Instruction manual

EV-101-DC
Damper Interface Control Panel

SCS BA EV-101-DC EN 1.0

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The supplementary sheet “Safety instructions and Warranty conditions” contains general and product-specific warnings and the intended use.

This document is invalid without the supplement!

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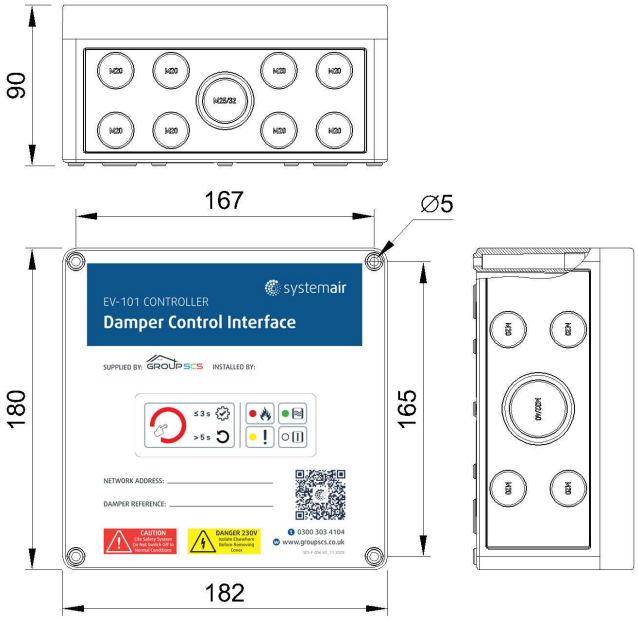
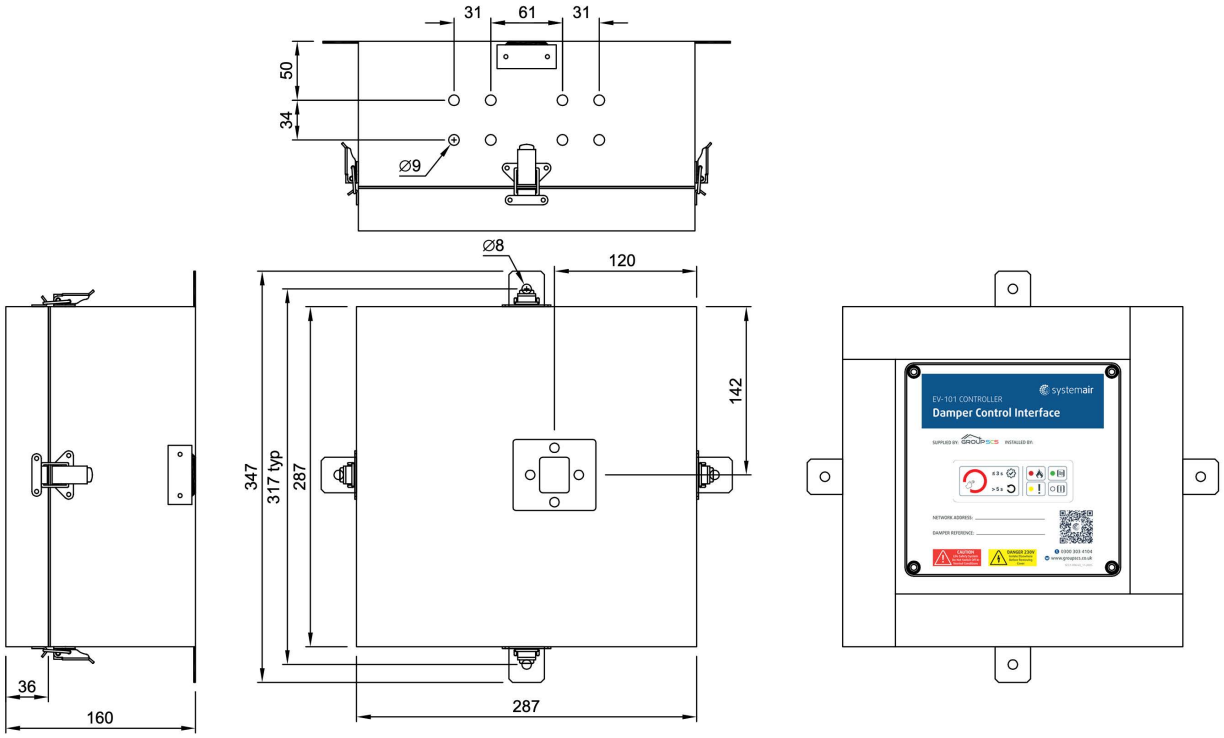
1. Dimensions

