

Installation Guide –

# Shaft Natural Damper – Residential (SND-R)

## These instructions should be used for:

- The installation of the Sertus Shaft Natural Damper – Residential (SND-R) in a flexible (Gypsum plasterboard) wall or in a rigid wall.



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# Shaft Natural Damper – Residential (SND-R)

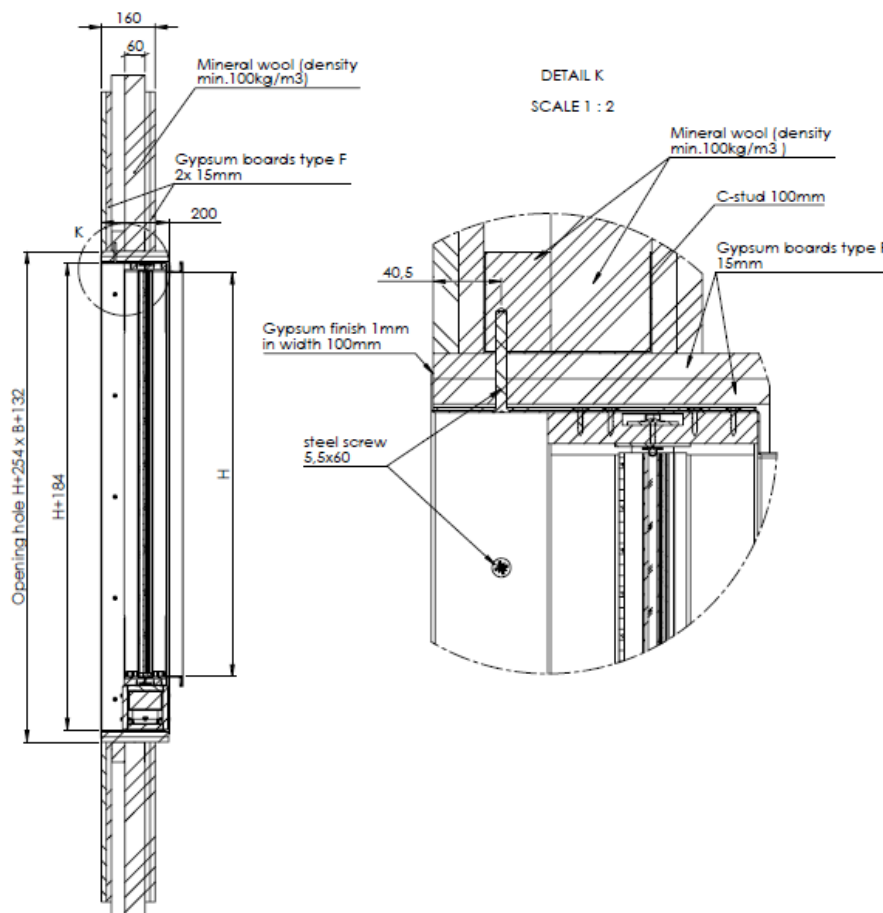
## Installation in a Flexible (Gypsum Plasterboard) Wall

1. Create a structural opening in the wall with the dimensions  $W + 107\text{mm} \times H + 259\text{mm}$ ; ( $W \times H$  are the dimensions of the damper geometric size,  $W$  = Width and  $H$  = Height).
2. Make a frame of layers of gypsum boards type F, 15mm thick and the width 200mm mounted by screws into the structural opening checking that the maximum size is  $W + 77\text{mm}$  and  $H + 199\text{mm}$ . Note: This assumes one layer of plasterboard on sides and two layers top and bottom.
3. Place a bead of intumescent mastic on the rear of the frame to create a good seal to the face of the wall.
4. Place the closed fire damper into the installation opening.
5. After setting the fire damper, mount it by the self-drilling screws 5.5 x 60mm through installation holes into damper's flange to steel C-studs into the wall.
6. Seal the connection between damper's flange and wall by 1mm gypsum finish in width 100mm.
7. After the damper has been installed successfully check it operates correctly.

Note: See Table 1 on page 5 for structural and finished opening sizes.

A site former to assist in creation of openings is available, please enquire for further details.

