HAUTAU
A MACO Group Company

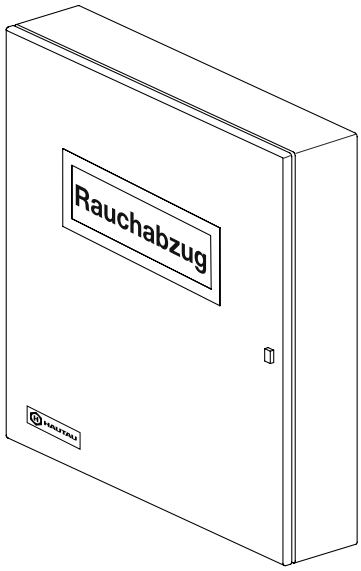
EN

Installation and operating instructions

Central smoke exhaust unit
RAZ 908, 916, 924, 932, 940, 948, 956, 964, 972

Central ventilation unit
LZ 908, 916, 924, 932, 940, 948, 956, 964, 972

Mitglied im VFF
Verband Fenster + Fassade



TÜV International Certification
TÜV THÜRINGEN
Geprüft
Tested
3510.3683.14.01
TIC

nach prEN 12101-9:2004
EN 12101-10:2005
☑ elektrische Sicherheit
☑ EMV
☑ Fertigung überwacht

Copy of the original instructions

Product description

The SHEV control unit is intended to be used as a power supply and control device for the connected equipment (refer to section “Equipment overview”). The smoke and heat exhaust control unit HAUTAU RAZ 900 contains all the electronics needed to control 24 V DC drives for windows and smoke vents: in the event of fire and for general ventilation. In case of power failure, the emergency power supply guarantees the operation of the SHEV facility for at least 72 hours.

Features

Opening in an emergency situation:
Manually by fire pushbutton, automatically by smoke and heat detector or third-party activation.

Closing in the event of an emergency:
Manually by SHEV-CLOSE button (Reset) inside the fire pushbutton.

Daily ventilation and exhaustion:
By ventilation pushbutton “OPEN-STOP-CLOSE” (continuous opening) and automatic closing by superordinate wind/rain sensor.

The included features depend on whether the system operates as an SHEV control unit or merely as a central ventilation unit and on which modules have been incorporated.

The smoke and heat exhaust control unit RAZ 9… has been designed as a modular central control unit. The maximum output current of the power supply is indicated by the label RAZ 908, while the expansion stage of the groups is identified by the designation RAZ 908-.

Its basic configuration consists of a housing with screw plate as well as a top hat rail, a transformer, a rectifier module with filter capacitors, a load module, a group module, a smoke and heat exhaust ventilation module, a smoke detector module, and battery packs.

The number of group modules corresponds to the maximum power output of the central unit. Sharing this power output with other groups is not possible. The number of smoke detector modules corresponds to the number of smoke detectors (max. 10 detectors/module). The maximum output current of the power supply or the maximum breaking capacity of the modules may not be exceeded.

The SHEV control unit is designed to run on emergency power for 72 hrs.

While the central ventilation units LZ 9.. are constructed in the same way as the SHEV control units, they lack the modules RWA 9, RM 9, LAD 9 and the battery packs.

Contents

Certificates and declarations

HAUTAU declares that the control unit fulfills all the relevant provisions of the legislation.

The Declaration of Conformity is available via the QR code.

The following legislation have been applied:
- Low-Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- RoHS Directive 2011/65/EU

⚠ WARNING:
Important safety instructions!

CAUTION

The safety of personnel requires that the following instructions be observed. Incorrect installation may result in severe or fatal injury!

The control unit complies with the state of the art. This applies to performance, material, functioning and the safe operation of the control unit.

Mortal danger by electric shock!
The smoke and heat exhaust control unit operates with 230 V AC / 50 Hz. Mortal danger if coming into contact with cables that are live.

During service/maintenance work at the unit, the supply voltage has to be disconnected via isolating link at all poles. Protect the system against unintentional re-starting. The isolating link must be clearly marked. The mains fuse must not exceed the rated current of 6A. Pull off the connecting plugs of the emergency power battery packs. Make sure that all potential-free inputs of the wires are disconnected from the power supply.

Risk of crushing and pinching!
To avoid misuse, a risk assessment acc. to Machinery Directive 2006/42/EC is required at the installation site.

Protective measures are to be applied according to EN 60335-2-103/2016-05.

The mounting of the control unit has to be performed by trained, qualified and safety-conscious electrical staff according to these installation and operating instructions. These include electrical fitters or skilled fitters with training in the field of electrical equipment installation. All work on live components may be performed only by a skilled worker with completed professional training in the field of electrical equipment installation.

Installation information

Make sure your shipment is complete prior to commencing installation. Please notify your supplier immediately in case of any irregularities.

Connect all components only in accordance with the terminal connection diagrams included with the central unit and the drives.

Strictly adhere to all DIN, VDE, government safety organisation and state building regulations (for example VDE 0100, VDE 0833, VDE 0800, BGV).

The introduced external wires that conduct voltages in excess of 33 V AC or 60 V DC must be connected immediately next to the terminal screws in such a way that they cannot come into contact with other live components when they are loosened (e.g. by tying them off).

The mains connection may only be established with cables that have been approved according to DIN VDE 0250-xxx.

The installation of the central unit has to include a switch/ circuit-breaker in function of an isolating link. This must be located near the unit and easy to reach for the user.
Mark this switch as an isolating link visibly for the user.

All wires except the feeder wire conduct 24 V DC and must not be laid together with electric power lines (follow VDE regulations). In any case, the wiring type must be coordinated with the responsible authority (fire department, TÜV, fire protection authority, etc). All maximum wire lengths and cross sections must correspond with the technical specifications. Observe the maximum possible connection options of the control unit.

The position of the central unit and the fire pushbuttons must also be coordinated with the responsible fire protection authority (observe state building regulations). Use suitable mounting material.

When installing the drives, please pay attention to the occurring forces.

Never wire a star-wired network, but always proceed from fire pushbutton to fire pushbutton, from smoke detector to smoke detector, from heat detector to heat detector, and from drive to drive.

Make sure to connect shunt and terminating resistors for central smoke and heat exhaust ventilation and alarm system loops.
Two monitoring diodes (1N 4007) must be installed in the last conduit box in front of the drive and in accordance with the terminal connection diagram.

Smoke and heat exhaust ventilation systems must be serviced at least once a year by the trained personnel of a company specialised in smoke and heat exhaust ventilation and in accordance with all statutory regulations (building code and state building regulations).

Finish by checking all functions as well as function and operation displays on the central smoke exhaust unit and the pivoting range of the drives. Complete the assembler's certificate included in the control book and forward the request form and the corresponding envelope to the operator of the central smoke exhaust unit.

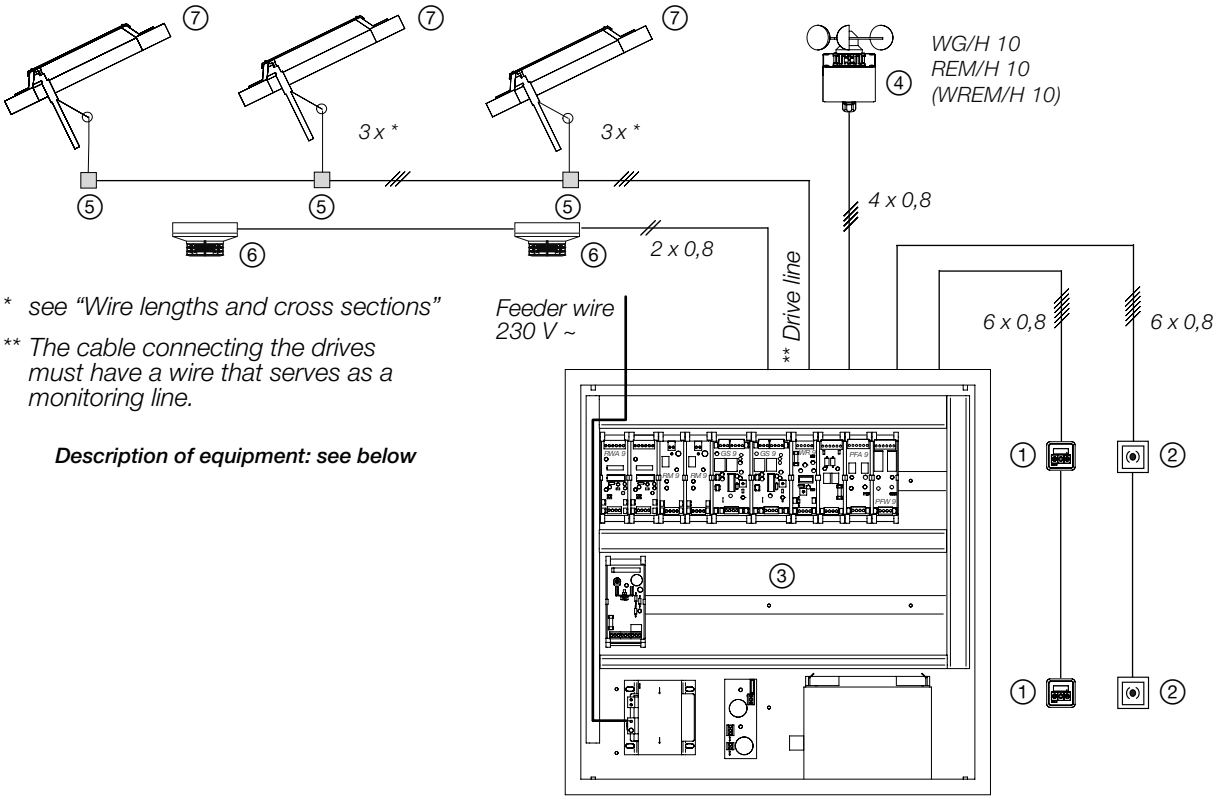
The Housing is classified as IP 30 according to DIN EN 60529. It is protected against the intrusion of foreign objects with a diameter greater than 2.5 mm. It is not protected against intruding water.

All drawings, installation and operating instructions and the control book must be kept with the central unit. Please store these documents in their entirety in the central smoke exhaust unit for future reference.

Features

- modular 24 V smoke and heat exhaust control unit (SHEV)
- to control windows for the purpose of smoke removal and daily ventilation
- scaled current output at increments from 8 A to 72 A at increments of 8 A
- modular design with expansion options thanks to additional RAZ 900 modules
- versatile connection options for fire pushbuttons, smoke detectors, ventilation pushbuttons and wind and rain sensors
- indicators for operating states and error messages
- set-up in one or several SHEV groups and one or several ventilation groups
- monitoring of motor cables for cable breakage and short circuits up the last conduit box
- emergency power supply for 72-hour emergency operation
- set-up and function according to standards prEN 12101-9 for control unit and EN 12101-10 for power supply.