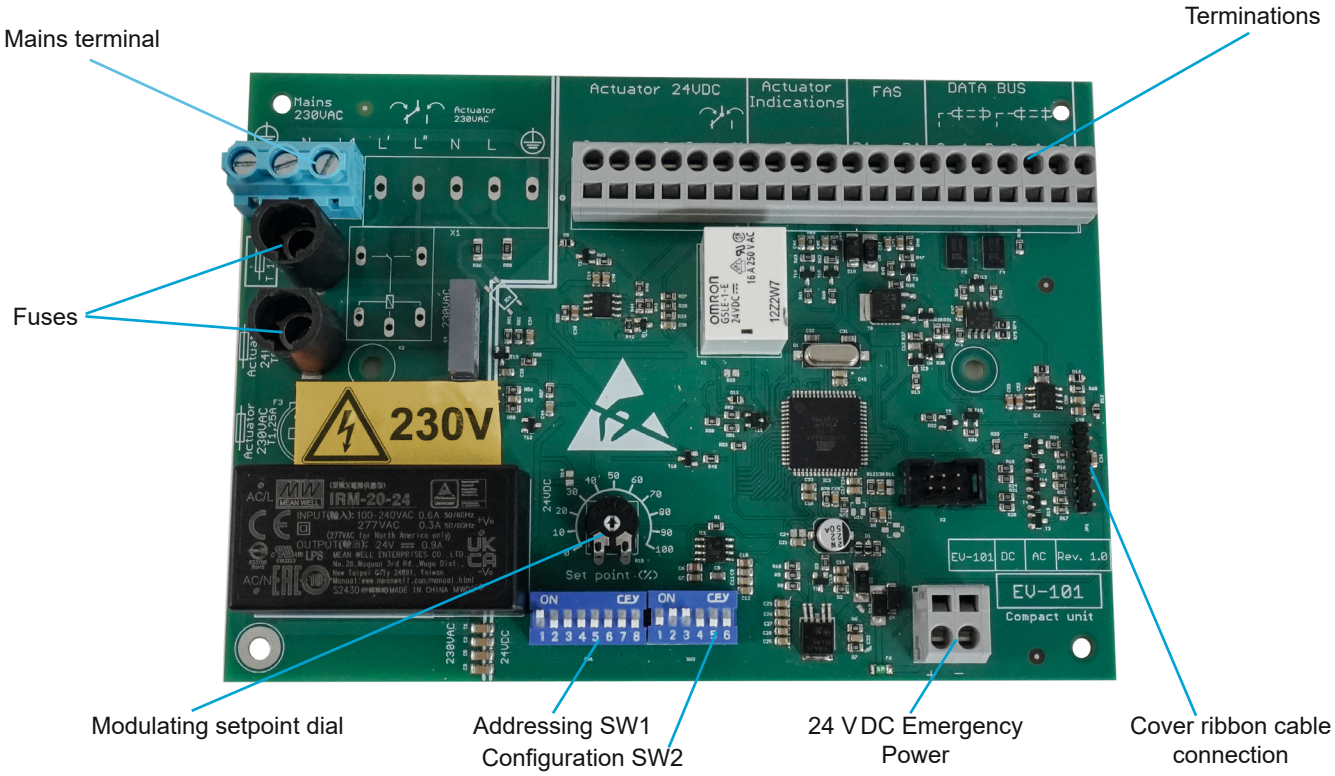
1.1. EV-101-DC Interface panel



1.2. EV-101-DC Hot box



1.3. EV-101-DC Internal arrangement



2. Technical information

2.1. Power supply information

Nominal voltage	230 V AC
Permitted voltage range	20 V DC to 253 V AC
Power consumption (full load)	0.4 A
Min. series fuse (on site)	≥ C 6 A
Connected load	92 VA
Inrush current (cold start)	40 A
Frequency range	47 Hz to 63 Hz
Mains fuse (internal)	Fuse characteristic Type T 1.25 A
Clamp size	0.5 mm² - 2.5 mm²

2.2. Aux input power information

Nominal voltage	24 V DC
Permitted voltage range	20 V DC to 25 V DC
Power consumption (full load)	approx. 40 mA (excluding smoke detector)
Clamp size	0.5 mm² - 2.5 mm²

2.3. Actuator output

Output voltage mains operation (nominal)	230 V AC
Maximum output current I_{out}	1.25 A (24 V DC)
Motor output fuse	Type T 1.25 A (24 V DC)
Modulating output	0–10 V DC
Modulating input range	0–10 V DC
Modulating input maximum range	0–30 V DC
Ripple of the output voltage Vpp (0 A < I_{out} < 0.9 A)	≤ 200 mVpp
Clamp size	0.5 mm² - 2.5 mm²

2.4. Indications (Feedback)

Output voltage (+)	24 V DC
Input voltage range	15 V DC to 30 V DC

2.5. FAS input for smoke detector EV-SD

Maximum number of EV-SD	2
Output voltage range (B1)	17.5 V DC to 18 V DC
Current carrying capacity (B1)	max. 120 mA
Monitoring current (OK range)	100 µA to 5 mA

