Quickguide
SHEV-3/6-RSV

SIMON
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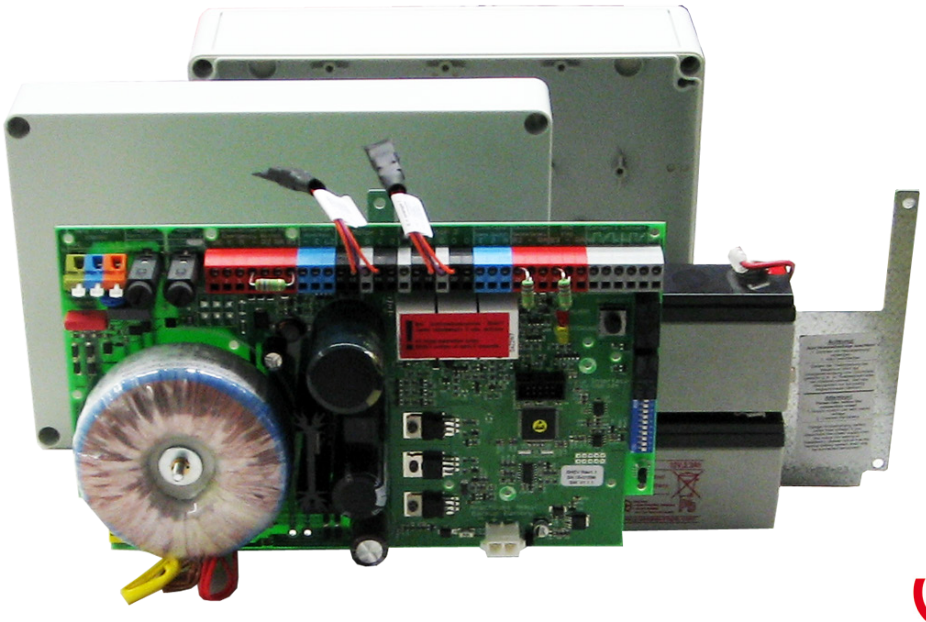
KA SHEV-3/6-RSV EN 1.0

For further information, please visit our product website:

short.simon-protec.com/shevrsven



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These operating instructions are only valid with the supplied supplementary sheet „Safety instructions and Warranty conditions!“

Table of contents

1. General

1.1. Foreword to this quick guide

This quick guide serves as a fast introduction for the installation by trained, experienced specialist personnel (e.g. mechatronics technician or electrician) and/or specialist personnel with knowledge involving the installation of electrical devices.

Please precisely observe the connection assignment, the minimum and maximum performance data (see Chapter 6: „Technical data“ on page 10) and the supplementary sheet „Safety instructions and warranty conditions“.

1.2. Use for intended purpose

See supplementary sheet „Safety instrcutions and warranty conditions“!

1.3. SIMON LINK

INFORMATION

Functions that can be configured or enabled with SIMON LINK are marked with the SIMON LINK logo!

You can find more information about SIMON LINK on our website

short.simon-protec.com/slen

2. Functional description

SHEV 3/6 RSV is a compact control unit for use with automatic smoke curtains in accordance with DIN EN 12101-1.

They allow the connection of

- smoke detectors,
- SHEV emergency switches,
- FAS-signals

and the control of tubular motors for smoke curtains.

They essentially consist of three components:

- power supply
- emergency power supply
- control electronics

2.1. Power supply

The emergency power supply of the SHEV 3/6 RSV is ensured by two 12 V lead batteries.

2.2. Control electronics (tested according to prEN 12101-9 / ISO 21927-9)

The complete control of the SHEV 3/6 RSV is handled by a microcontroller.

2.3. Operating status indicators (OK, FAULT and ALARM)

The SHEV 3/6 RSV has three operational status indicators on the control board to display the current operation mode.