Wiring diagram



* *see "Wire lengths and cross sections"*

** *The cable connecting the drives must have a wire that serves as a monitoring line.*

Description of equipment: see below

Beispielanlage RAZ 900

Equipment overview

① **Ventilation pushbutton LT or LTA**
for manual operation of ventilation function

② **Fire pushbutton FR 900**
for manual release and reset of SHEV function

③ **Smoke and heat exhaust control unit RAZ 9.**
Power supply with integrated control functions for SHEV and ventilation

④ **Wind transmitter WG/H 10, rain sensor REM/H 10 (WREM/H 10)**
for automatic closing of windows, top-hung windows and light domes in case of rain and/or wind

⑤ **Conduit box** (by customer)

⑥ **Smoke detector RM 523**
for automatic release of SHEV function via smoke detection

⑦ **Drives**
for opening and closing of windows, top-hung windows and light domes to remove smoke and to ventilate in a natural way

Housing dimensions

For the basic control units

Control unit	Output current (A)	GS 9	RWA 9	Width (mm)	Height (mm)	Depth (mm)	Clearance Top hat rail	Fire groups	Ventilation groups
908-1	8	1	1	600	400	210	293	1	1
916-1	16	2	1	600	600	300	703	1	2
916-2	16	2	2	600	600	300	586	2	2
924-1	24	3	1	600	600	300	643	1	3
924-2	24	3	2	600	600	300	526	2	3
924-3	24	3	3	600	600	300	409	3	3
932-1	32	4	1	1000	800	300	1304	1	4
932-2	32	4	2	1000	800	300	1226	2	4
932-3	32	4	3	1000	800	300	1148	3	4
932-4	32	4	4	1000	800	300	1070	4	4
940-1	40	5	1	1000	800	300	1255	1	5
940-2	40	5	2	1000	800	300	1176	2	5
940-3	40	5	3	1000	800	300	1098	3	5
940-4	40	5	4	1000	800	300	1020	4	5
940-5	40	5	5	1000	800	300	942	5	5
948-1	48	6	1	1000	800	300	1194	1	6
948-2	48	6	2	1000	800	300	1116	2	6
948-3	48	6	3	1000	800	300	1038	3	6
948-4	48	6	4	1000	800	300	960	4	6
948-5	48	6	5	1000	800	300	882	5	6
948-6	48	6	6	1000	800	300	804	6	6
956-1	56	7	1	1000	1000	300	1274	1	7
956-2	56	7	2	1000	1000	300	1196	2	7
956-3	56	7	3	1000	1000	300	1118	3	7
956-4	56	7	4	1000	1000	300	1040	4	7
956-5	56	7	5	1000	1000	300	962	5	7
956-6	56	7	6	1000	1000	300	884	6	7
956-7	56	7	7	1000	1000	300	806	7	7
964-1	64	8	1	1000	1000	300	1214	1	8
964-2	64	8	2	1000	1000	300	1136	2	8
964-3	64	8	3	1000	1000	300	1058	3	8
964-4	64	8	4	1000	1000	300	980	4	8
964-5	64	8	5	1000	1000	300	902	5	8
964-6	64	8	6	1000	1000	300	824	6	8
964-7	64	8	7	1000	1000	300	746	7	8
964-8	64	8	8	1000	1000	300	668	8	8
972-1	72	9	1	1000	1000	300	1159	1	9
972-2	72	9	2	1000	1000	300	1081	2	9
972-3	72	9	3	1000	1000	300	1003	3	9
972-4	72	9	4	1000	1000	300	925	4	9
972-5	72	9	5	1000	1000	300	847	5	9
972-6	72	9	6	1000	1000	300	769	6	9
972-7	72	9	7	1000	1000	300	691	7	9
972-8	72	9	8	1000	1000	300	613	8	9
972-9	72	9	9	1000	1000	300	535	9	9

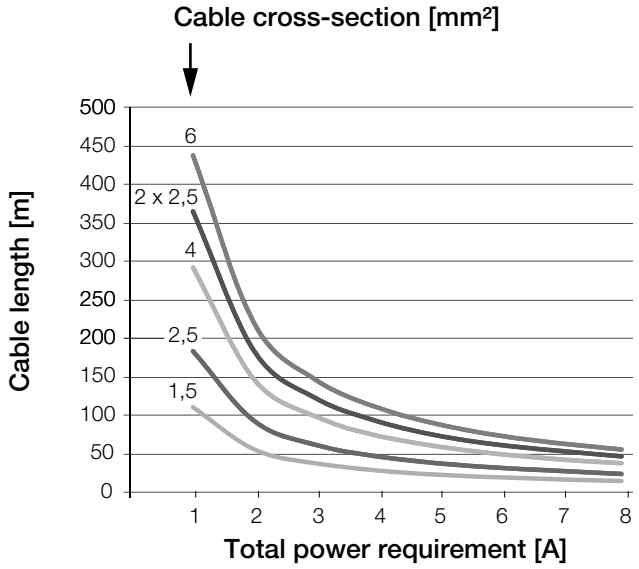
Wire lengths and cross sections

The wires of the drives may not be extended and have to be connected directly in a conduit box, or, depending on the type of drive, to the overload cutoff or the synchronous module. The maximum wire lengths from the power source (SHEV/central ventilation unit or power supply) to the last conduit box (or overload cutoff, synchronous module) have to be in accordance with the wire cross sections used and with the maximum power consumption for each drive group. When using the drives in safety equipment for smoke removal or smoke control, perform wiring in accordance with the functional integrity classes E30 or E90 of the Model Wiring Guideline (MLAR).

Security systems need line monitoring. Lines with the appropriate number of wires for the supply of the drives and line monitoring have to be provided. The green/yellow protective conductor must not be used as a line monitor.

Calculation formula:

$$\text{Cable cross section [mm}^2\text{]} = \frac{\text{total current consumption [A] x max. wire lengths [m]}}{73}$$



Attention:

The clamping points in the control system are designed for wire cross sections of up to 2.5 mm^2. For larger cross sections, reduce the cross section immediately in front of the control unit. To prevent electric shock, connect the ground wire first before connecting any other lines such as the mains supply line or any external lines. Observe all applicable VDE regulations.

Mounting of the control unit

The SHEV control unit has to be installed at a safe place, where it is protected against fire and smoke effects. The RAZ 900 has to be mounted in such a way that it is easily accessible for the maintenance staff (e.g. ensure installation at eye level). It must be possible to open the door all the way. The label “Smoke outlet” has to be applied at a suitable place.

Use suitable mounting material to attach the control unit at the designated borings.

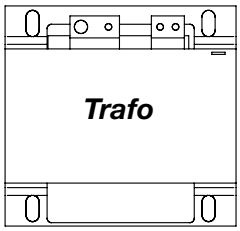
Make sure to properly earth the housing. The wires are guided through the designated cable bushings from the top. Ensure a clear labelling of the wires of all components, which will be connected to the RAZ 900, as well as the feeder wires of the power supply. This is necessary for the proper assignment of the connections in case the modules have to be replaced.

Overview of the major components and modules

The **transformer** is used to provide 230 V AC supply voltage to the central control unit. It consists of a 21 V AC power coil and a 27 V AC loading coil. The mains terminals and the mains fuse are installed on the transformer. The value of the mains fuse is:

8 A– power supply unit T 1.6 A
16 A– power supply unit T 3.15 A
24 A– power supply unit T 5.0 A

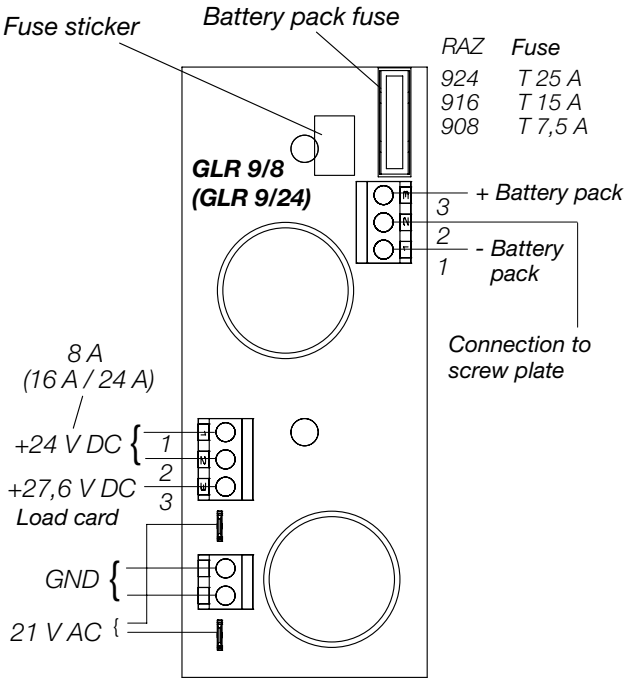
Switch to emergency power operation without disruption (operator guide mode).



Rectifier module GLR 9/8, 9/24

The rectifier module is used to supply the control unit with power. It is screwed directly next to the transformer on the screw plate. The wires are connected via terminal screws and following the terminal diagram. The transformer connector is slipped on via cable lugs. The central unit is overload and reverse battery protected.

A short circuit at the “+” and “-” terminals of the 24 V DC feed lines in the control unit triggers the transformer’s mains fuse and the battery pack fuse.
This will result in complete failure.
In this case, all LEDs in the central unit, the fire pushbuttons, and the ventilation pushbuttons will turn off.



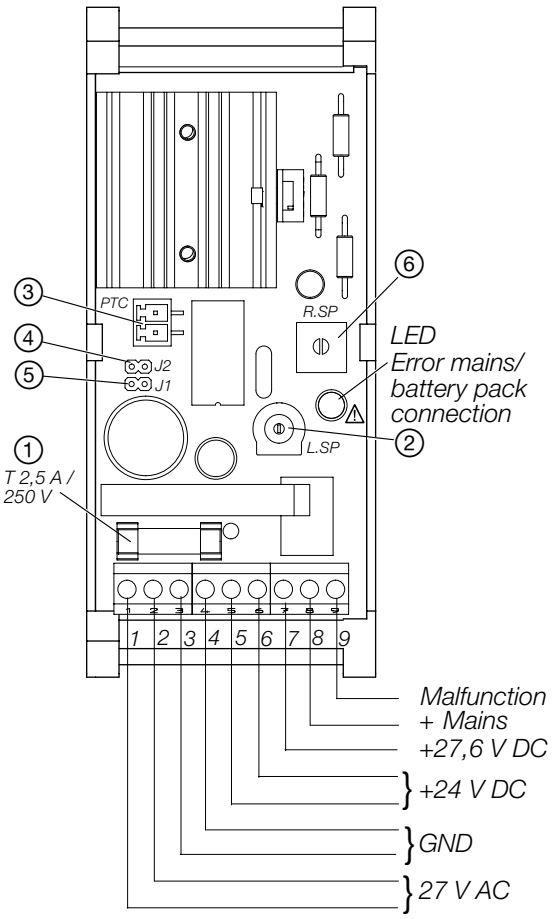
Technical specifications

Supply		
	GLR 9/8	21 V AC, max. 8 A
	GLR 9/24	21 V AC, max. 24 A
Output voltage max.		32 V DC (when idle)
Load cycle		
	GLR 9/8	4 min. / 8 A; 16 min. / 1.2 A
	GLR 9/24	4 min. / 24 A; 16 min. / 1.2 A
Battery pack voltage		24 V DC (max. 27.6 V)
Battery pack fuse		
	RAZ 924	T 25 A (24 A power supply)
	RAZ 916	T 15 A (16 A power supply)
	RAZ 908	T 7.5 A (8 A power supply)

Load module LAD 9.1

Is used to create the charging voltage and for monitoring the battery pack connection.

