not trigger the alarm from the FAS / FACU yourself! You are liable for damages!

1. Activate (let release) the alarm from the FAS / FACU.
2. Check the display of the alarm signal on the connected FAS / FACU.
3. Display the alarm status on the **LSF 7000** Control Unit test.
4. Check that the smoke exhaustion system has opened correctly.
5. Reset the alarm via the HSE push button.
6. Check the reset of the alarm on the FAS / FACU.

Check fault message

Check the transmission path of a fault message to the connected components as follows:

1. Turn the detector insert of a smoke detector in the base counterclockwise and remove it.
2. This leads to a fault in the smoke detector line.
3. Check fault displays on the **LSF 7000** Control Unit.
4. Check the display of the HSE push buttons, if necessary check the forwarding or transmission of the fault to other systems.
5. Screw the detector insert into the base in a clockwise direction until it engages.
6. Smoke detector fault is reset with a delay.

Check ventilation function

Repeat the following steps for each ventilation push button:

1. Press push button in OPEN and CLOSE direction.
2. Follow the motion of the smoke exhaustion unit according to the direction of control.
3. Check the LED displays in the push button.
4. Close the system using the ventilation push button.

Check Emergency power batteries

The **LSF 7000** Control Unit is equipped with 2 emergency power batteries. The batteries are located in the battery compartments of the control unit housing. They are completely maintenance free and must be replaced at least every **4 years**. If necessary, check the condition of the batteries with appropriate measuring equipment. Only batteries approved by the manufacturer may be used.

The installation date must be noted on the batteries!

NOTE

Dispose of removed batteries according to legal regulations.

Maintenance Timer

The **LSF 7000** Control Unit offers the possibility of setting a maintenance interval via the configuration software which is subject to licensing. The expiry of the maintenance date is signalled in the HSE push button and in the Control Unit (see "Meaning of the displays" and "Help in case of malfunction or repair").

If the maintenance interval has expired, it must be reset by a specialist. The maintenance interval can be reset using the configuration software, which is subject to a charge.

The maintenance timer is not active when delivered!

Check points	OK	Not OK	N / A
1. Intended use of the system.			
2. Completeness and visual inspection of the installation according to the equipment directory.			
3. Smooth running and leak-proof smoke exhaustion systems.			
4. Visual inspection Control Unit.			
5. Battery voltage / installation date of the battery (replace every 4 years!).			
6. Mains voltage at Control Unit and charging voltage (27,6 V).			
7. Connection of the protective conductor.			
8. Function ventilation button / ventilation switch.			
9. Air quality meter function.			
10. Function additional devices (e.g. thermostat).			
11. Activating / resetting the system on the HSE button, including displays.			
12. Activation of the system by the smoke detector(s) including displays.			
13. Activating via FAS control.			
14. Complete opening of the smoke exhaustion system <60s in case of alarm.			
15. Signal transmission to / from lift control (inform operating personnel!).			
16. Function of static fire control.			
17. Function of the extended static fire control.			
18. Function of the sirens.			
19. Maintenance timer active / reset.			
20. Information and warning signs available.			
21. Function-preserving cleaning performed.			
22. Test badge attached.			

Storage and Disassembly

The Control Unit should only be stored in places protected from moisture, heavy contamination and high temperatures (not above 30 °C). Do not remove the packaging until the Control Unit is ready to be installed. Disconnect the batteries and store them separately if the Control Unit has already been used.

When storing rechargeable batteries it is essential to observe the following:

Keep the storage time of the lead acid batteries as short as possible, as the batteries discharge over time. The batteries must be recharged after seven months of storage at the latest. For recharging, either use a suitable charger or connect the batteries to an EMB Control Unit and supply it with mains voltage. In both cases the charging time is at least **8 hours** (depending on discharge).

If the Control Unit is to be permanently decommissioned, the legal regulations for destruction, recycling and disposal must be adhered to. The Control Unit contains plastic, metal and electrical components as well as batteries. Replaced batteries contain highly toxic pollutants and must therefore only be disposed of at the collection points stipulated by law.

Before removing the Control Unit, it must be disconnected from the mains at all poles!