Fig 1: Light wall



# Shaft Natural Damper – Residential (SND-R)

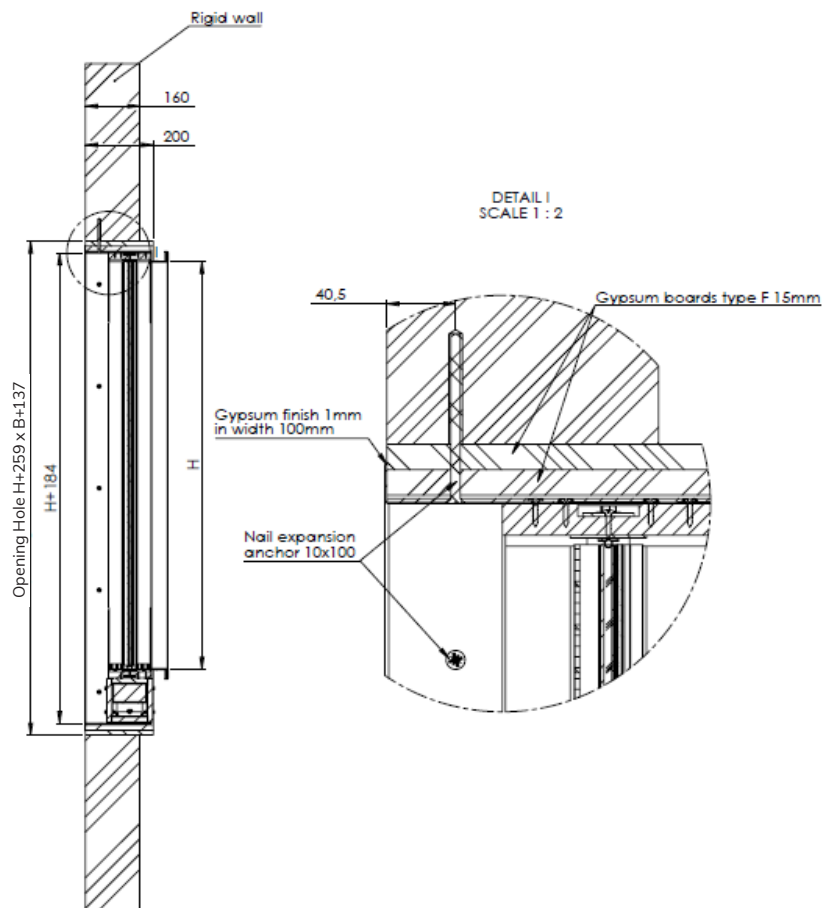
## Installation in a Rigid Wall

1. Create a structural opening in the wall with the dimensions  $W + 107\text{mm} \times H + 259\text{mm}$ ; ( $W \times H$  are the dimensions of the damper geometric size,  $W$  = Width and  $H$  = Height).
2. Make a frame of layers of gypsum boards type F, 15mm thick and the width 200mm mounted by screws into the structural opening checking that the maximum size is  $W + 77\text{mm}$  and  $H + 199\text{mm}$ . Note: This assumes one layer on sides and two layers top and bottom.
3. Place a bead of intumescent mastic on the rear of the frame to create a good seal to the face of the wall.
4. Place the closed fire damper into the installation opening.
5. After setting the fire damper, drill  $\text{Ø}10$  holes 100mm deep thru installation holes into damper's flange in rigid wall for nail expansion anchor, place anchors into the holes and mount the screws through installation holes into damper's flange.
6. Seal the connection between damper's flange and wall by 1mm gypsum finish in width 100mm.

Note: See Table 1 on page 5 for structural and finished opening sizes.

A site former to assist in creation of openings is available, please enquire for further details.

Fig 2: Rigid wall



# Shaft Natural Damper – Residential (SND-R)

**Table 1: Structural and finished wall openings (1.0m<sup>2</sup> versions)**

Damper Size (mm – W x H)	Structural Opening Size* (mm – W x H)	Finished Plaster Size* (mm – W x H)
750 x 1850	857 x 2109	827 x 2049
900 x 1550	1007 x 1809	977 x 1749
900 x 1850	1007 x 2109	977 x 2049

\* Assuming one layer of 15mm plasterboard on sides and two layers top and bottom.