The load module is fed by a separate transformer coil via a fuse ① located on the module. A potentiometer ② is used to set the charging voltage. The load module monitors the battery pack and mains connection and issues an error in case of a disruption. The yellow LED on the load module will come on as soon as the mains and battery pack connection is not in order. The module will switch off the voltage supply to the ventilation control system in case of a mains voltage failure. The sensor at the end of the PTC cable is positioned close to the battery back (see image), while the other end is connected to the PTC plug ③ on the load module. If the PTC sensor measures a temperature above 0 °C in the area of the battery pack, the charging voltage is 27,6 V. Temperatures below 0 °C will increase the charging voltage to 30 V. Jumper J2 ④ is used to enable/disable the charging function, while the potentiometer ⑥ is used to set the minimum discharge voltage (pre-set at the factory). This requires that a voltage of 19,2 V be applied between GND and pin 7 and that the potentiometer ⑥ be set to the level where the LED is barely on/ goes out.



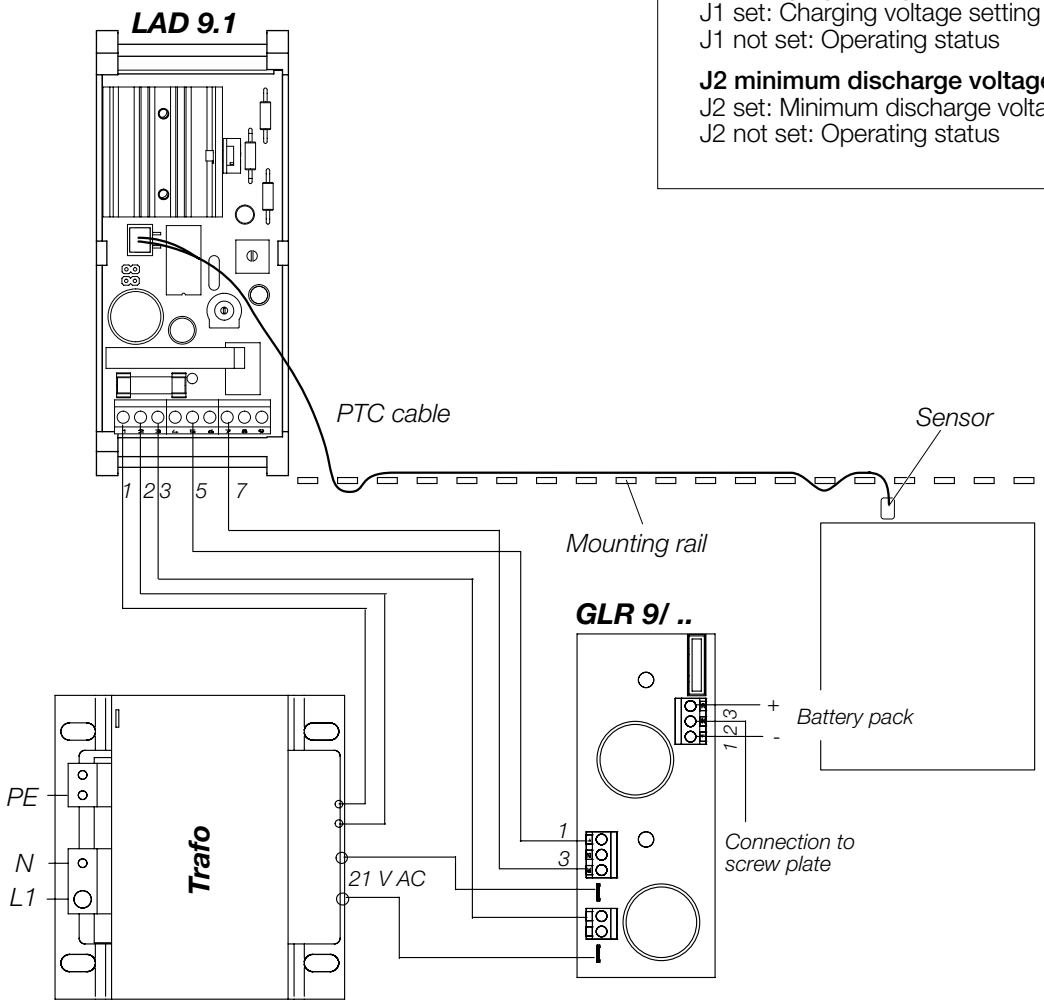
Technical specifications

Supply	27 V AC; 1,5 A
Charging voltage setting ②	27,6 V DC (at 10K instead of battery pack with jumper J1 ⑤ set)
Fuse ①	T 2,5 A / 250 V
Monitoring	yes, cyclically approx. every 25 minutes
Space requirements	55 mm

Description of the jumpers (plug-in jumpers) ④ + ⑤

J1 charging voltage
J1 set: Charging voltage setting
J1 not set: Operating status

J2 minimum discharge voltage
J2 set: Minimum discharge voltage setting
J2 not set: Operating status



Overview of the major components and modules (cont.)

Group control module GS 9

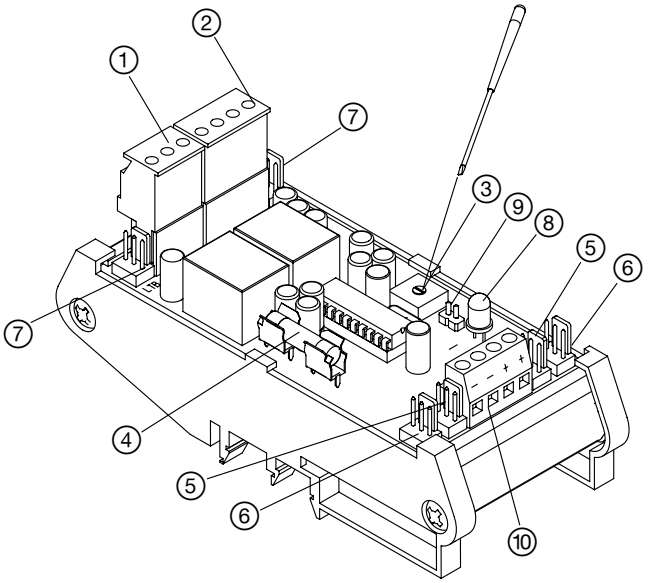
The group control module is used to control the motors, monitor the motor lines for cable break, and include an EMERGENCY STOP function for power-controlled windows in the event of an emergency.

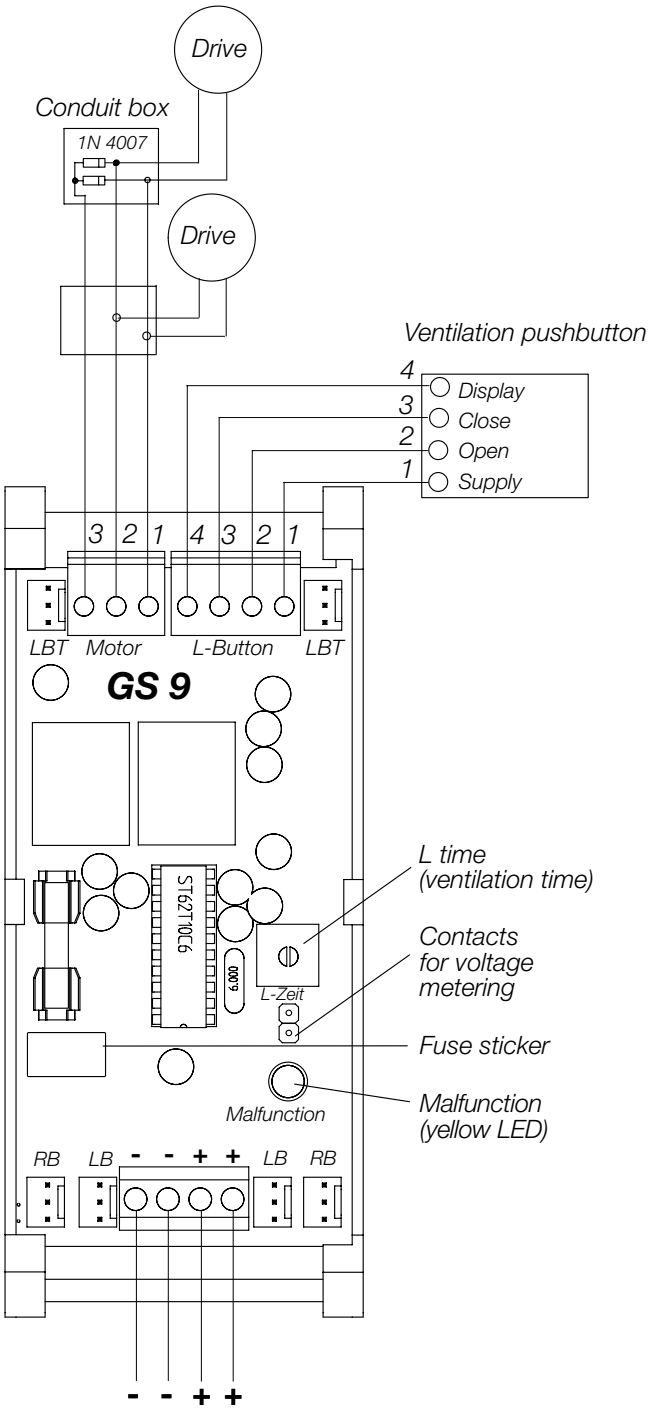
Technical specifications

Supply voltage ⑩	24 V DC max. 32 V DC
Motor connection ①	max. 8 A
Malfunction indicator ⑧	yellow LED
Vent. pushbutton connection ②	LT or LTA (HAUTAU Type)
Vent. pushbutton bus (LTB) ⑦	+24 V active
Ventilation bus (LB) ⑤	+24 V active
SHEV bus (RB) ⑥	+24 V active
Fuse ④	8 drives T 6,3 A (or according to requirements)
Opening time limitation	up to 60 s
Space requirements	55 mm

Installation

Voltage is supplied by a 4-pin terminal ⑩ via strands of the same size 2,5 mm².
The wires of the motor and ventilation pushbutton are connected to terminals ① and ② according to the terminal diagram.
The internal wiring of SHEV bus (RB) ⑥ and ventilation bus (LB) ⑤ is connected via 3-pin jumpers.





Overview of the major components and modules (cont.)

The group control module GS 9 is used to control drives. The signals issued by the smoke and heat exhaust ventilation bus ⑥ are given the highest priority. The signals issued by the ventilation bus ⑤ are given the second highest priority. The signals issued by the ventilation pushbutton bus ⑦ are given the lowest priority.

If an SHEV OPEN command is given, the motor output will be switched to OPEN again every 2 minutes for a duration of 30 minutes.

The motors are connected to a 3-pin plug-in terminal ①. The terminal 3 of this plug-in terminal is intended to monitor for cable break and trigger an EMERGENCY STOP.