- Green LED: mains operation indication
- Yellow LED: status or fault indication
- Red LED: alarm indication

3. Functions

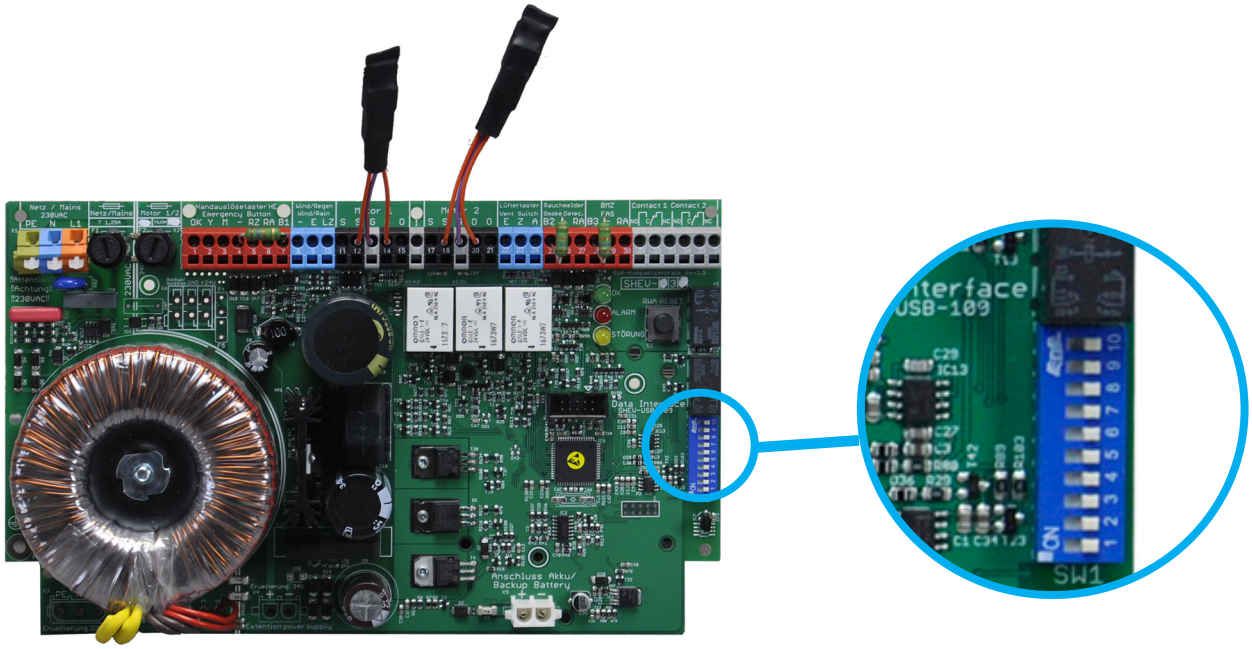
3.1. Emergency switch reset Funktion

The SHEV message can be reset using the emergency switch. Pressing the RESET button once resets only the alarm message. Pressing the RESET button a second time lifts the smoke curtain that is connected via the motor control module.

3.2. Non-modifiable settings on SW1

DIP switches 1 – 4 (ventilation configurations) and 9 (FAS alarm closes) on SW1 must be set to OFF for the system to operate correctly.

Figure 1: DIP switch SW1



3.3. FAS auto-reset function

After a triggering by FAS contact (“High” signal or line interruption of B1), the FAS reset function automatically deletes the message when the signal changes to “Low” or when the line interruption is removed. The function can be switched on or off via DIP switch 10 on SW1. If the DIP switch is set to ON, FAS auto-reset is active; if the switch is set to OFF, the function is not active. When using the FAS auto-reset function, the FAS contact must be connected to detection loop 3. The use of the auto-reset function must comply with local regulations and the requirements of the supervisory authority.

3.4. External output of messages

The SHEV 3 / 6 RSV is equipped with two volt-free relais or contacts for redirecting of fault or other messages. They can be allocated freely using DIP switches 5-8 at SW1 (see table 1).

ATTENTION

Status messaged are not displayed while in emergency power operations

The indication relays are rest to the basi position (break contact closed). Note the operation / triggering while in emergency power operations.

INFORMATION

WIth configuration of the indication relay with fault / failure the signals of the relay contacts are inverted:

Failure ⇒ closing contact opened.

No failure ⇒ closing contact closed.

Possible applications:

OK = closing contact is closed = power supply and motor line 1 / 2 okay (mains monitoring).

OK off = Wire break on motor line 1 or 2.