Disposal

Do not throw electrical appliances in the household waste! According to the European Directive 2012 / 19 / EU on Waste Electrical and Electronic Equipment (WEEE) and its implementation in national law, electrical equipment that is no longer usable must be collected separately and sent for environmentally friendly recycling.

Warranty and Customer Service

In principle, the following applies:

„General Terms of Delivery for Products and Services of the Electrical Industry (ZVEI)".
„Terms of Delivery for the software used".

The warranty complies with the legal requirements and applies to the country in which the product was purchased.
The warranty extends to material and manufacturing defects that occur under normal use.

The warranty period for material delivery is twelve month.

Warranty and liability claims for personal injury and damage to property are excluded if they are attributable to one or more of the following cause:

- Improper use of the product.
- Improper installation, commissioning, operation, maintenance or repair of the product.
- Operating the product with defective, incorrectly installed or non-functional safety and protective devices .
- Failure to observe the instructions and installation requirements in these instructions.
- Unauthorised structural changes to the product or accessories.
- Catastrophes caused by foreign bodies and Acts of God.
- Wear and tear.

The contact person for possible warranties or for spare parts or accessories is the branch office responsible for you or your responsible clerk at:

Aumüller Aumatic GmbH.
The contact details are available on our website
(www.aumueller-gmbh.de)

Liability

Product changes and product adjustments can be made without prior notice. Illustrations are not binding. Despite the greatest possible care, no liability can be accepted for the content of these instructions.

Overview of all external Connections for the **LSF 7000** Control Unit

Pay attention to the individual connection diagrams in this description. For the position of the respective terminals as detailed for the different Control Unit versions.

(to fill in)

		Terminals			Comment
Drive 1		CLOSE +	OPEN –	1	
		–	+	2	
		Line monitoring		3	
Drive 2 only version 0102		CLOSE +	OPEN –	1	
		–	+	2	
		Line monitoring		3	
Ventilation 1	Switch	COM		1	
		OPEN		32	
		CLOSE		33	
	Displays	COM		35	
		OPEN		36	
		CLOSE		37	
Ventilation 2 only version 0102	Switch	COM		1	
		OPEN		32	
		CLOSE		33	
	Displayn	COM		35	
		OPEN		36	
		CLOSE		37	
Manual Fire detector	Switch	COM		1	
		EMERGENCY OPEN		13	
		CLOSE		14	
	Displays	COM	–	15	
		EMERGENCY OPEN	+	16	
			+	17	
		Operation	+	18	
		Fault	+	19	
Smoke detector (or FAS)				1	
			+	22	

			Terminals	Comment
1. REL 65 (optional)			1	
			2	
		COM	3	
2. REL 65 (optional)			1	
			2	
		COM	3	
7xPSB	**Emergency power supply**	F2 24 V DC –	1	
		24 V DC +	2	
	Mains voltage	F1 24 V DC –	3	
		24 V DC +	4	
Room thermostat		(1)	1	
		(3)	72	
Air quality meter (CO2)		(1) –	1	
		(2) +	5	
		(3)	1	
		(4)	71	
FACU module		(1)	1	
		(3)	22	
Ventilation key switch			1	
			32	
			33	
			35	
			36	
			37	

Certificate and Declaration of Conformity

We declare under our sole responsibility that the product described under "Data sheet" is in conformity with the following directives:

- 2014/30/EU
  Directive relating to Electro-Magnetic Compatibility
- 2014/35/EU
  Low voltage Directive

CE

Technical file and declaration at firm:

Aumüller Aumatic GmbH
Gemeindewald 11
D-86672 Thierhaupten

Ramona Meinzer
Managing Director (Chairman)

Note:

The proof of the application of a quality management system is for company:

Aumüller Aumatic GmbH

according to the certification basis **DIN EN 9001** as well the "Declaration of Incorporation and Conformity" can be accessed via the QR code or directly on our homepage:

(www.aumueller-gmbh.de)

Translation of the original instructions (German)

Important note:
We are aware of our responsibility, which is why we present life-supporting and value-preserving products with greatest possible conscientiousness. Although we make every effort to ensure that the data and information are as correct and up-to-date as possible, we still cannot guarantee that they are free from mistakes and errors.
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The publication of these assembly and commissioning instructions supersedes all previous editions.

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