2.6. Mechanical features

Housing Dimensions	182 × 180 × 90 mm (h × w × d)
Weight (not including batteries)	0.9 kg
Ingress rating	IP66
Housing material	Polystyrene
Colour	Light Grey RAL 7035
Protection class	II

2.7. Mechanical features (Hot Box)

Housing Dimensions	284 × 284 × 160 mm (h × w × d)
Weight (not including batteries)	5.60 kg
Ingress rating	IP55[1]
Housing	Insulating Fab-Bloc
Colour	White RAL 9010
Protection class	II

(1) Rating when correctly installed and sealed as per instructions

2.8. Environmental requirements

Ambient temperature	-5 to 40 °C
Storage temperature	-5 to 70 °C
Suitable for outdoor installation	No

2.9. Standards and certifications

EN compliant	As per EMC directive 2014/30/EU and the low voltage directive 2014/35/EU
UK compliant	As per Electromagnetic Compatibility Regulations 2016 and Electrical Equipment (Safety) Regulations 2016
Additional registrations, certificates[1]	prEN 12101-9 BS ISO 21927-9 BS EN 12101-10
Classification as per EN 12101-9	Class D
Classification as per EN 12101-10	Class A
Environmental class as per EN 12101-10	1

3. Product description

3.1. Functional specifications

The EV-101-DC operates as a fire and smoke damper interface panel, providing both power and control functions for smoke control and fail-safe damper actuators. It can function as part of an addressable system or as a standalone unit.

The panel continuously monitors damper position and status, with visual indicators showing current condition. A built-in self-test function exercises the damper to verify operation and identify faults.

3.1.1. Network mode

The panel operates as an addressable interface, reporting damper status and receiving operation commands from the EV-DCP master damper control panel according to a programmed cause and effect.

3.1.2. Standalone mode

The panel can be directly triggered by a smoke detector or fire alarm interface to operate the damper.

3.2. Power supply

The panel requires a 230 VAC power supply, which is internally converted to a 24 VDC output for the dampers. Damper operation is controlled via a relay that switches power to drive the damper both open and closed, and it can also provide a contiunous output if required.

The panel accepts open and closed feedback signals from the dampers, which are powered from the panel's 24 VDC signal output.

An optional 24 VDC backup supply can be connected to maintain position monitoring and network communication in the event of a mains power failure.

3.3. Digital Output

A 24 VDC transistor output is available for special applications controlled by commands via the network.

3.4. FAS Fire Alarm Input

The FAS input allows connection of a smoke detector or fire alarm interface for standalone operation. The input is monitored with a terminating resistor.

The alarm condition is triggered by either an open circuit or short circuit condition across the terminating resistor.

The panel automatically resets the alarm when the input returns to a healthy state (resistor connected within tolerance).

A reset command cycles power to the FAS terminals for 3 seconds, to allow latching smoke detectors to reset. If the detector fails to reset and the input does not return to a healthy state, the alarm will be retriggered.

3.5. Status indicators

The status of the panel and damper are indicated by coloured LEDs on the front of the panel.

LED (Colour)	*State*	*Condition*
ALARM (Red)	Off	No alarms active and in normal condition
	On	In alarm with the damper in correct position
	Flashing	In alarm with the damper not in position or travelling
FAULT (Yellow)	Off	No fault or warning conditions
	Flashing	A fault or failed test condition active, identified by Morse code.
OPEN (Green)	Off	No damper open feedback received
	On	Damper open or at the modulating setpoint position
	Flashing	Damper travelling to the open position or modulating setpoint
CLOSE (White)	Off	No damper closed feedback received
	On	Damper closed
	Flashing	Damper travelling to the closed position

3.5.1. Fault indication

Flash	*Morse Code*	*Condition*
— — •	G	General fault
— —	M	Mains power supply fault
• — —	W	Master communication error
• • •	S	FAS Input in alarm
• • — •	F	Motor output fuse fault
— • — •	C	Damper failed to close
— — —	O	Damper failed to open
• —	A	Modulating input signal error
— • • —	X	Test result – Damper failed to close
— • — —	Y	Test result – Damper failed to open
— — • •	Z	Test result – Damper failed to modulate

3.6. Function buttons

A multi-function test / reset button is located on the front of the panel.

Function	*Action*
Test	Press the button for between 1 – 3 seconds to start a self-test sequence.
Reset	Press the button for > 5 seconds to send a reset command.

3.7. Addressing

The panel address for network mode can be set by switch SW1.

The address is set in a binary format with the sum of the values set in the ON position.