Table 1: Matrix signal relay (C1, C2)

SW1 – 5	SW1 – 6	SW1 – 7	SW1 – 8	Allocation C1	Allocation C2	Remarks
OFF	OFF	OFF	OFF	Message smoke curtains triggered (alarm)	Fault	Delivery state
ON	OFF	OFF	OFF	Message smoke curtains triggered (alarm)	Smoke curtain triggered in CLOSE/DOWN direction	
OFF	ON	OFF	OFF	Message smoke curtains triggered (alarm)	Smoke curtain triggered in the UP direction (mains operation)	
ON	ON	OFF	OFF	Message smoke curtains triggered (alarm)	Central wind-up (mains operation) active	
OFF	OFF	ON	OFF	Message smoke curtains triggered (alarm)	OK	Power supply OK and no wire break on motor lines 1/2
ON	OFF	ON	OFF	Fault	Smoke curtains triggered in CLOSE/DOWN direction	
OFF	ON	ON	OFF	Fault	Smoke curtains triggered in UP direction (mains operation)t	
ON	ON	ON	OFF	Fault	Central wind-up (mains operation) active	
OFF	OFF	OFF	ON	Fault	OK	Power supply OK and no wire break on motor lines 1/2
ON	OFF	OFF	ON	Smoke curtains triggered in CLOSE/DOWN direction	Actuators triggered in CLOSE direction	
OFF	ON	OFF	ON	Smoke curtains triggered in CLOSE/DOWN direction	Central wind-up (mains operation) active	
ON	ON	OFF	ON	Smoke curtains triggered in CLOSE/DOWN direction	OK	Power supply OK and no wire break on motor lines 1/2
OFF	OFF	ON	ON	Smoke curtains triggered in UP direction (mains operation)t	Central wind-up (mains operation) active	
ON	OFF	ON	ON	Smoke curtains triggered in UP direction (mains operation)	OK	Power supply OK and no wire break on motor lines 1/2
OFF	ON	ON	ON	Central upwind (mains operation) active	OK	Power supply OK and no wire break on motor lines 1/2
ON	ON	ON	ON	Message smoke curtains triggered (alarm)	Message FAS fire alarm	

4. Mounting

ATTENTION

Observe the instructions in the supplementary sheet „Safety instructions and warranty conditions“ under all circumstances!

ATTENTION

The openings of the battery cells (round lids on top of the batteries) must not point downwards. This may cause a leak out of the battery!

ATTENTION

Do NOT connect the battery during installation!

4.1. Mounting plastic housing

Figure 2: Mounting points SHEV 3 RSV plastic housing (SHEV 6 analog)

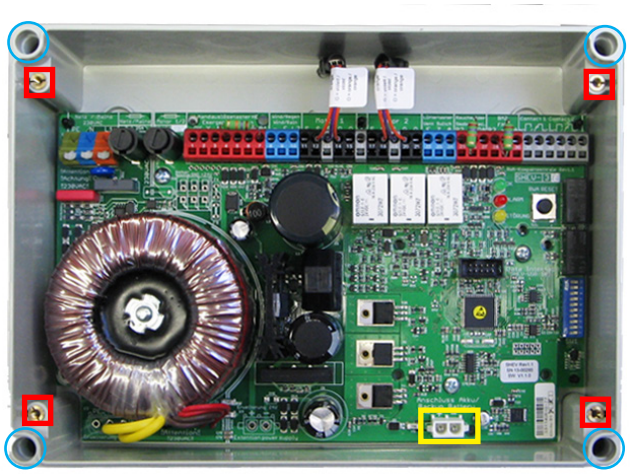
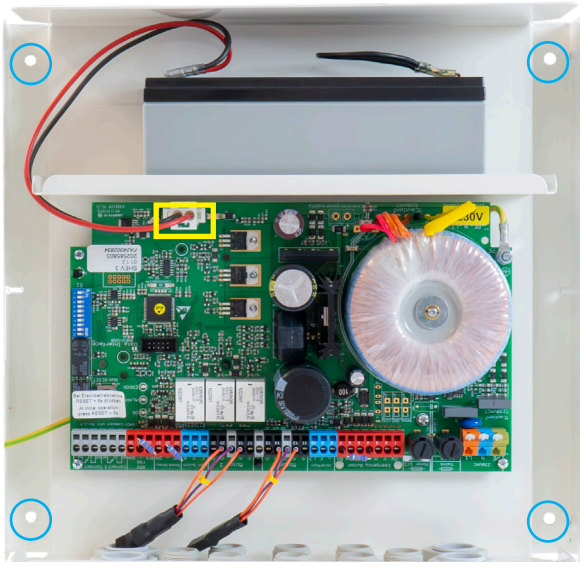


Figure 3: Mounting points SHEV 3 RSV IP (SHEV 6 analog)