The motor output is protected by a fuse which is integrated into the guard circuit.

Cable break in the area of the motor lines and EMERGENCY STOP operation is indicated by a yellow LED ⑧ (which flashes during emergency stop operation).

A potentiometer ③ can be used to change the operating mode of the module:

- When the potentiometer is set to zero, the operating mode of the ventilation pushbutton is “OPEN-STOP-CLOSE”,
- A different potentiometer position means operating mode “OPEN-CLOSE”.

The set voltage value determines the time during which the drives will be moving towards the “OPEN” position. The STOP button is without function when the timer is switched on. The running period does not interfere with the smoke and heat exhaust ventilation functionality.

The running period voltage is measured at the contacts ⑨. The voltage values are assigned to the following running periods in “ON” direction:

Voltage [V]	Time [s]
0,5	~ 4
1,0	~ 11
1,5	~ 17
2,0	~ 23
2,5	~ 29
3,0	~ 35
3,5	~ 42
4,0	~ 49
4,5	~ 54
5,0	~ 61

To ensure observance of guideline ZH1/494, install EMERGENCY STOP pushbuttons on windows that are less than 2.5 m in height. The design of these EMERGENCY STOP pushbuttons must comply with standard DIN EN 60204.

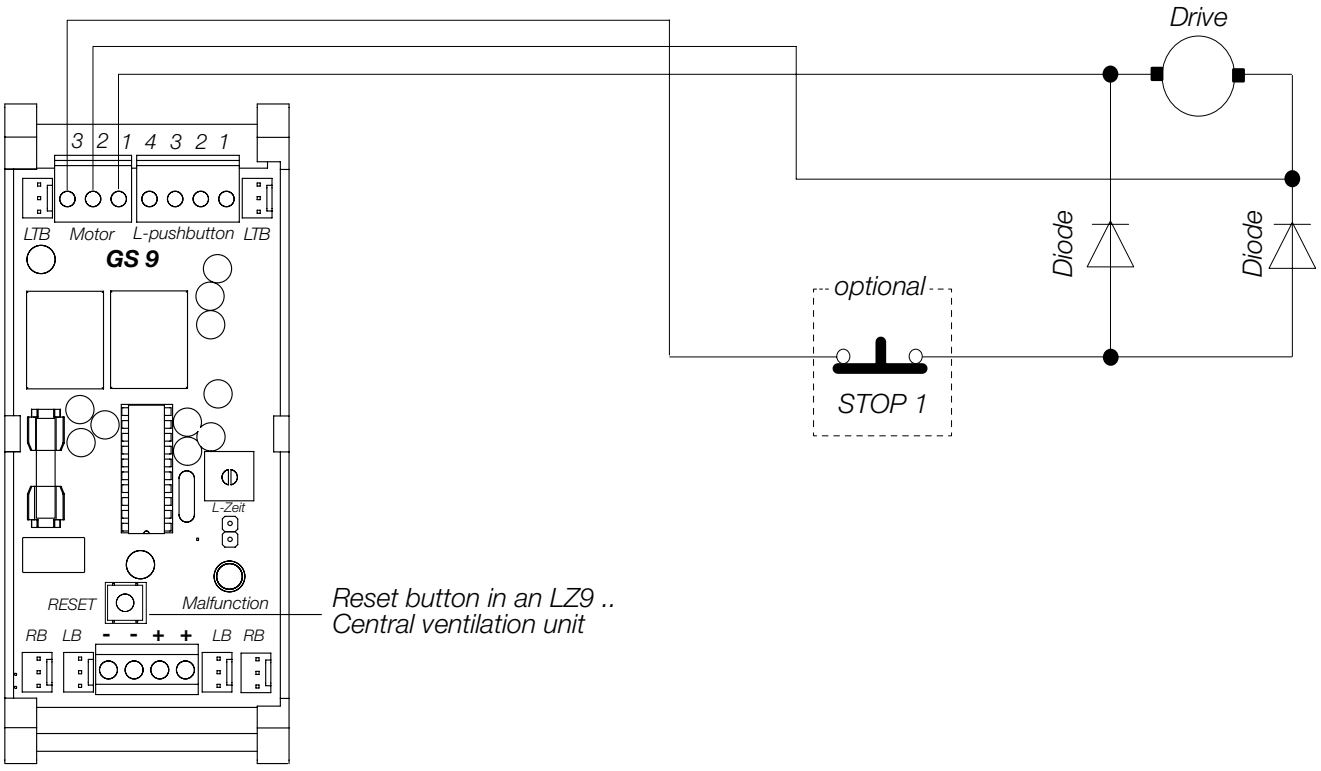
The devices used to protect against crushing hazards and the EMERGENCY STOP button used as an “opener” are connected in series and integrated into the motor guard circuit (see drawing). When combined with the GS 9 module, they provide the following functions:

- If the direction in the module is switched to “OPEN”, the disruption of line 3 is only defined as a “malfunction” in the central control unit.
- If the direction “CLOSE” is switched as a ventilation function (includes ventilation pushbutton, superordinate ventilation, wind/rain sensor, delayed smoke and heat exhaust ventilation reset) and wire 3 is interrupted (equal to actuation of EMERGENCY STOP pushbutton), the GS 9 module will trigger an internal malfunction. The drives in this group will be stopped, while the internal malfunction remains active and is indicated in the fire pushbutton as well as on the module. Actuating the module in “OPEN” direction will reset the error message mentioned above and allow the drive to move again during the next “CLOSE” operation.

Pressing and holding the “Reset” button in the fire pushbutton will disable the EMERGENCY STOP function.
Releasing the reset button will enable the EMERGENCY FUNCTION again.

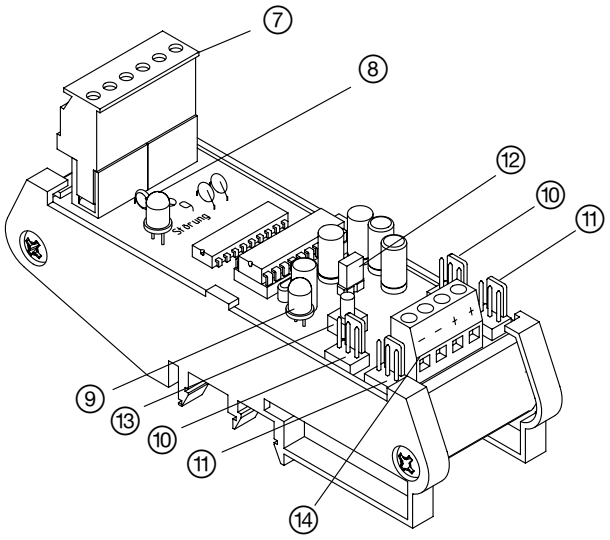
If a connected timer is switched on, the ventilation function will be blocked after an emergency stop has been triggered. Pressing the reset button in the fire pushbutton or on the RWA 9 module of the central control unit will enable the ventilation function again.

An additional reset button is installed on the smoke and heat exhaust ventilation bus of the group module in the central ventilation units LZ 9 to reset the EMERGENCY STOP function manually (see drawing below). In the event of an EMERGENCY STOP, the control unit must be reset by issuing an “OPEN” or a reset command (in combination with a timer).



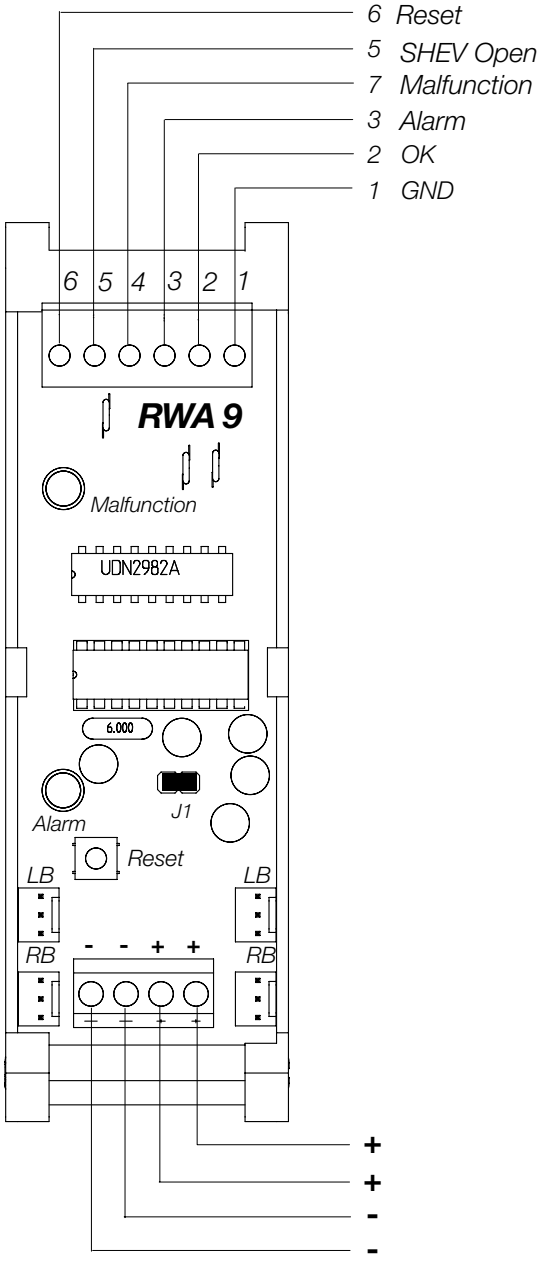
Smoke and heat exhaust ventilation module RWA 9

Is used for signal analysis and monitoring the fire pushbutton wires. The SHEV OPEN and RESET wires are monitored for breakage and short circuits.



Technical specifications

Supply voltage ⑭	24 V DC max. 32 V
SHEV pushbutton connection ⑦	up to 10 SHEV pushbuttons (FR 900)
Display Alarm ⑨	red LED
Display Malfunction ⑧	yellow LED
SHEV bus (RB) ⑪	+24 V active
Ventilation bus (LB) ⑩	+24 V active
Monitoring	Disruptions and short circuits for pushbutton “Open” and “Close”
Outputs “OK”, “Alarm” and “Malfunction”	short-circuit protected
Space requirements	41 mm



Description

There is a 6-pin plug-in terminal on top of the SHEV module RWA 9 that is used to connect the fire pushbutton ⑦.

The outputs “Display OK”, “Display Alarm” and “Display Malfunction” are overload protected.

The wires “SHEV OPEN” and “RESET (CLOSE)” are monitored for disruptions and short circuits.

A yellow “ERROR” LED ⑧ will light to indicate an error in the area of the fire pushbutton. In case of emergency power operation the yellow “ERROR” LED ⑧ will flash.

The red “ALARM” LED ⑨ will be lit when the “OPEN” signal is active on the smoke and heat exhaust ventilation bus, while the output “Display Alarm” will be activated for the SHEV pushbutton. Pressing the RESET button in the SHEV pushbutton or on the smoke and heat exhaust ventilation module will block the ventilation function for a minute.

An active error signal on the smoke and heat exhaust ventilation bus will result in the disabling of the output “Display OK” and the enabling of the output “Display Malfunction” (flashes during emergency power operation).