Actuator for smoke control dampers 90°

- Torque motor 40 Nm
- Nominal voltage AC/DC 24 V
- Control Open/close
- Mechanical interface Form fit 14x14 mm, continuous hollow shaft


**Technical data**

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Switching thresholds min. ON voltage	AC 19.2 V / DC 21.6 V
	Switching thresholds max. OFF voltage	AC 6.5 V / DC 6.5 V
	Power consumption in operation	12 W
	Power consumption in rest position	0.5 W
	Power consumption for wire sizing	18 VA
	Power consumption for wire sizing note	Imax 8.2 A @ 5 ms
	Auxiliary switch	2 x SPDT
	Switching capacity auxiliary switch	1 mA...6 A (3 A inductive), DC 5 V...AC 250 V
	Switching points auxiliary switch	3° / 87°
	Tolerance	±2°
	Connection supply / control	Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free
	Connection auxiliary switch	Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free
<b>Functional data</b>	Torque motor	40 Nm
	Inhibiting torque dynamic	40 Nm
	Inhibiting torque static (voltage-free)	50 Nm
	Direction of motion motor	selectable by mounting L/R
	Manual override	with hand crank
	Angle of rotation	Max. 100°
	Angle of rotation note	Including 5° mechanical overrun at both sides
	Running time motor	<60 s / 90°
	Sound power level, motor	62 dB(A)
	Mechanical interface	Form fit 14x14 mm, continuous hollow shaft
	Position indication	Mechanically, with pointer
	Service life	Min. 10'000 cycles
<b>Safety data</b>	Protection class IEC/EN	III, Safety Extra-Low Voltage (SELV)
	Protection class auxiliary switch IEC/EN	II, reinforced insulation
	Degree of protection IEC/EN	IP54
	EMC	CE according to 2014/30/EU
	Low voltage directive	CE according to 2014/35/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.B
	Rated impulse voltage supply / control	0.8 kV
	Rated impulse voltage auxiliary switch	2.5 kV
	Pollution degree	3
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-30...50°C [-22...122°F]
	Storage temperature	-40...80°C [-40...176°F]

<b>Safety data</b>	Servicing	maintenance-free
<b>Weight</b>	Weight	2.7 kg

**Safety notes**


- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- The actuator is adapted to and installed on the smoke control damper by the damper manufacturer. For this reason, the actuator is only supplied direct to safety damper manufacturers. The manufacturer then bears full responsibility for the proper functioning of the damper.
- The two switches integrated in the actuator are to be operated either on power supply voltage or at safety extra-low voltage. The combination power supply voltage/safety extra-low voltage is not permitted.
- Because of the fact that very high torques are applied to the damper shaft, the use of St50 (as a minimum) is recommended.
- The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

**Product features**

<b>Mode of operation</b>	2-wire open/close control. The actuator is overload-proof and can thus remain energised even at the end stops.
<b>Manual override</b>	The hand crank included in the shipment can be used for manual operation of the actuator.
<b>Signalling</b>	Two microswitches with fixed settings are installed in the actuator for indicating the damper end positions. It should be noted with this application however that the contacts can no longer be used in the milliampere range after larger currents have been applied to them, even if this has taken place only once.  The position of the damper blade can be read off on a mechanical position indication.
<b>Standards / Regulations</b>	The design of the actuator is based on the specific requirements from the European standards: <ul style="list-style-type: none"> <li>• EN 12101-8: Smoke and heat control systems - Part 8: Smoke control dampers</li> <li>• EN 1366-10: Fire resistance tests for service installations - Part 10: Smoke control dampers</li> <li>• EN 13501-4: Fire classification of construction products and building elements - Part 4: Classification using data from fire resistance tests on components of smoke control systems</li> </ul>
<b>Delivery notes</b>	Incl. Hand crank, Pointer, Protective bag

**Accessories**

Electrical accessories	Description	Type
	Cable set with plug 0.5 m for communication and power supply unit	ZST-BS
Mechanical accessories	Description	Type
	Hand crank 40 mm	ZK1-B
	Hand crank 70 mm	ZK2-B
	Protective bag with wire, Multipack 100 pcs.	ZSD-B.1