Mounting points housing

Mounting points batteries

Battery port

4.2. Electrical connection

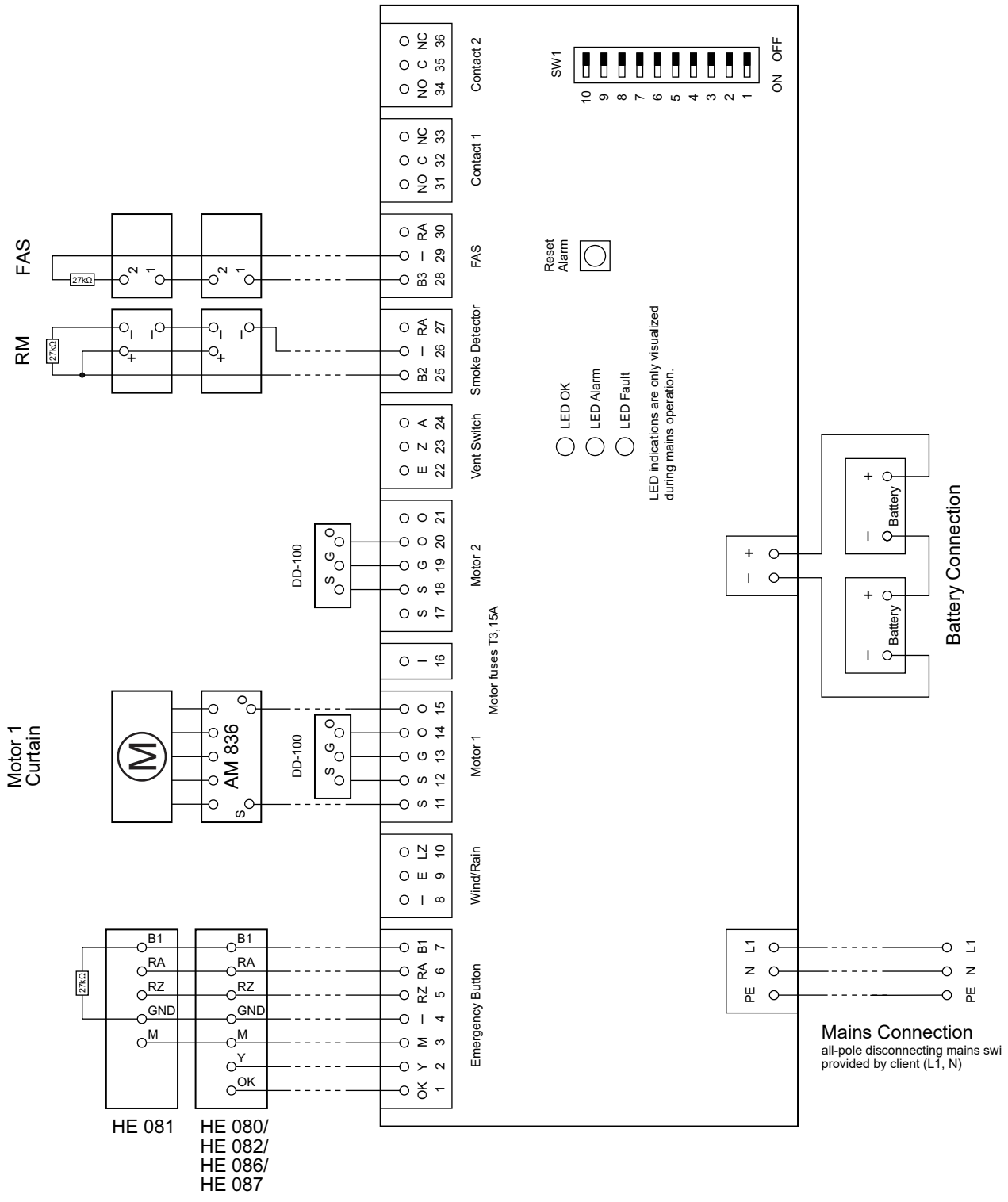
DANGER

Disconnect the power supply chord for all poles from mains. The connection of the SHEV 3/6 RSV must be done volt-free!

INFORMATION

For complete connection of the roller assemblies, refer to the operating instructions for the AM-836 motor control module!

Figure 4: Wiring diagram complete (simplified illustration)



INFORMATION

For the detection lines, the use of shielded cables is recommended.

