Nature is our partner for a safe, sustainable indoor climate

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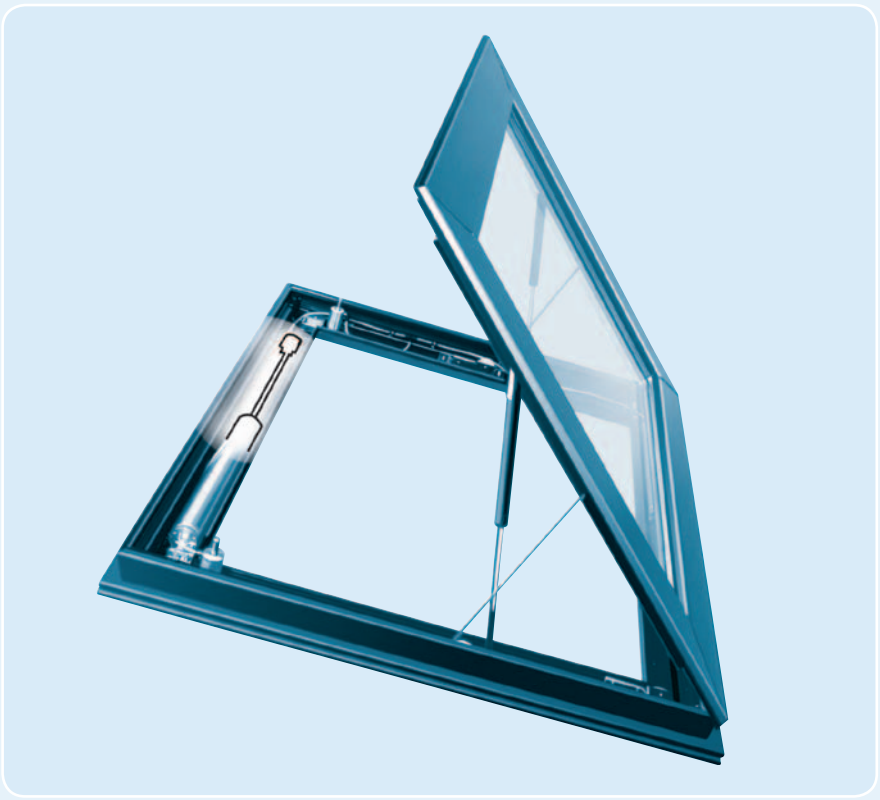
iDAStech®
innovation, integration, inspiration

Brakel® Luma

Stylish ventlight for roof applications with concealed controls

The Luma aesthetic (fire) ventilation window is suitable for roof applications in which case both the internal and external appearance play an important role. The Luma has a small mounting height and in its closed position the controls are completely embedded in the frame. The Luma has thermally insulated profile sections. Applications: atria, shopping centres, train stations and airports.



EN 12101-2

Designs

The Luma is suitable for applications in roofs, with a mounting angle of 10-90°. The opening angle of the Luma is a maximum of 90° in relation to the base structure.
The structure consists of completely thermally insulated aluminium profile sections. The design ensures that the external appearance has also been perfectly finished in detail. The frame is sealed with EPDM rubbers.
The structure is completely thermally insulated, ensuring a high insulation value for the window.

Options

The Luma can be supplied both untreated, anodised or in any RAL colour you require. The following designs are possible in the ventlight: single-walled aluminium, double-walled aluminium insulated, laminated glass, insulated glass and double-walled polycarbonate.

Regulations

The system is tested and certified in accordance with EN 12101-2.

Flanges

The flange thickness of the Luma is a minimum of 24 mm.

External appearance

Any rectangular shapes are possible as standard with:

- frame height of 600 to 2000 mm
- frame width of 600 to 2500 mm
- maximum panel surface area of 3.5 m^2
- glass thickness 6-40 mm
- mounting angle of 10°-90°
- opening angle of a maximum of 90°

The Luma can also be supplied in a triangular shape.
The weight depends on dimensioning and panel.
The maximum weight of the panel is 45 kg/m^2.