**Electrical installation**

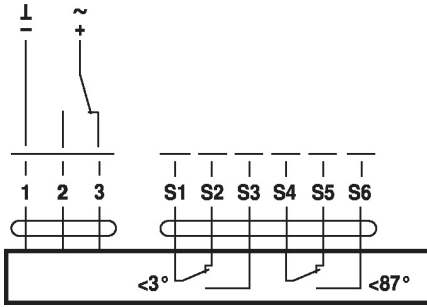

**Supply from isolating transformer.**

**Parallel connection of other actuators possible. Observe the performance data and the switching thresholds.**

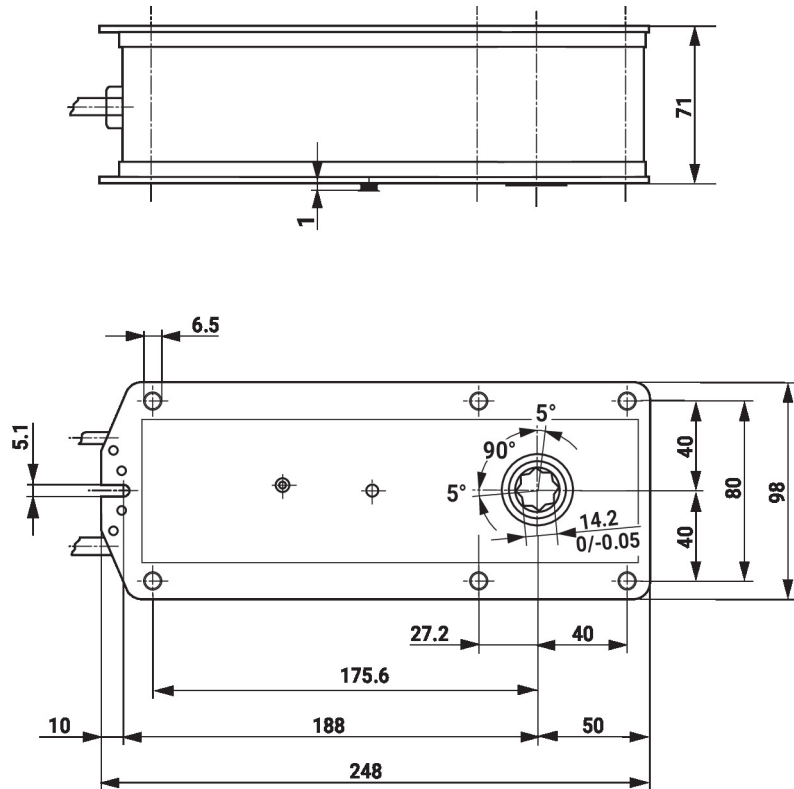
**Combination of power supply voltage and safety extra-low voltage not permitted at the both auxiliary switches.**