The RESET button ⑬ will activate the SHEV OPEN signal on the SHEV bus. If the jumper ⑫ is set, each malfunction will trigger an alarm.

Installation

Voltage is supplied by a 4-pin terminal ⑭ via strands of the same size 2.5 mm².
The SHEV pushbutton is connected to a 6-pin plug-in terminal ⑦ according to the terminal diagram. The internal wiring of SHEV bus (RB) ⑪ and ventilation bus (LB) ⑩ is connected via 3-pin jumpers.

Smoke detector module RM 9

When a smoke detector has been triggered, smoke detector module RM 9 will issue the “OPEN” signal on the smoke and heat exhaust ventilation bus.

Technical specifications

Supply voltage ⑥	24 V DC max. 32 V
Smoke detector connection ①	up to 10 pcs RM 523; quiescent current max. 1,2 mA; release current 19 ... 225 mA
Display alarm ②	red LED
Display OK ③	green LED
SHEV bus (RB) ⑤	+24 V active
Terminal resistor	10k
Transfer resistor	2k
Monitoring	Disruption and short circuit
Space requirements	37 mm

Description

A maximum of 10 RM 523 smoke detectors can be connected to the loop of one smoke detector module. The smoke detector connection is monitored for disruptions and short circuits.

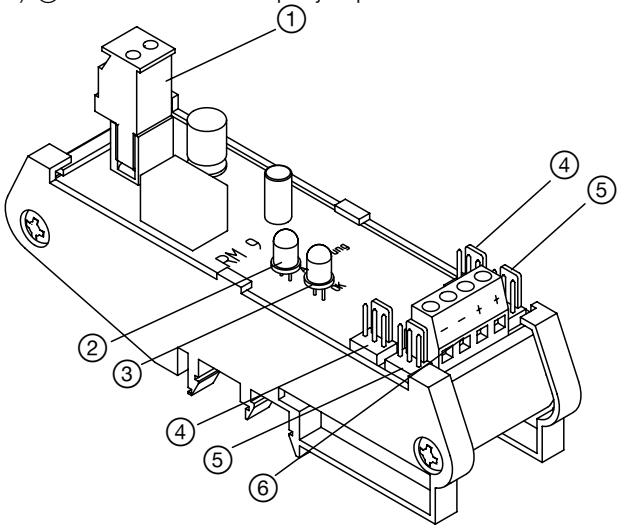
Another option is to connect a central fire alarm system, which, however, requires that only smoke detectors or only one central fire alarm system be connected to one module.

The green LED ③ will turn off in the event of a central control unit malfunction or emergency power. When the smoke detector is triggered, the red LED will be lit ②.

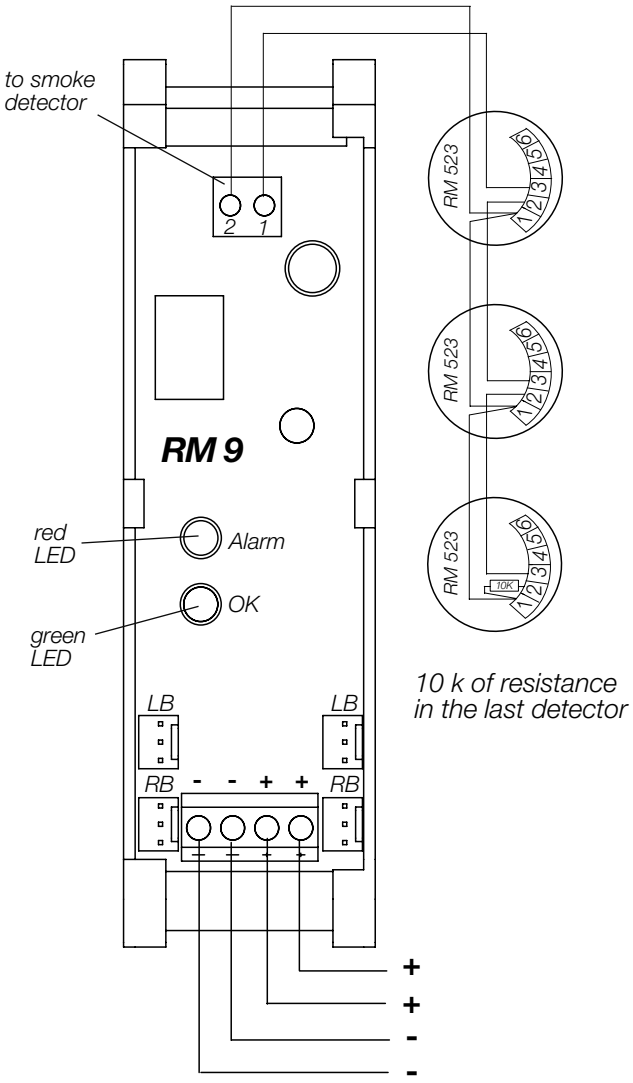
If the ”CLOSE“ signal is active on the SHEV bus, the voltage supply to the smoke detector loop will be cut off to reset the smoke detector. At the same time, a malfunction signal is prevented from being issued on the smoke and heat exhaust ventilation bus.

Installation

Voltage is supplied by a 4-pin terminal ⑥ via strands of the same size 2,5 mm².
The wires to the smoke detector loop are connected to the 2-pin plug-in terminal ① according to the terminal diagram. The internal wiring of SHEV bus (RB) ⑤ and ventilation bus (LB) ④ is connected via 3-pin jumpers.

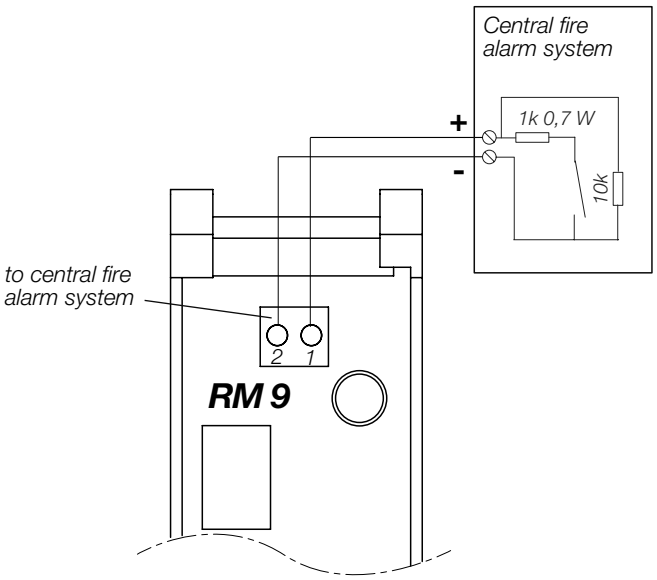


Example:
Connection of 3 smoke detectors



10 k of resistance in the last detector

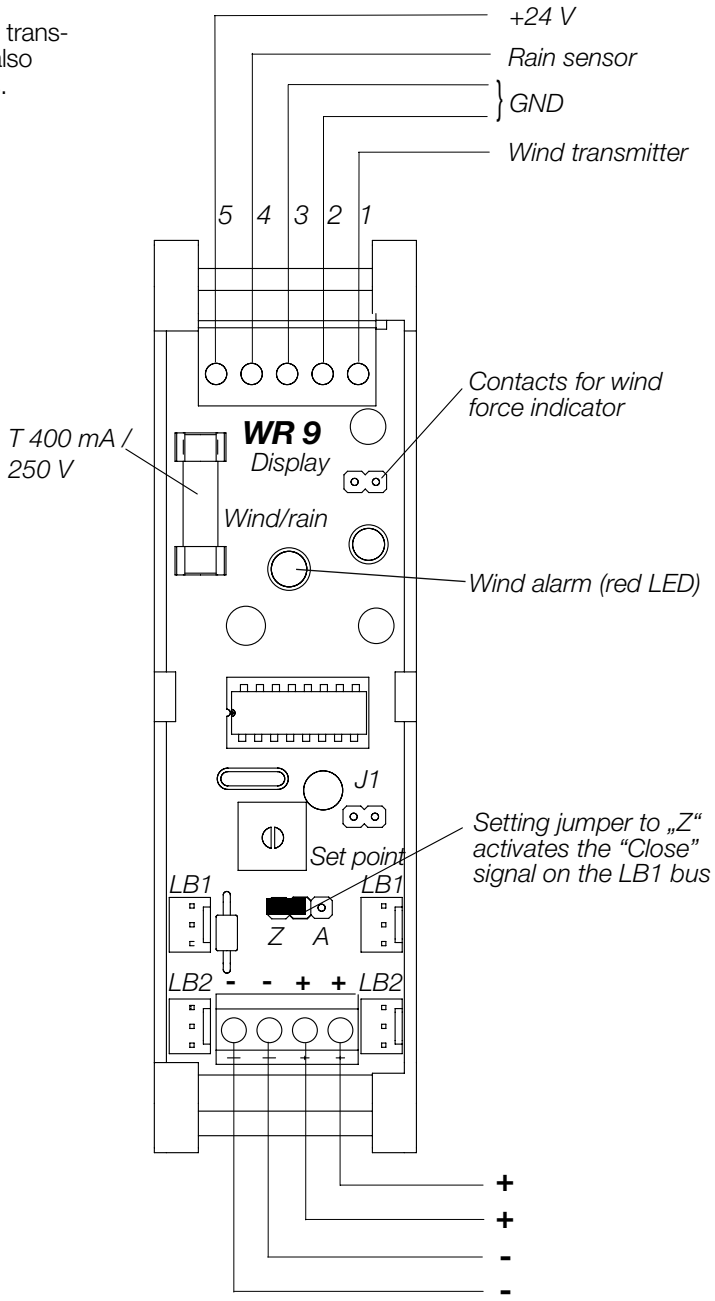
Example: Connection of 1 central fire alarm system



Overview of the major components and modules (cont.)

Wind/rain module WR 9

The wind/rain module counts the impulses issued by the wind transmitter and attributes them to the wind force. The module will also transfer the signal issued by the rain sensor to the internal bus.