SW1	*ON*	*OFF*	*Function*
1	+1	0	Addressing Value 1
2	+2	0	Addressing Value 2
3	+4	0	Addressing Value 4
4	+8	0	Addressing Value 8
5	+16	0	Addressing Value 16
6	+32	0	Addressing Value 32
7	+64	0	Addressing Value 64
8	+128	0	Addressing Value 128

3.8. Configuration switches

A reset command must be triggered to apply changes to the configuration

SW2	*OFF*	*On*	*Function*
1	Addres-sable	Stand-alone	Operation mode
2	Open	Closed	Normal / Reset damper position
3	No	Yes	End position feedback monitoring
4	Spring	Hold	Actuator safety drive type
5	Fixed	Modulating	Actuator positioning type (Must be set to OFF for AC version)
6	2..10V	0..10V	Modulating position feedback range (Not used for AC version)

4. General Functions

4.1. Normal Position

This is the default damper position when no alarms, overrides, lockouts, or test sequences are active. In normal mode, the actuator outputs are energised to drive the damper to the position set by switch SW2-3.

When the actuator position type is set to modulating by SW2-5 the damper will drive to the modulating setpoint position by default.

4.2. FAS Alarm

An FAS alarm can be triggered either by the FAS Alarm input or via an alarm command received over the network.

When the FAS Alarm input is detected, the actuator output de-energises, driving the damper to its safety (alarm) position, opposite to the normal position set by SW2-3.

In addressable mode, the actuator responds to alarm or override commands from the master control panel according to the programmed cause and effect.

In standalone mode set by SW2-2, the FAS alarm resets automatically when the input returns to normal.

4.3. Alarm override

In addressable mode, the damper alarm position can be overridden by commands from the master control panel in response to operator override intervention.

4.4. Lockout

Lockout mode applies only in addressable network configurations.
If communication with the master panel is lost, lockout mode activates automatically.
Upon restoration of communication, normal operation resumes.
On power-up, the panel enters lockout mode until communication is confirmed.
In lockout mode during normal operation, the damper moves to the safety position (opposite to the normal position set by SW2-3).
If lockout occurs during an alarm or override, the actuator maintains its last output or command until communication is restored.

4.5. Self-Test

The self-test exercises the damper and verifies operation by monitoring position feedback signals (must be connected, and SW2-3 set ON).

The test can only be performed in normal mode.

Start the test by pressing the function button for 1–3 seconds or by a test command from the master panel.

The test aborts immediately if an alarm, override, or lockout occurs, or if a reset command is received.

4.5.1. Test Sequence

Step	*Damper Output*	*Verification check*
1	Open (energised)	Open feedback received within 180 secs
2	Close (de-ener-gised)	Closed feedback received within 180 secs
3	Normal position	Normal position (SW2-2, SW2-5) feedback received within 180 secs

If incorrect feedback signals are received during the test sequence, the test will fail and a fault will be indicated. Previous test results and faults are cleared at the start of each test or when a reset command is received.

5. Installation Instructions

DANGER

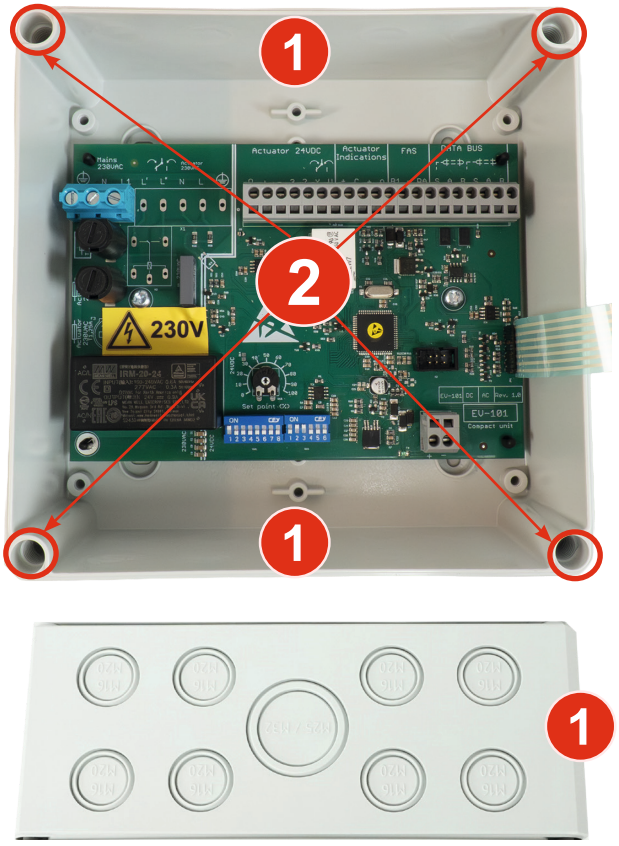
Risk of electrocution. Works on this equipment should only be carried out by a qualified and competent electrical person. Observe all electrical safety regulations and safe systems of work. Check power supply has been isolated or disconnected safely before removing equipment covers.