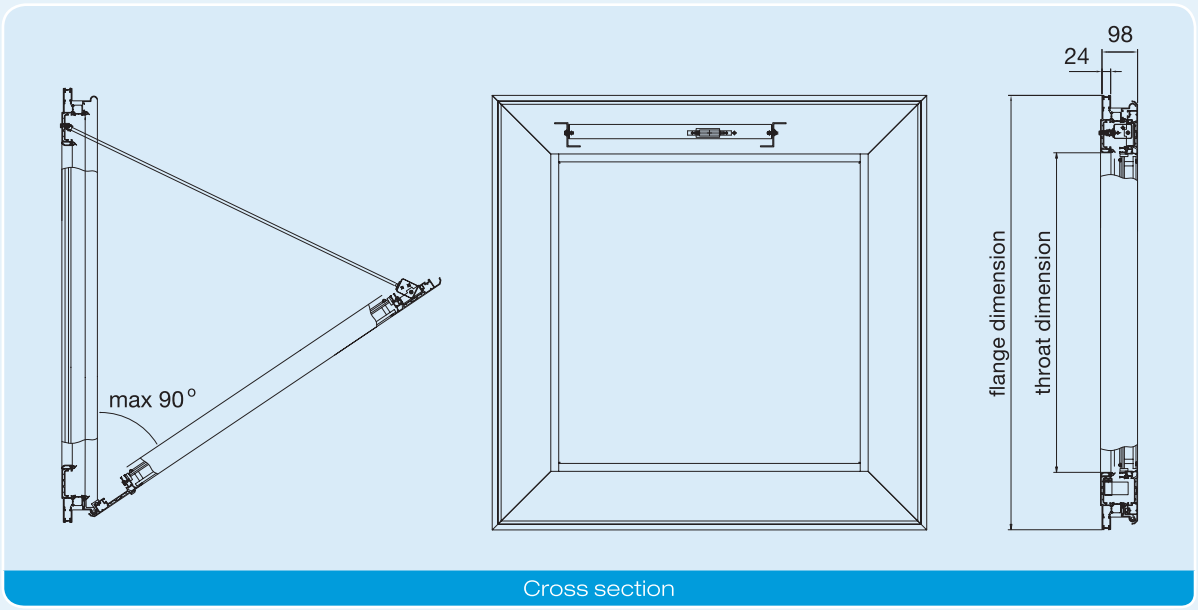
Control system

The entire control system for the Luma is completely concealed inside the structure in its closed state. Gas springs or motors are not therefore visible, which means that the Luma can be used in any situation. It is also possible to very easily clean the window.

M chain motor 24V

MB chain motor 24V with electric fire switch

Extras: **FS** failsafe



Cross section

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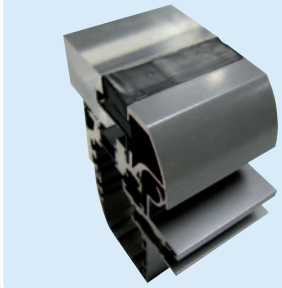
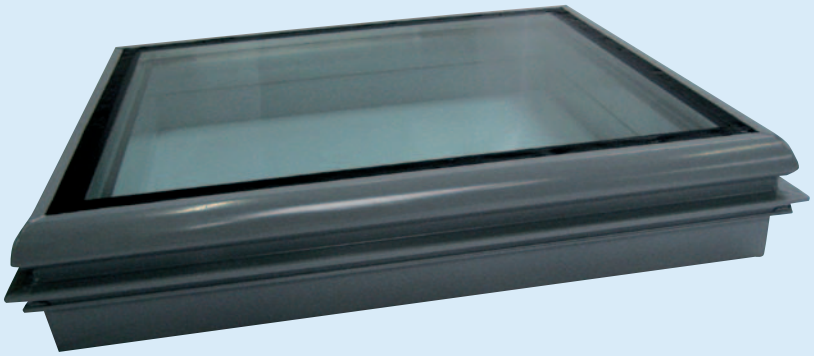
Brakel® Lumera



Aesthetic (fire)ventilation window

Like the Luma, the Lumera is a high-quality architectural (fire) ventilation window. As a ventilation window with slim profiles and controls that are hidden in the frame, the Lumera actually is a combination of the Luma and the Ventria. The Lumera was especially designed for structural glass roofs with a small incline.