Technical specifications

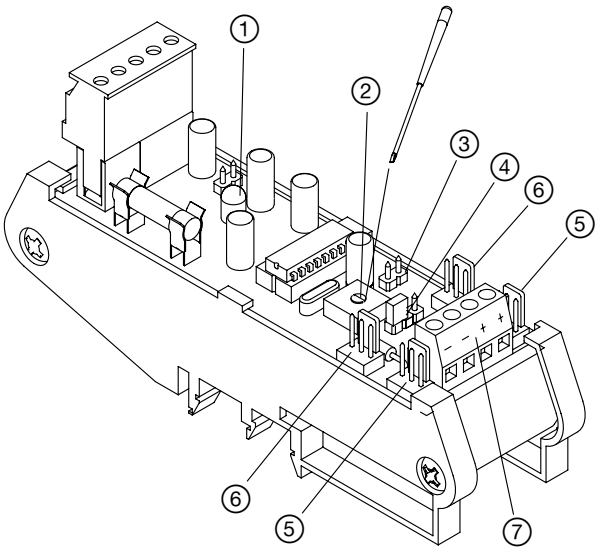
Wind transmitter with reed contact, display of wind force in Beaufort (optional).	
Display Wind alarm (red LED) ①	
Set point adjustment by potentiometer ②	
Jumper ③ for switching the display	
Factory setting of the wind force	4
Start delay for wind	20 s
Switch-off delay for wind and rain	60 s
Supply voltage	24 V DC (max. 32 V)
Output, max. current load:	400 mA
Number of wind/rain sensors:	1
Ventilation bus 1 (LB 1) (LB 1) ⑥	+24 V active
Space requirements	37 mm

Description

A wind/rain alarm will be triggered after a start delay every time the wind force exceeds a certain set point. A wind/rain alarm will also be triggered when the rain sensor input is active; however, without the start delay.
When the wind force falls below the set point and the rain sensor signal is inactive, the wind/rain alarm is reset after a certain switch-off delay. The signal issued by the rain sensor is transferred to the internal bus.
To adjust the set point of the wind/rain module, slip on the jumper ③ and turn the potentiometer ②. Setting jumper ④ to “Z” activates the “CLOSE” signal on the LB1 bus ⑥. Setting jumper ④ to “A” activates the “OPEN” signal on the LB1 bus ⑥.

Installation

Install the wind transmitter in a suitable location unsheltered from the wind. Follow the terminal diagram or the included control system to connect the wind sensor. When connecting the WR 9 to other control elements, make sure these elements are completely discharged and the emergency power supply is switched off. In the presence of wind, the display or the volt meter must show a value.
The display must be adjustable when the jumper ③ is slipped on and the potentiometer ② is turned.
Voltage is supplied by a 4-pin terminal ⑦ via strands of the same size 2,5 mm². The internal wiring of the ventilation buses (LB1) ⑥ and (LB2) ⑤ is connected via 3-pin jumpers.

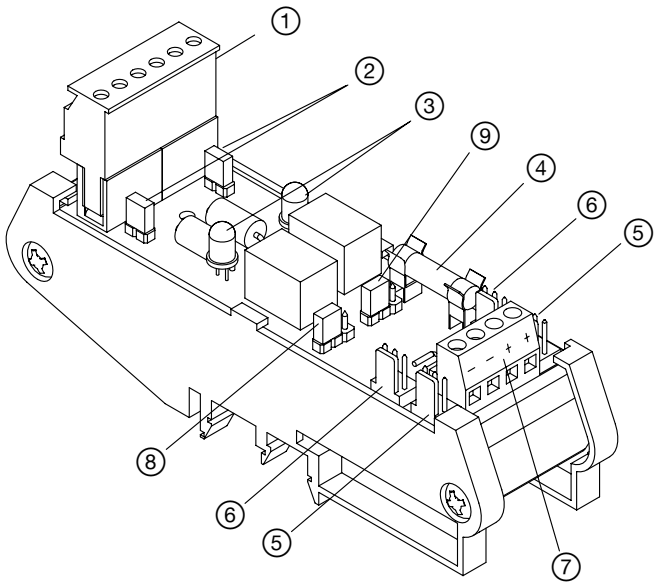


Adjusting the set point with a volt meter:

Voltage [V]	Wind force [Beaufort]
0,3	2
0,6	3
1,0	4
1,4	5
2,0	6
2,9	7
3,6	8

Potential-free input module PFE 9

Used to connect two potential-free inputs.



Technical specifications

Supply voltage ⑦	24 V DC max. 32 V
Connection ①	+/-24 V DC and 2 relays
Display ③	2x green LEDs
Ventilation bus (LB) ⑥ SHEV bus (LB) ⑤	+24 V active or +24 V active
Fuse ④	max. 400 mA
Space requirements	37 mm

Description

The potential-free input module PFE 9 consists of a 6-pin terminal ① used for connecting two potential-free input signals, which control one relay each. In addition, two terminals are supplied with 24 V DC voltage, which can be used to power external devices.

The fuse ④ is used to protect the voltage supply circuit, which is switched off in the event of a mains failure.

The module output is connected via 3-pin connectors ⑤/⑥.

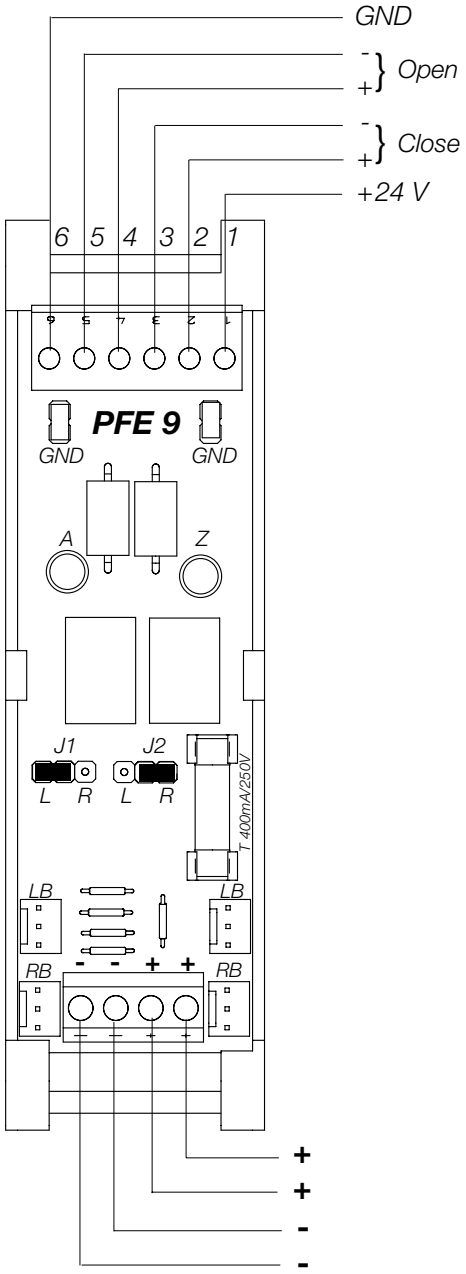
Jumpers ② can be used to link the inputs with the GND. The input signals are indicated by LEDs ③.

Use jumpers J1 ⑧ and J2 ⑨ to switch the input signals “ON” and “OFF” onto the ventilation or smoke and heat exhaust ventilation bus.

Output +24 V is switched off during emergency power operation.

Installation

Voltage is supplied by a 4-pin terminal ⑦ via strands of the same size 2,5 mm². The wires to the external devices are connected to the 6-pin plug-in terminal ① according to the terminal diagram. The internal wiring of SHEV bus (RB) ⑤ or ventilation bus (LB) ⑥ is connected via 3-pin jumpers.



Potential-free output module PFA 9 and PFW 9 for 230 V of alternating voltage

Potential-free output module PFA 9
Is used for the connection of two potential-free change-over contacts to external devices. The relays are controlled by "OPEN" and "CLOSE" signals issued by the smoke and heat exhaust ventilation or ventilation bus. The jumpers can also be set such that a "Malfunction" signal is issued.

Potential-free change-over module PFW 9
Works in the same way as PFA 9, but its output contacts are designed for 230 V AC.

Technical specifications

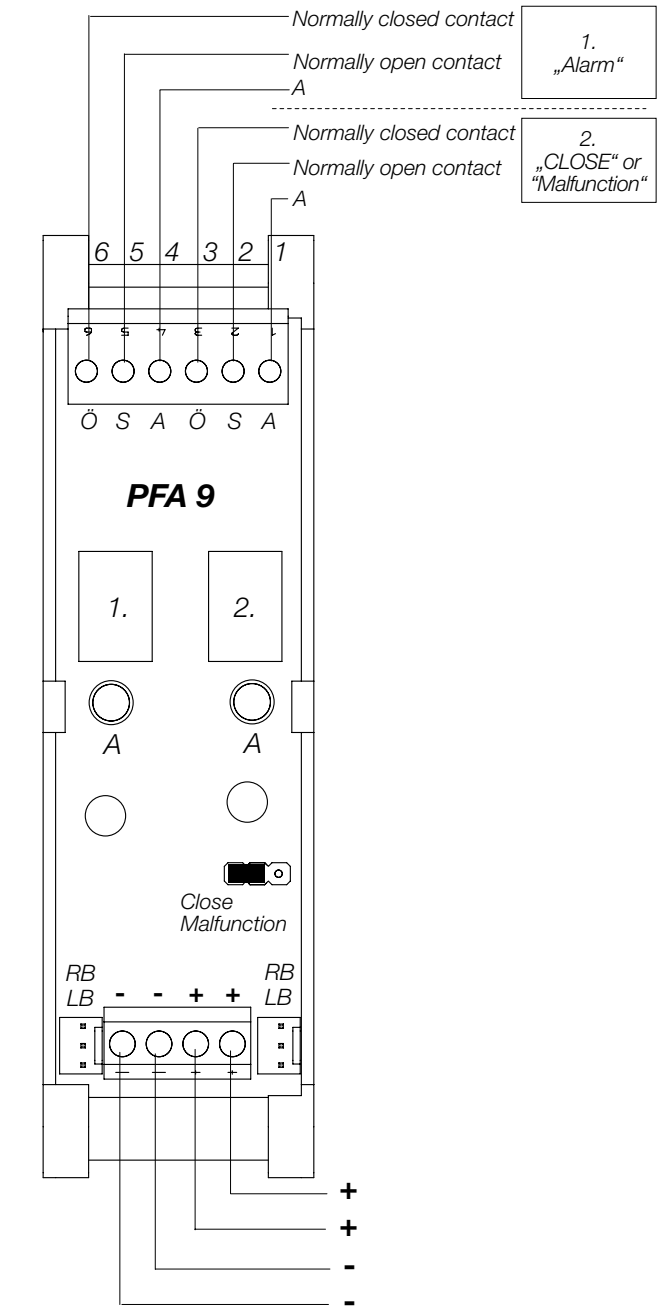
Supply voltage ⑥	24 V DC max. 32 V
Output PFA 9 ①	2x change-over contacts 24 V DC, 1 A
Output PFW 9 ①	2x change-over contacts 230 V AC, 1 A
Diaplay ②	2x green LEDs
Ventilation bus (LB) ⑤ SHEV bus (RB) ⑤	+24 V active or +24 V active
Jumper ③	„Close" and „Malfunction"
Space requirements	37 mm