Figure 5: Wiring diagram smoke detector

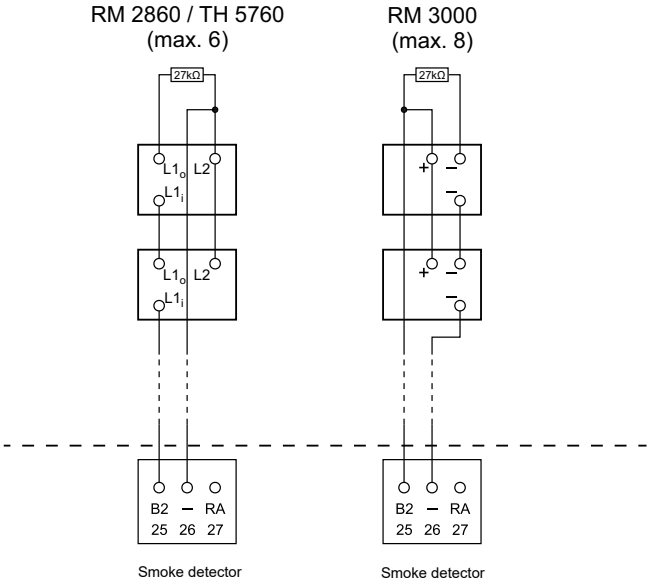
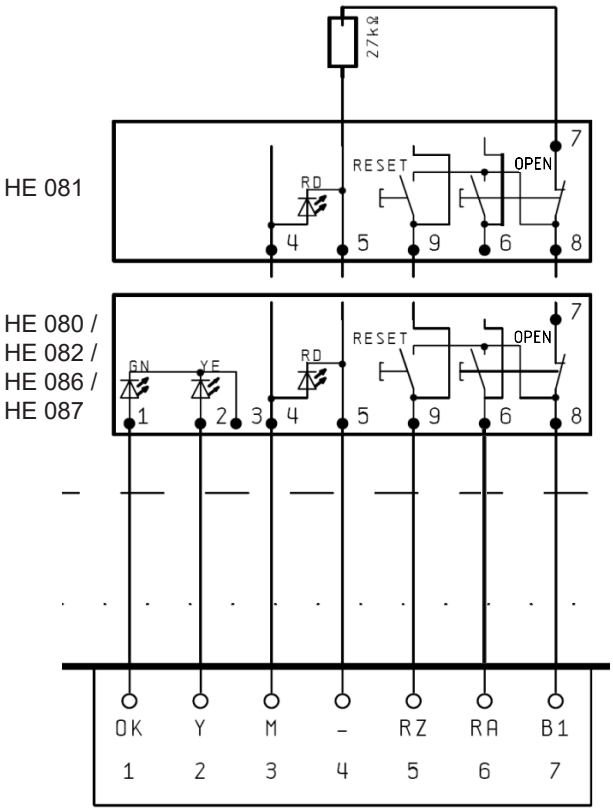


Figure 6: Wiring diagram emergency switch (Alarm-Taster)



4.3. Motor cable monitoring by DD-100

The DD-100 diode terminators in the control center are used for cable monitoring and must remain connected.

4.4. Wire lengths

INFORMATION

Dimension indications (rule of thumb):
Wire cross-section [mm²] = 0.019
x number of motors
x power input per motor [A]
x wire length [m]
The regulations of DIN VDE 0100 and DIN VDE 0298 continue to apply.

5. Commissioning

ATTENTION

Only after the SHEV 3/6 RSV has been commissioned successfully and the permanent on-site mains power supply is ensured the battery may be installed and connected.

INFORMATION

If the battery is disconnected, the error message may appear after at least 8 minutes (green LED flashes, yellow LED lights up).

ATTENTION

Only batteries approved by the panel manufacturer are allowed for connection. If any other battery is used, the control panel loses the relevant certifications and the warranty expires.

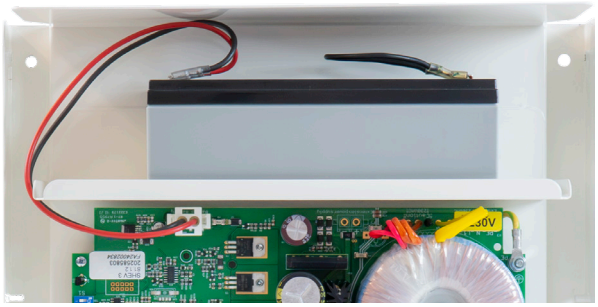
5.1. Commissioning SHEV 3/6 RSV plastic housing