**Wiring diagrams**

AC/DC 24 V, open/close



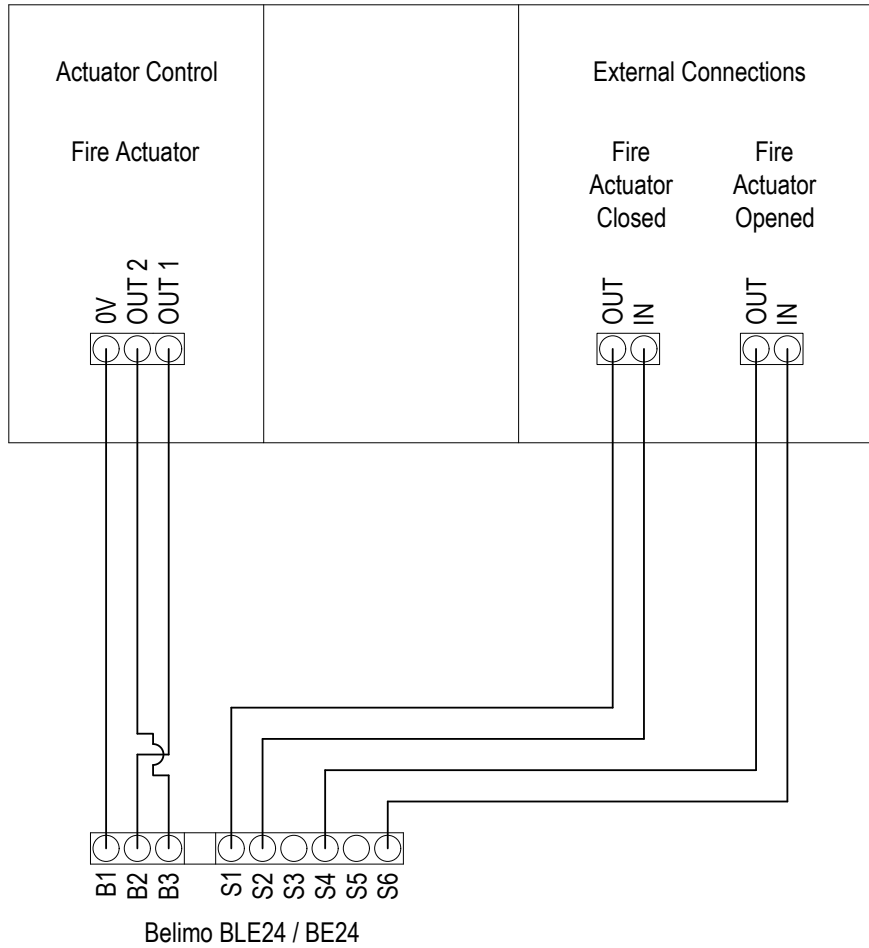
**Dimensions**



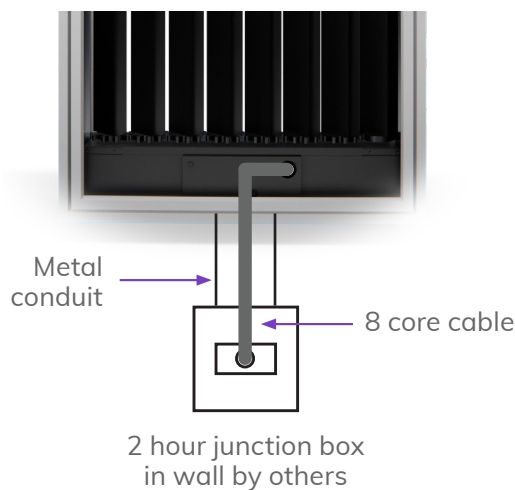


# Shaft Natural Damper – Residential (SND-R)

## Wiring Diagram



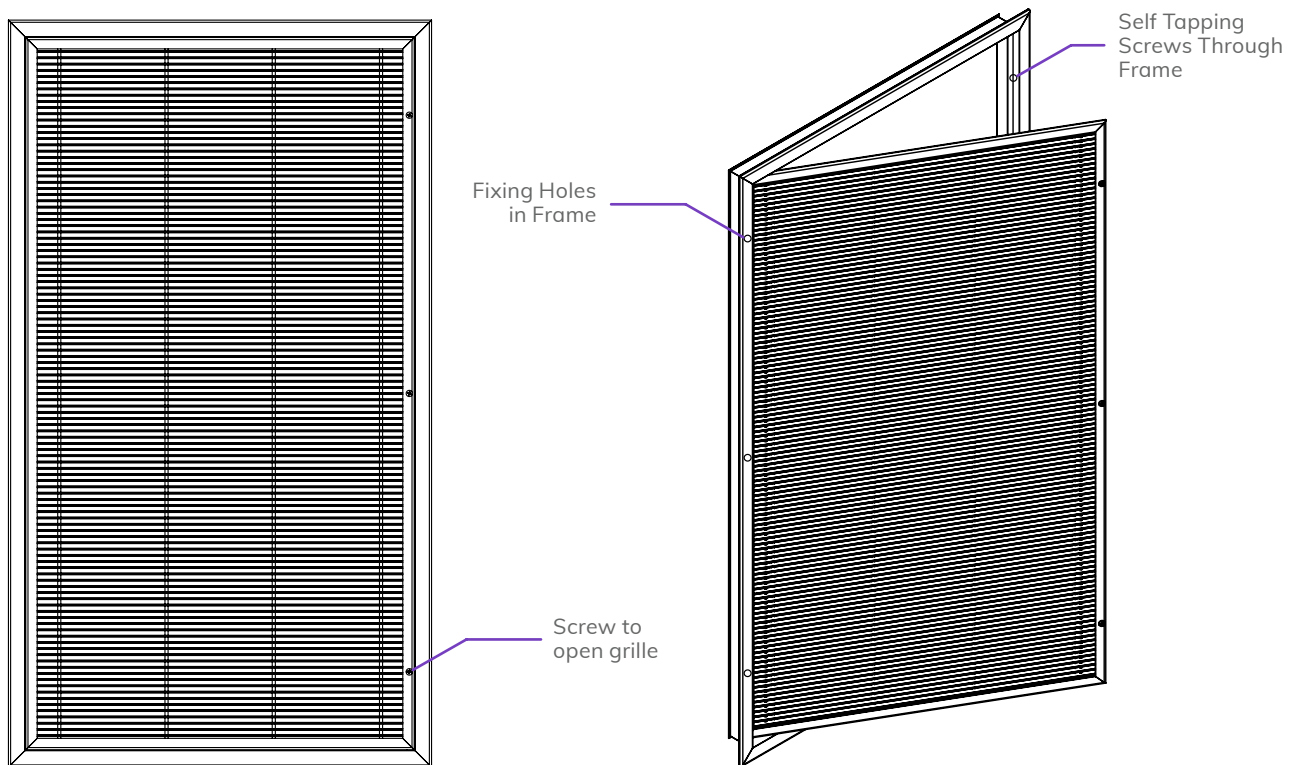
Recommended connection point:



## Installation of Grille

The damper is supplied with a hinged Liner grille and fixings.