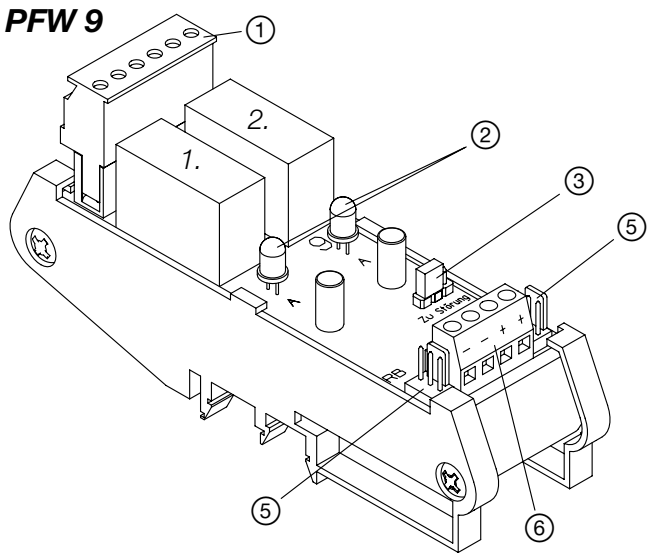
Description

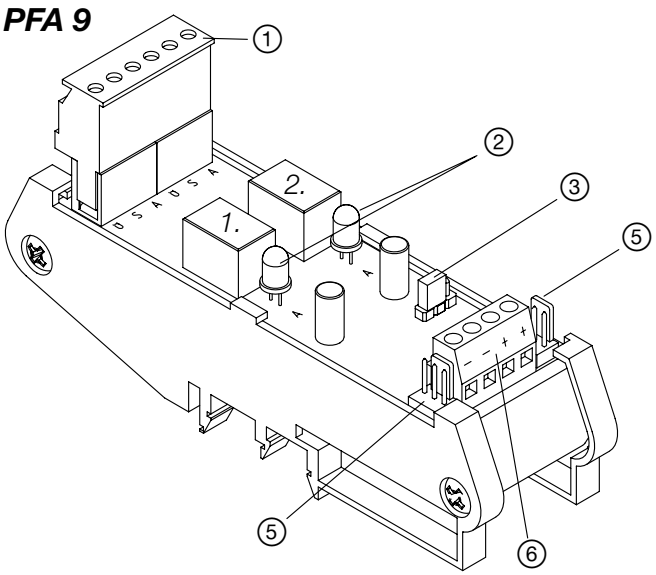
The potential-free output module PFA 9 consists of a 6-pin terminal ① for connecting external devices via two potential-free change-over contacts. The two relays are controlled by "OPEN" and "CLOSE" signals issued by the smoke and heat exhaust ventilation or ventilation bus ⑤. A jumper ③ can be used to switch one relay between the signals "Close" and "Malfunction". If the relay is active, the corresponding green LED ② will be lit.

Installation

Voltage is supplied by a 4-pin terminal ⑥ via strands of the same size 2,5 mm².
The wires to the external devices are connected to the 6-pin plug-in terminal ① according to the terminal diagram.
Wires that can conduct voltages in excess of 33 V AC or 60 V DC must be connected immediately next to the terminal screws in such a way that they cannot come into contact with other live components when they are loosened (e.g. by tying them off at the cable conduit).
The internal wiring of SHEV bus (RB) ⑤ or ventilation bus (LB) ⑤ is connected via 3-pin jumpers.



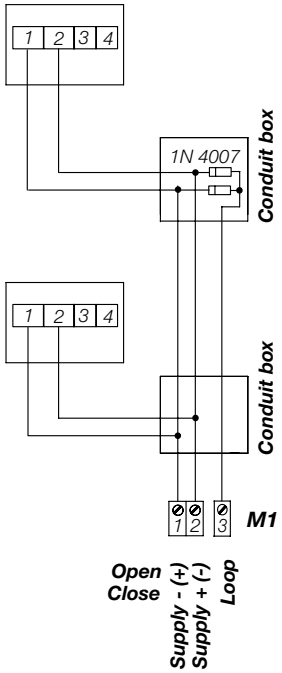




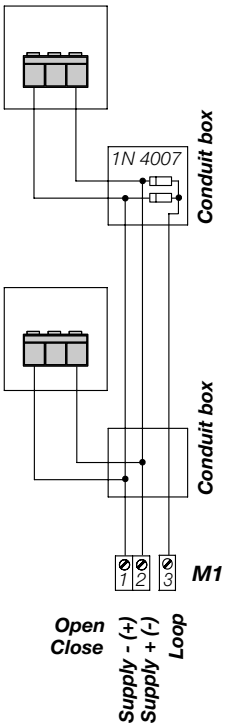
Additional diagram drives

Polarity with drives OPEN

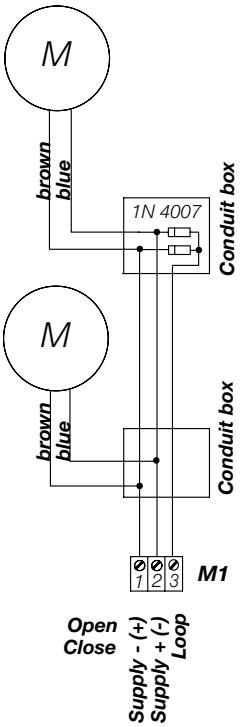
Chain drive SKA 20
Locking drive SM 2



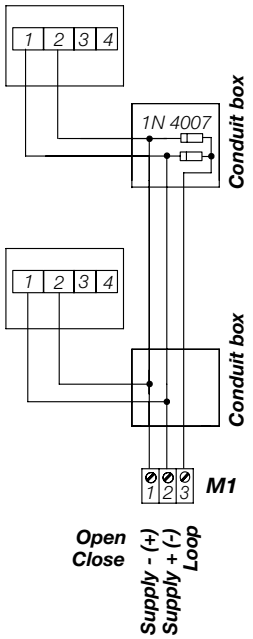
Chain drive SKA 45, 50



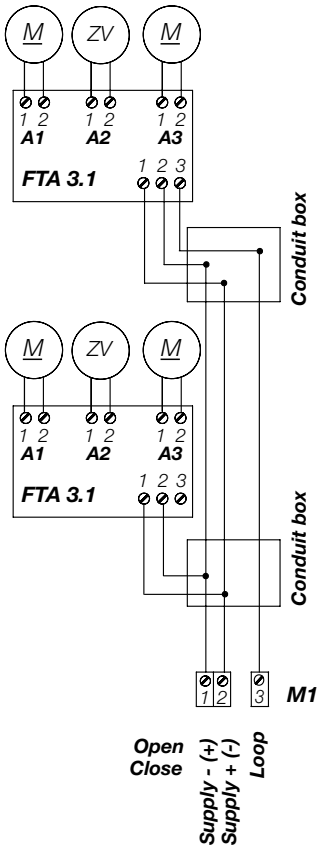
Spindle drive SA



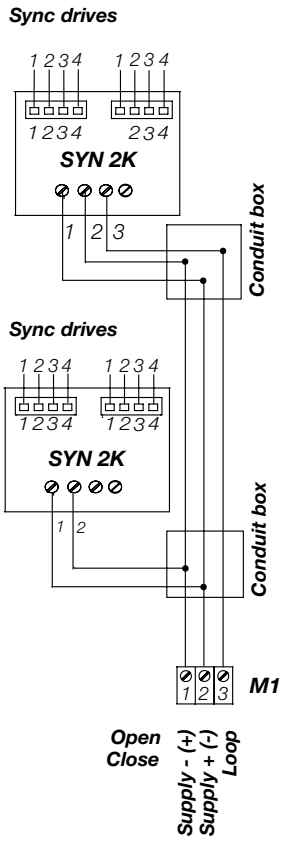
Chain drive SKA 30, 60 Twin
PRIMAT kompakt
Electric fitting stay SBS



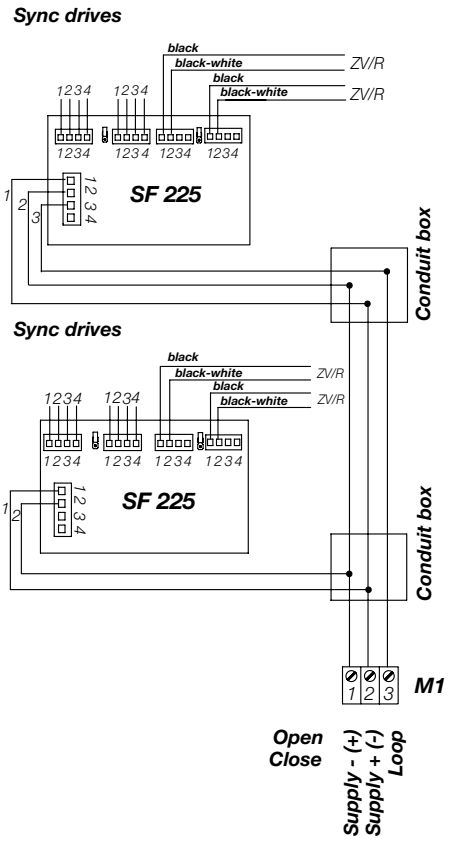
Drives with overload cutoff, additional locking and sequence control FTA 3.1 - 24 V DC



Synchronous drives with external synchronisation SYN 2K



Synchronous drives with additional locking and external synchronous sequence SF 225



Installing the battery packs

Disconnect the control unit, if connected, from the mains supply and open it.

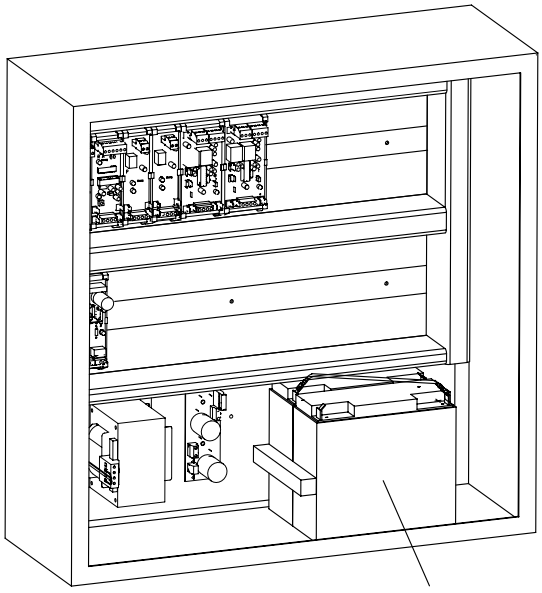
Install the battery packs into the central control unit as shown in the drawing. Use the battery pack bridge to connect the positive pole with the negative pole of the other battery pack, as shown in the drawing.

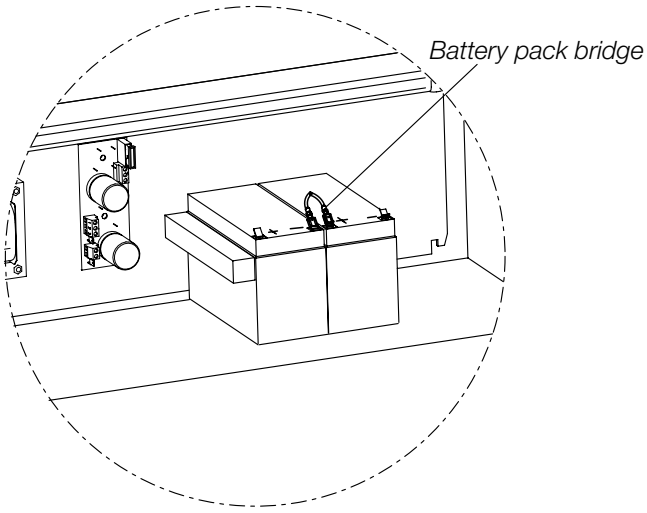
Follow the terminal diagram to connect the battery pack wire.