5.1. Mounting instructions

Place the interface panel where it is easily accessible for maintenance and testing.

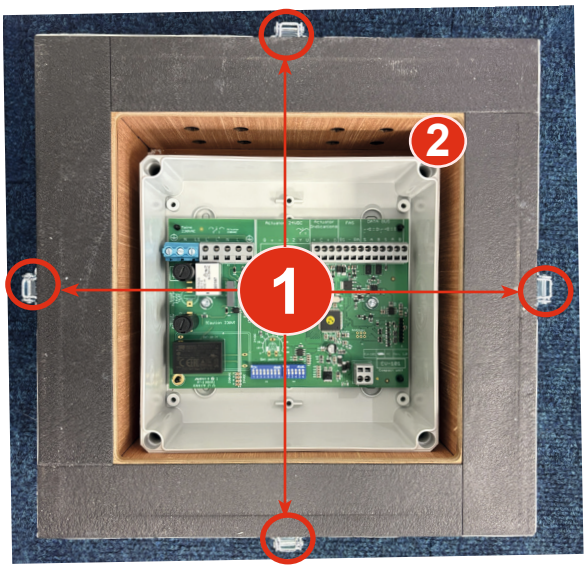
1. Remove the Lid
   - ➢ Loosen the fixings at each corner of the lid. Carefully disconnect the lid ribbon cable from the board, do not let the lid hang by the cable.
2. Prepare Cable Entries
   - ➢ Knock out the required cable entry points gently to avoid damaging the board (see figure 1, ❶). Insert suitable cable glands into the openings.
3. Position the Panel
   - ➢ Place the interface panel where it will be mounted. Use the fixing points located under the lid fixings to mark where holes need to be drilled (see figure 1, ❷).
4. Drill Holes and Secure Panel
   - ➢ Drill holes sized for 4 mm screws and insert wall plugs. Secure the panel to the wall using appropriate screws.
5. Connect External Cables
   - ➢ Feed external cables through the glands, secure them, and connect according to the wiring instructions.
6. Set Configuration and Replace the Lid
   - ➢ Adjust the configuration switches as required. Carefully reconnect the ribbon cable and replace the lid, securing it with the fixings.

Figure 1: EV-101-DC fastening points



5.2. Hot Box Mounting Instructions

Figure 2: EV-101-DC hot box



Place the interface panel where it is easily accessible for maintenance and testing.

1. Position the hot box
   - Place the hot box where it will be mounted or use the fixing dimensions given. Mark the fixing points where holes need to be drilled (see figure 2, 1).
2. Drill Holes and Secure the Panel
   - Drill holes for 5 mm screws and insert wall plugs. Secure the panel to the wall using appropriate screws.
3. Remove the Lids
   - Unclamp the hot box lid by lifting the clamp latches on all sides and remove with care. Loosen the internal panel fixings at each corner of the lid. Carefully disconnect the lid ribbon cable from the board, do not let the lid hang by the cable.
4. Connect External Cables
   - Feed external cables through the cable entry holes, secure them, and connect according to the wiring instructions. Any unused entry holes must be sealed using an intumescent fire sealant with a fire rating greater than 120 mins (see figure 2, 2).
5. Set Configuration and Replace the Lid
   - Adjust the configuration switches as required. Carefully reconnect the ribbon cable and replace the lid, securing it with the clamps.

5.3. Wiring Diagrams

Figure 3: Overview connectors / DIP-switches / jumpers (simplified representation)