- Connect battery plug to port „Battery back-up“ (see figs. 2 and 3 on page 6)
- Fasten the battery with 4 screws M4 x 8 mm (screws are included in the scope of delivery)

5.2. Commissioning SHEV 3/6 RSV IP steel-sheet housing

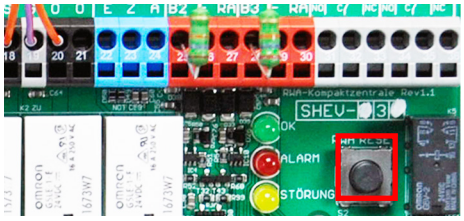
- Place the battery pack on the battery panel of the housing
- Connect battery plug to port „Battery back-up“

Figure 7: Battery connection SHEV 3 RSV IP steel sheet housing (SHEV 6 RSV analog)



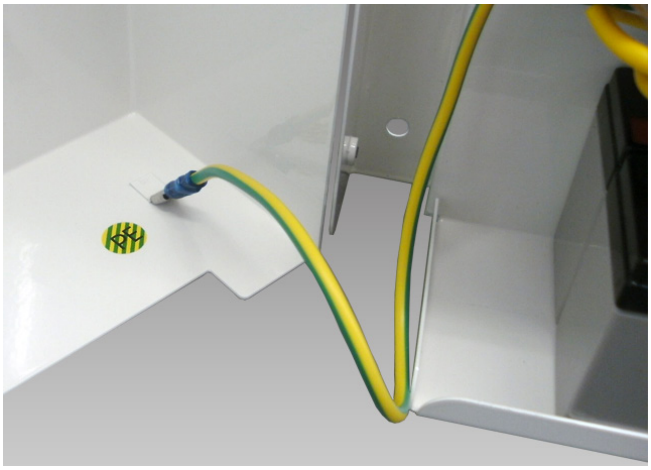
ATTENTION

After connecting the battery pack, press the RESET button for **5 seconds** in order to initialize the SHEV!



- Connect the PE cable to the PE-connection on the lid.

Figure 8: PE connection



- Place the cover and fasten it with the two screws on the side.

5.3. Troubleshooting

ATTENTION

Due to the low loop current, the insulation resistance of the monitored wires (B1, B2 and B3) must be checked! The insulation resistance must be > 20 MΩ/km (manufacturer information), otherwise wire interruptions will no longer be detected reliably.

INFORMATION

The operating states of the SHEV 3/6 RSV can optionally be visualized with SIMON LINK (only during mains operation).

For more information visit

short.simon-protec.com/slen

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6. Technical Data

Table 2: Electrical characteristics

Power supply information	
Nominal voltage	230 VAC
Acceptable voltage range	195 VAC to 264 VAC
Power consumption (1)	0.56 A (SHEV 3 RSV) 1.2 A (SHEV 6 RSV)
Min. series fuse (on-site)	≥ C 16 A
Connected load	103 VA
Inrush current	approx. 10 A
Frequency range	47 Hz to 63 Hz
Mains fuse (internal)	Fuse characteristic: Type T 1.25 A
Clamp format	0.5 mm² – 2.5 mm²
Out information motor channels	
Duty cycle	ED 30%
Output voltage mains operation (nominal)	24 VDC
Voltage range (mains operation)	23.0 VDC to 24.5 VDC
Output voltage battery operation (nominal)	24 VDC
Voltage range (battery operation)	21 VDC to 28.6 VDC
Output current (I_{out}) (short-term operation) ($I_{out} = I_{mot1} + I_{mot2}$)	3 A (SHEV 3 RSV) 6 A (SHEV 6 RSV)
Power output (non-stop operation)	50 W (SHEV 3 RSV) 100 W (SHEV 6 RSV)
Power output (short-term operation)	73.5 W (SHEV 3 RSV) 145 W (SHEV 6 RSV)
Output fuse for actuators	Fuse characteristics: Type T 3.15 A
Ripple of the output voltage Vpp (0 A < I_{out} < 3 A)	≤ 300 mVpp
Power outage bridge-over time	10 ms
Clamp format	0.5 mm² – 2.5 mm²
Emergency power mode / Hold-open	60 minutes

(1) Power consumption at maximum load of the supply system.