Loosen the screws on the front of the grille to allow the grille to open and then fix through the side into the damper casing using self-tapping screws provided through pre-drilled holes in the frame of the grille.



# Shaft Natural Damper – Residential (SND-R)

## Declaration of Performance

No: **SND-R-2434-CPR-0303-23**

Description	Details
<b>1. Unique identification code of the product-type</b>	Smoke control damper Shaft Natural Damper SND-R type for multi-compartment smoke control systems.
<b>2. Intended use</b>	Shaft Natural Damper SND-R type is intended to use in single and multi-compartment smoke and heat control systems.
<b>3. Producent manufacturer</b>	Sertus Ltd, Europa House, Alfold Road, Cranleigh, GU6 8NQ
<b>4. Authorised representative</b>	Not applicable
<b>5. System of AVCP</b>	System 1
<b>6. Harmonised standard</b>	EN 12101-8:2011 Notified body: CTO S.A. Maritime Advanced Research Centre Szczecinska 65, 80–392 Gdansk, Poland Notified body No. 2434 No. of Certificate of constancy of performance: 2434-CPR-0303

## 7. Declared performance

Smoke Control Damper SND-R type for multi-compartment smoke control systems		
Product Description		
Fire resistance classification according to EN 13501-4:2016	EI 120 ( $V_{ew} - i \leftrightarrow o$ ) S 500 C <sub>10000</sub> AA multi	
Dimensions:	Width (mm)	Height (mm)
External	408–1008	632–2082
Internal	300–900	400–1850



EN12101-8:2011

## Declaration of Performance (cont.) No: SND-R-2434-CPR-0303-23

### 7. Declared performance (cont.)

Smoke Control Damper SND-R type for multi-compartment smoke control systems	
Product Description	
Blade: Quantity Width Orientation	2–6 Nominal 150mm Vertical motor at top or bottom
Actuator	Belimo electric actuators for dampers: BE 230/24 BEN 230/24
Installation	In standard supporting construction, rigid or flexible, thickness 160mm or greater, wall opening finished with one layer of 15mm plasterboard to the sides and two layers to top and bottom 200 mm width, the gap filled with gypsum mortar
Minimum distance between dampers installed in separate ductwork	200mm
Minimum distance between damper installed in building partition and the nearby wall or ceiling	75mm

Essential Characteristics	EN 12101-8	Mandated levels and/or classes	Assessment
Nominal Activation Conditions / Sensitivity	4.2.1.3	EI 120 ( $V_{ew} - i \leftrightarrow o$ ) S 500 C <sub>10000</sub> AA multi	Pass
Response Delay (Response Time)	4.2.1.4	< 60 s	Pass
Durability of Operational Reliability	4.2.2.2	< 120 s	Pass
Fire Resistance			
Integrity	4.1.1 (a) 4.4.1	E120 (max. negative pressure 500 Pa)	Pass
Insulation	4.1.1 (b) 4.4.1	EI120 (max. negative pressure 500 Pa)	Pass
Smoke Leakage	4.1.1 (c) 4.4.1	EIS120 ( max. negative pressure 500 Pa)	Pass
Mechanical Stability (in the scope of E)	4.1.1 (d)	N/A	Pass



EN12101-8:2011


**Declaration of Performance (cont.)**  
**No: SND-R-2434-CPR-0303-23****7. Declared performance (cont.)**

Essential Characteristics	EN 12101-8	Mandated levels and/or classes	Assessment
Maintenance of the cross-section (in the scope of E)	4.1.1 (e)	N/A	Pass
High Operating Temperature	4.1.1 (f) 4.4.1	N/A	NPD
<b>Durability</b>			
Durability of Response Delay	4.4.2.1	N/A	Pass
Durability of Operational Reliability	4.4.2.2	10000 cycles < 120 s	Pass

**8. Declaration**

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No. 305/2011, under the sole responsibility of the manufacturer identified above.

Signed for and on behalf of the manufacturer by:



Steve Knight, Technical Director

**Place and date of issue:**  
Cranleigh, November 2022



EN12101-8:2011