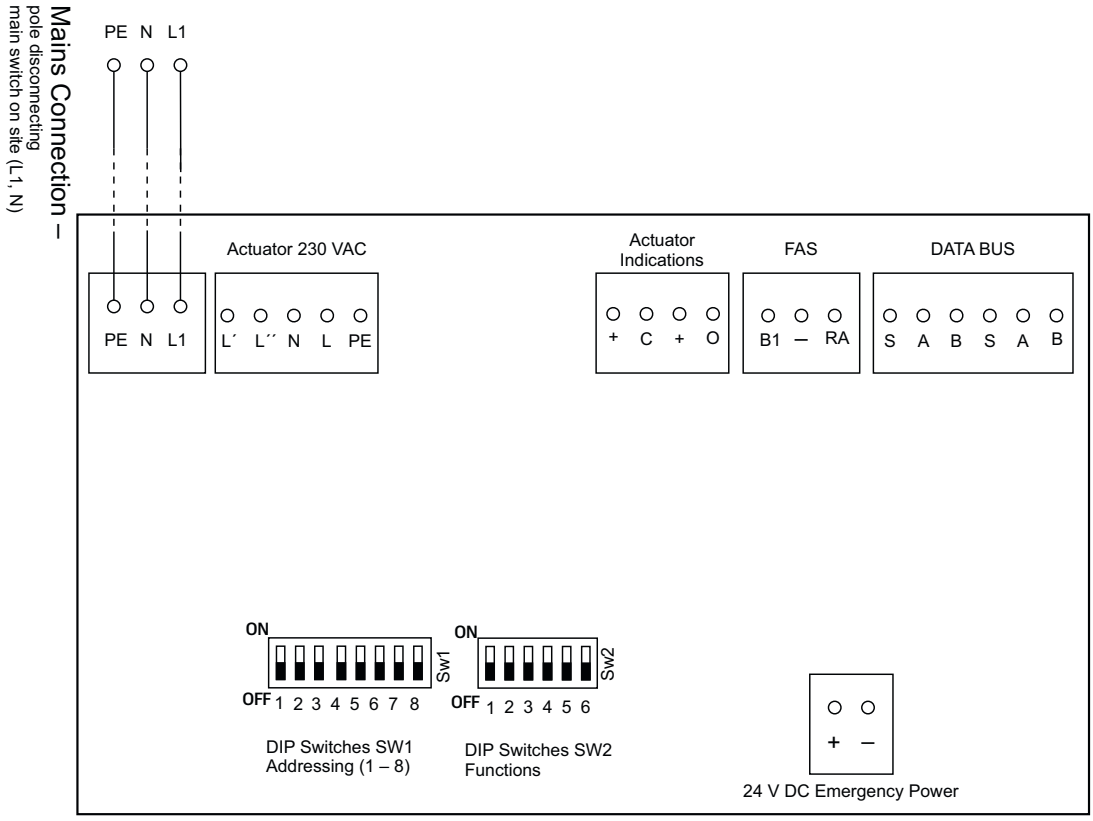


Figure 4: Mains Supply

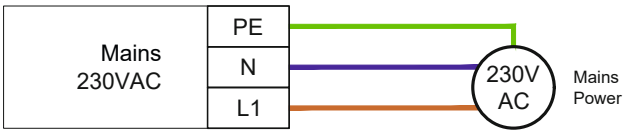


Figure 5: 24 V Input

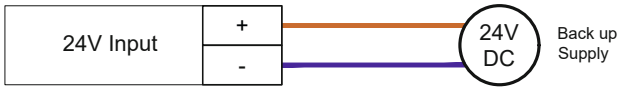


Figure 6: Network Connection

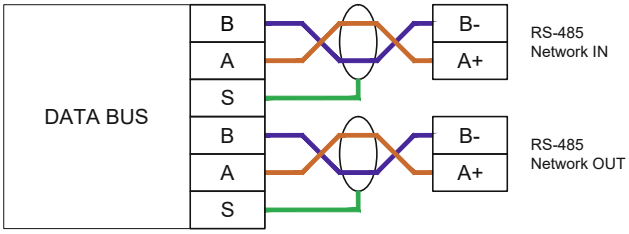


Figure 7: FAS Input

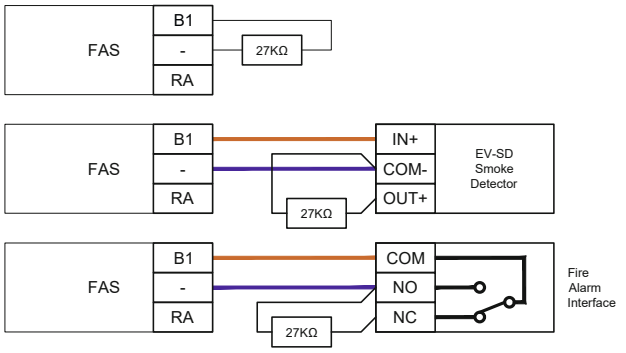


Figure 8: Feedback Input

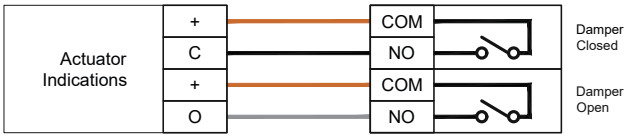
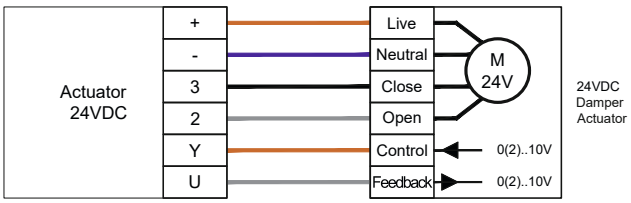