Table 3: Connection

Connection information emergency switches		
Maximum number of main emergency switches (i.e. HE 080 / HE 082 / HE 087)		1
Maximum number of off-site emergency switches (i.e. HE 081 / HE 086)		7
Output voltage range (B1)	Clamp 7	17.5 V DC to 18 V DC
Connection fire alarm system (FAS)		
Output voltage range (B3)	Clamp 28	17.5 V DC to 18 V DC
Current carrying capacity (B3)	Clamp 28	max. 120 mA
Monitoring current (OK range)	Clamp 28	100 µA to 5 mA
Reset time after SHEV reset (by disconnecting from mains B3)	Clamp 28	3 s
Input voltage range	Clamp 30	15 V DC to 30 V DC
Connection information smoke detector (RM 3000 / RM 2860)		
Maximum number		8 x RM 3000 6 x RM 2860
Output voltage range (B2)	Clamp 25	17.5 V DC to 18 V DC
Current carrying capacity (B2)	Clamp 25	max. 120 mA
Monitoring current (OK range)	Clamp 25	100 µA to 5 mA
Reset time after SHEV reset (by disconnecting from mains B3)	Clamp 25	3 s
Input voltage range	Clamp 27	15 V DC to 30 V DC
Connection information free input		
Input voltage range (I)	Clamp 16	15 V DC to 30 V DC
Connection information volt-free contacts (NO–C–NC)		
Voltage and current rating of the switching contacts 1 and 2	Clamp 32 to 31/33 Clamp 35 to 34/36	max. 30 V DC 2 A DC (60 W / 62.5 VA)
Voltage capacity of switching contact 1 and 2 (C – NO resp. C – NC) – ohmic load		max. 2 A DC
Switching power		60 W / 62.5 VA

Table 4: Mechanical characteristics

Characteristic	Plastic housing SHEV-3/6 RSV	Steel-sheet housing SHEV-3/6 RSV IP
Size (w x h x d)	254 x 180 x 111 mm (SHEV 3 RSV) 361 x 254 x 111 mm (SHEV 6 RSV)	325 x 305 x 90 mm (SHEV 3 RSV IP) 325 x 423 x 89 mm (SHEV 6 RSV IP)
Weight (incl. battery)	4.40 kg (SHEV 3 RSV) 6.40 kg (SHEV 6 RSV)	5.30 kg (SHEV 3 RSV IP) 8.90 kg (SHEV 6 RSV IP)
Protection type	IP66 (1) acc. to EN 60529	IP54 acc. to EN 60529
Housing	Polystyrol (halogen-free)	Steel-shet (powder coated)
Protection class	II	I (2)
Colour	grey	RAL 9010

(1) With respective use of IP66 cable lead-through.
(2) The protective conductor is used as a functional conductor for a higher EMC immunity and should therefore be connected.

Table 5: Connection and operation

Connection	See figure 4 „Wiring diagram complete (simplified illustration)“ on page 7.
Terminal clamps	Tension spring clamps 0.5 mm² – 2.5 mm²
Switch-off of actuators in any position	yes (only in normal operation)
Maximum wire length between control unit and actuator	See chapter 4.4 „Wire lengths“ on page 8
Pause time during change of direction	200 ms
Maintenance	See supplementary sheet „Safety instructions and warranty conditions“

Table 6: Installation and environmental requirements

Operating temperature	-5 to 40° C[1]
Storage temperature	
Suitable for outdoor installation	No

(1) This temperature range applies to all components of the SHEV 3/ 6 system (including the battery).

Table 7: Approvals and certificates

EN compliant	As per EMC-directive 2004 / 108 / EG and the low-voltage directive 2006 / 95 / EG
Additional approvals, certificates	ISO 21927-9 prEN 12101-9 DIN EN 12101-10
Classification as per prEN 12101-9	Class D
Classification as per EN 12101-10	Class A
Environmental class as per EN 12101-10	1

Table 8: Control time of inputs

Input digital (RZ, RA, LZ, Z, A)	500 ms
Input analog (B1, B2, B3) during mains operation	500 ms
Input analog (B1, B2, B3) during emergency power operation	2500 ms

Table 9: Lead battery

Maintenance-free lead battery	
Size (w x d x h)	178 x 34 x 64
Weight	2 x 0.95 kg
VdS registration	G101139 (Yuasa) / G122013 (SIMON)
Output voltage per battery	10.5 V DC to 14.1 V DC
Output voltage total (series connection)	21.0 V DC to 28.2 V DC
Rated capacity (total)	2.3 Ah
Service life	approx. 4 years