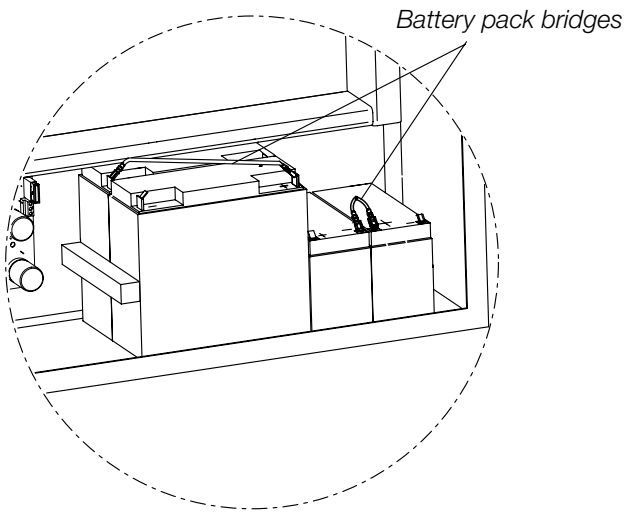
To prevent dangerous gases from developing and to ensure the central control unit remains operational for 72 hrs. in case of a mains failure, we recommend using the following battery packs:

SBV 7 - 12 / 7 - 12 L	12 V	7 Ah
SB 7,2 - 12 L	12 V	7,2 Ah
SBLV 17-12i	12 V	17 Ah
SSBL 18 - 12i	12 V	18 Ah

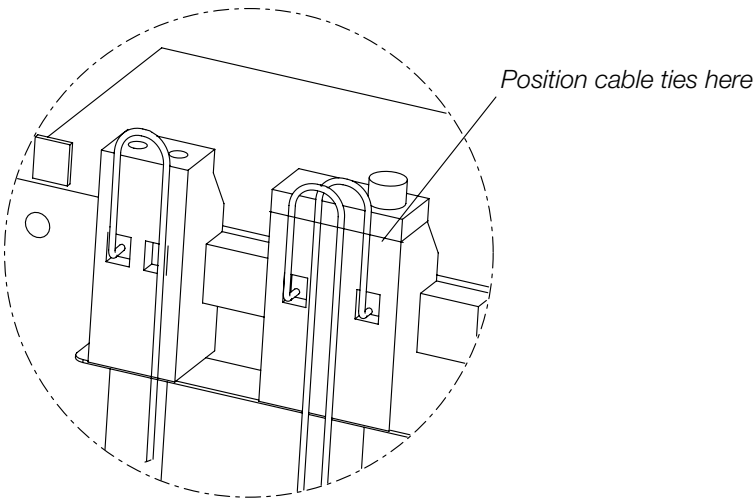
The battery packs must be replaced no later than every four years.







Fastening the live wires



Function test

Check if the central unit functions properly after successfully installing all components (fire pushbuttons, smoke or heat detector, drives, ventilation pushbuttons, etc).

- Switch the 230 V AC power supply on and slip on the battery packs.
- The green LED on LAD 9 is lit.
- All other modules must show only green LEDs.
- Push the alarm button (red) on the fire pushbuttons to turn the system on. The red LEDs in the fire pushbutton and on the RWA 9 are lit.
- Check if all windows of the corresponding fire group are opened all the way. Afterwards, close the windows by pressing the RESET button (black) in the fire pushbutton.
- Use a smoke detector test control unit to trigger the smoke detector; the (red) LED on the RM 9 will be lit, and the windows will open.
- When using test gas for checking the smoke detectors, you must press and hold the RESET button on the RWA 9 module or the fire pushbutton for 10 seconds in order to set the RM 523 smoke detector to revision mode.
- Check the ventilation pushbuttons by pressing the OPEN, STOP, and CLOSE buttons.
- Switch off the 230 V AC mains supply; the green LEDs will turn off, and the yellow malfunction LEDs will start flashing in the event of a malfunction.

Elimination of fault functions

Green display LEDs on the load module are not lit
Error source:
- 230 V AC mains supply not connected
- Mains fuse switched off
- Connection to battery packs is not established

Error message “Mains / battery fault“ does not appear
- monitoring takes place cyclically approx. every 25 minutes
- it is necessary to wait for the appropriate time

Displays on SHEV module - yellow LED is lit/flashes –
Error source:
- Malfunction in the area of the fire pushbutton
- Break or short circuit in wire SHEV “OPEN” or “CLOSE”; red LED is lit
- Alarm was triggered

Displays on smoke detector module – red LED is lit
Error source:
- A smoke detector in this group was triggered, green LED is not lit
- 10K terminal resistor not installed in smoke detector
- Break or short circuit in smoke detector wire
- System runs on emergency power

Display in group control module – yellow LED is lit or flashing
Error source:
- Cable break in the area of the motor lines
- EMERGENCY STOP button pressed
- Fuse on module defective

Display in wind/rain module – red LED is lit
Error source:
- The wind sensor has triggered a wind alarm
- The rain sensor was triggered

Displays in potential-free output module – green LEDs are lit
Error source:
- The relays have been actuated by the signals issued by the smoke and heat exhaust ventilation or ventilation bus

Displays in potential-free input module – green LEDs are lit
Error source:
- The relays on the module have been actuated by the signals issued by external devices

CAUTION:

Before working on electrically powered windows and dome lights, make sure to set them to the desired position. They must be disconnected via isolating link at all poles and safeguarded against unintentional re-starting. The isolating link must be clearly marked. This step allows you to disable the ventilation function while performing work on the windows.Observe the maintenance and operating regulations for power-controlled windows, doors, and gates.

Care

Check all devices and cable connections for external damage and dirt. The operability of smoke outlets, central control units, fire pushbuttons, ventilation pushbuttons, etc. must not be affected by, for example, structural measures or stored goods.

Maintenance

Smoke and heat exhaust ventilation systems must be serviced at least once a year by a company specialised in smoke and heat exhaust ventilation and in accordance with all statutory regulations (building code and state building regulations).

To guarantee a reliable emergency power supply, have the used battery packs checked and, if necessary, replaced on a regular basis. The battery packs must be replaced no later than every 4 years. Dispose of the battery packs properly as required by all applicable legal regulations.

The inspection plate on the central unit must be renewed, and a control book must be kept.

We recommend that you conclude a service contract.

Maintenance

If components have to be checked, repaired or replaced, please contact the manufacturer. Use only original spare parts. Modifications of connections are permitted only within the limits of the connection options.

Disposal

Dispose of this product, when it has reached the end of its service life, in accordance with the provisions of the Electrical and Electronic Equipment Act.

Technical specifications

IMPORTANT NOTE:

The module must not be used separately for purposes other than those described herein.

Power supply according to EN 12101-10	
Consisting of	Transformer, rectifier module, load module and battery packs
Primary power supply	Mains
Secondary power supply	Battery pack
max. interrupt time between power sources	< 1 ms
Duty cycle	Duty cycle 20; 4 min On / 16 min Off (Standby)
Class acc. to EN 12101-10	Class A; applicable in all systems

Primary power supply	
Mains voltage (8 A to 72 A)	230 V AC / 50 Hz (-10% / +10%)
Feed	Single-phase feed
Voltage	24 V DC (rated) (19 V - 32,5 V)
Power consumption per 8 A of current output	≤ 290 W
Connection terminal	Screw-type terminal on transformer, 2,5 mm²
Fuse (on transformer)	8 A power supply: T 1,6 A 16 A power supply: T 3,15 A 24 A power supply: T 5,0 A
overvoltage category	category 2

Secondary power supply	
Battery pack	2 x 12 V
Battery capacities 8 A:	7 Ah or 7,2 Ah
16 A:	17 Ah or 18 Ah
24 A:	17 Ah or 18 Ah
32 A:	7 Ah or 7,2 Ah + 17 Ah or 18 Ah
40 A - 48 A:	2x 17 Ah or 2x 18 Ah
56 A:	7 Ah or 7,2 Ah + 2x 17 Ah or 2x 18 Ah
64 A - 72 A:	3x 17 Ah or 3x 18 Ah
Battery type	Lead
Emergency power supply	72 h
Current output after 72 h in emergency power supply	8 A - 72 A for 180 s according to DIN EN 12101-10
Charging time (80% capacity)	24 h
Connection terminal	Flat plug
Monitoring	yes, cyclic approx. 25 minutes
Fuse (on the rectifier module)	8 A power supply: T 7,5 A 16 A power supply: T 15 A 24 A power supply: T 25 A

Control panel according to prEN 12101-9	
Consisting of	SHEV module, smoke detector module and group control module
Class according to prEN 12101-9	Class C: Control panel without detector

Output drives	
Voltage	24 V DC (rated) (19 V - 32,5 V)
Ripple	≤ 9,1%
Current (rated)	8 A per output of group control module
Current (short-time)	10 A (for < 10 ms)
Opening/closing operation	Reversal of voltage polarity
Pulse-off time during reversal of polarity	yes, approx. 2 s
Pulsing according to prEN 12101-9	yes, every 2 min.
Automatic clearing	no
Line monitoring	yes, up to the last conduit box by monitoring diodes with 3rd line
Connection terminals	Screw-type terminal 2,5 mm²
Fuse	T 6,3 A

Material and mechanical characteristics	
Dimensions	see Set-up, chapter “Housing and battery pack dimensions”
Housing	Sheet steel for surface installation, cable feed from the top
Colour	grey
Halogen-free	yes
Silicone-free	yes
RoHS-compliant	yes

Connection and operation	
applicable for SHEV	yes, type RAZ 9xx
applicable for ventilation	yes, types RAZ 9xx and LZ 9xx
Ventilation function in case of mains failure	no, ventilation blocked
Maintenance	once a year
Change of battery packs	every 4 years and in case of fault function

Approvals and certificates	
Controlling equipment	certified by TÜV based on prEN 12101-9
Power supply	certified by TÜV according to EN 12101-10
CE-compliant	yes, according to EMC Directive 2004/108/EC and Low-voltage Directive 2006/95/EC
RoHS-compliant	yes, according to Directive 2011/65/EC
Protection class	Class I

Installation and environmental conditions	
Nominal temperature	20 °C
Ambient temp. range	-5 °C to +40 °C
Installation situation	dry
Applicable for outdoor install.	no
Protection class*	IP 30 (acc. to DIN EN 60529)
max. altitude	up to 2000 m over NHN
max. relative air humidity	50 %
min. clearance	1.5 mm
max. relative air humidity	50 % at 40° C

Technical specifications

	Outputs			
	Fire pushbutton	automatic detectors	Ventilation pushbutton	Wind/rain sensor
applicable for models	HAUTAU FR 900 ..	RM 523 and TM 523	HAUTAU LT, LTA and double rocker switch	HAUTAU WG/H, REM/H and WREM/H
Voltage	24 V DC (rated) (19 V - 32,5 V)			
Output, max. current load	120 mA	120 mA	120 mA	400 mA
Line monitoring	yes	yes	no	no
max. number	10	10	10	1
Emergency power supply	yes	yes	no	no
Fuse	electronic			T 400 mA / 250 V
Connection terminal	Screw-type terminal 2,5 mm²			

For more information, refer to the description of the modules.