Figure 9: Actuator Output



5.4. Common Actuator Wiring

5.4.1. Fire Dampers

Figure 10: Belimo Fire Damper 24 VDC

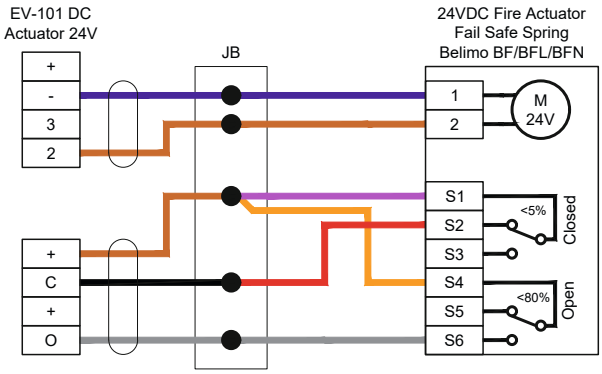


Figure 11: Belimo Fire Damper 24 VDC Modulating

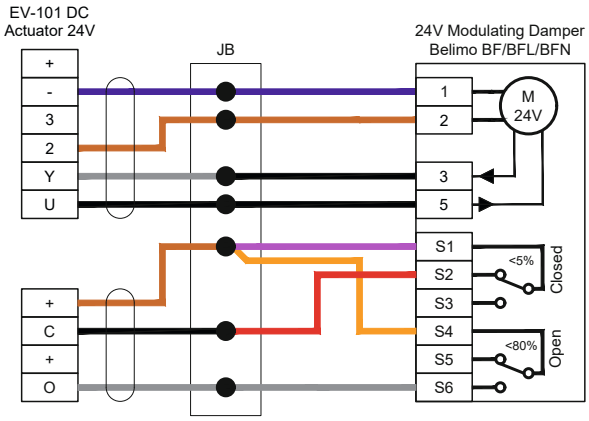


Figure 12: Johnson Controls Fire Damper 24 VDC

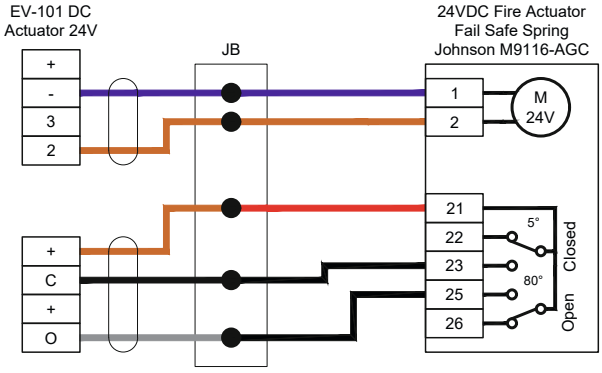
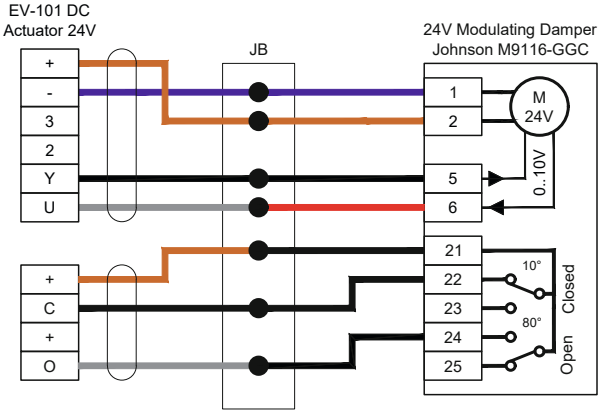


Figure 13: Johnson Controls Actuator 24 VDC Modulating



5.4.2. Smoke Control Dampers

Figure 14: Belimo Smoke Control Damper 24 VDC

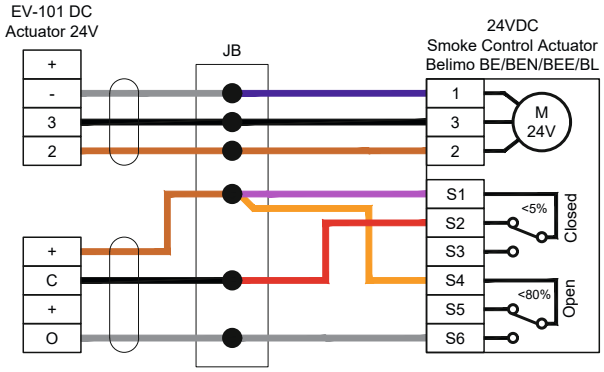


Figure 15: Johnson Controls Smoke Control Damper 24 VDC

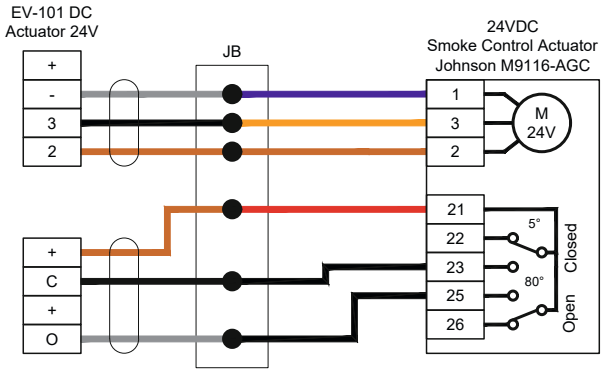
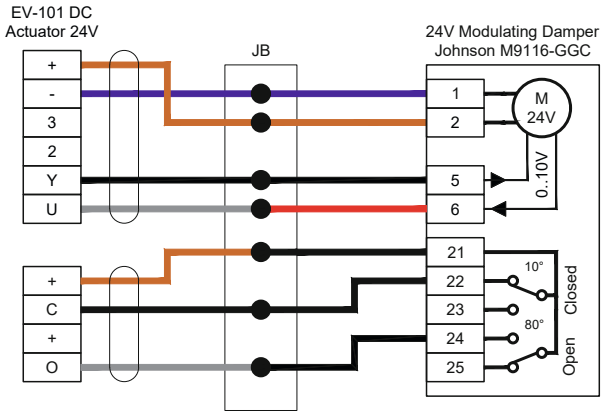


Figure 16: Johnson Controls Smoke Control Damper 24 VDC modulating



6. Commissioning Instructions

DANGER

Disconnect both mains supply poles before connecting any device to the interface panel.

ATTENTION

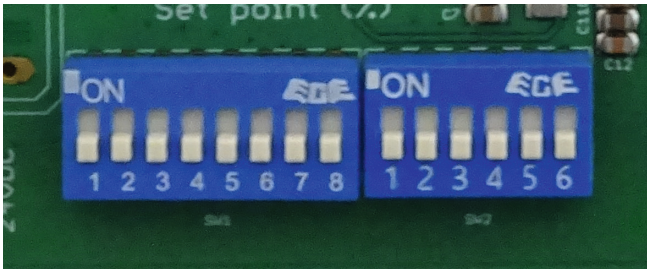
The control board is sensitive to electrostatic discharge causing damage to components. Do not remove or handle the board, this may invalidate the warranty.

6.1. Inspection

- Identify the damper type and operation.
- Verify the damper voltage and load are compatible with the interface panel.
- Confirm correct wiring for both the damper type and its feedback signals.
- Verify correct power supply is available

6.2. Commissioning Procedure

- Before applying mains power, set the damper configuration switches (SW2) for correct operation and type (see section 3.8: “Configuration switches” on page 8).



- For addressable systems, set the panel address using switches (SW1). Each address must be unique, starting at 1 and assigned sequentially.
- Set standalone mode (SW2-1 = ON) for testing.
- Apply mains power and check the OK indicator is illuminated.
- Start a self-test by momentarily pressing the function button. Confirm the damper operates through the test sequence.
- If a fault is indicated, identify and correct the issue, then repeat the test until no faults remain.
- For addressable systems, set the panel back to network mode (SW2-1 = OFF).
- For balancing modulating typed dampers (SW2-5 = ON) adjust the setpoint dial to the required position and press the button for more than 5 seconds or until the damper moves to the set position.

7. Troubleshooting

ATTENTION

Due to the low loop current, the insulation resistance of the monitored wire (B1) must be checked! The insulation resistance must be = 20 MΩ/km (wire manufacturer specification), otherwise disconnections may be undetected.

INFORMATION

The EV-100 indications are only visible with mains power connected.

For more information about the operational status see 3.5.1.: “Fault indication” on page 7.

8. Appendix

8.1. Manufacturer‘s declaration EC

We hereby declare that the product complies with the applicable directives. The declaration of conformity can be read at the company‘s premises and will be sent to you upon request. This declaration certifies that the product complies with the mentioned directives, but does not represent any guarantee of the product‘s features. This declaration loses its validity, if the product is modified without seeking our prior authorisation.

8.2. Manufacturer‘s declaration UK

We hereby declare that the product complies with the applicable regulations. The declaration of conformity can be read at the company‘s premises and will be sent to you upon request. This declaration certifies that the product complies with the mentioned regulations, but does not represent any guarantee of the product‘s features. This declaration loses its validity, if the product is modified without seeking our prior authorisation.

8.3. UK manufacturer‘s declaration (distributor)

The installer is responsible for the correct assembly or commissioning, the preparation of the declaration of conformity in accordance with UK regulations and for affixing the UK marking. The UKCA marking must be positioned where it is visible.

8.4. Company address

8.4.1. System manufacturer (Germany)

SIMON
we create fire safety

SIMON PROtec Systems GmbH
Medienstraße 8
94036 Passau

Phone: +49 (0) 851 988 70 - 0
Fax: +49 (0) 851 988 70 - 70

E-Mail: info@simon-protec.com
Web: www.simon-protec.com

8.4.2. Group SCS

GROUP SCS | systemair

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