Designs

The Lumera is a ventlight that can be mounted at an angle of 0-90°. The opening angle of the window in relation to the base is variable up to a maximum of 90°. As a result the Lumera is suitable for both day-to-day ventilation and fire ventilation. The Lumera consists of cold bridge-free aluminium profiles ensuring that a high insulation value is attained. Although the Lumera is usually supplied with insulated glass, uninsulated glass (or some alternative panel) is also possible on request. Delivery, installation and sealing of the (glazed) panel can be carried out by third-parties on site or by Brakel in the factory.

The Lumera is designed with an eye for detail and is therefore ideally suited for use in buildings with very stringent aesthetic requirements. Examples of this are the concealed controls and the glass fixing, which is not visible from the outside. If required, the Lumera can be anodised or powder-coated (in any RAL colour).

EN 12101-2

Controls

For opening and closing the Lumera is fitted with one or two 24 Vdc chain motors. The controls can be designed to be fail-safe using batteries. A 230 Vac control is also possible. Gas springs can also be used to support the motors.

Flanges

The standard flange thickness is 28 mm and can be increased as required. There are two standard flange widths, namely 30 mm or 50 mm. Various customer-specific requirements with regard to flanges can be implemented on demand.

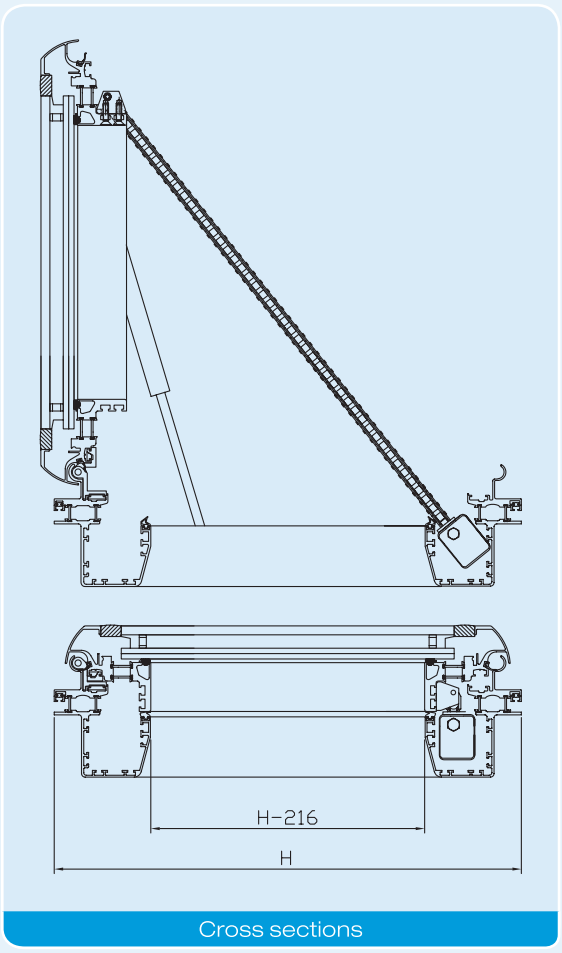
External appearance

Other than in its standard rectangular shape the Lumera is also available in triangular or trapezium shapes.
Dimensions and specifications:

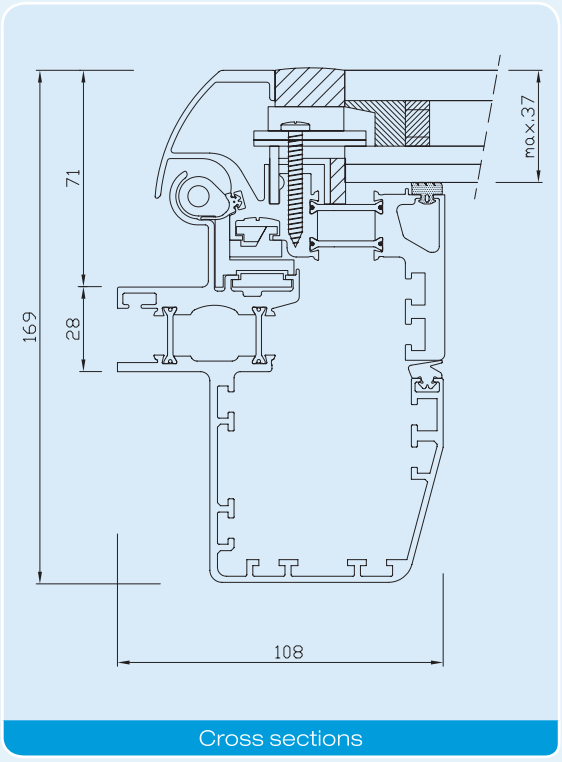
- height: 300 to 2000 mm
- width: 600 to 3000 mm
- surface area: maximum 3.5m^2
- glass thickness: maximum 37 mm
- glass: fitted with recessed frame
- glass weight: maximum 55 kg/m^2
- seals: two double seals around using EPDM rubbers
- total profile height: 169 mm

Regulations

The system has been tested in accordance with EN 12101-2.



Cross sections



Cross sections

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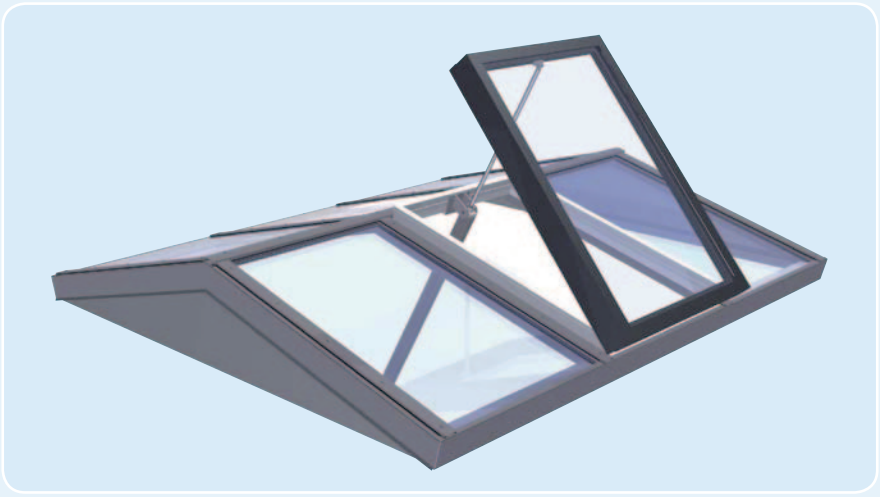
Brakel® Duralite

Sustainable standard industrial glazed rooflight

Duralite is a glazed industrial rooflight, which can be considered the standard rooflight for industrial buildings both now and in the future. This glazed rooflight, which has a gradient of 15°, is the green alternative to plastic rooflights. The Duralite system is favourably priced, easy to fit and can be supplied including glass within ten working days.



Thermally separated saddle roof with a gradient of 15°

In response to market demand for more sustainable products, Brakel developed the entirely thermally separated saddle roof with a gradient of 15°. This glazed roof was specially developed for industrial applications, while it also makes for highly convenient installation. The Duralite glazed rooflight is available in a range of three modular sizes, with a fixed centre to centre measurement, sandwich panel end pieces, and mill finish aluminium. The double glazing is supplied as standard in HR^{++} with two safety interlayers, in clear or matt, and with a U-value of 1.1 or 1.3 W/m^{2}K. Furthermore, hinged windows, approved in accordance with EN 12101-2, can be seamlessly integrated in the system in an aesthetical manner, for smoke & heat extraction and ventilation purposes.

Fall protection

The Duralite glazing system is compliant with fall protection standards (SB1200). This saves both time and money, which would otherwise have to be spent on implementing additional measures.

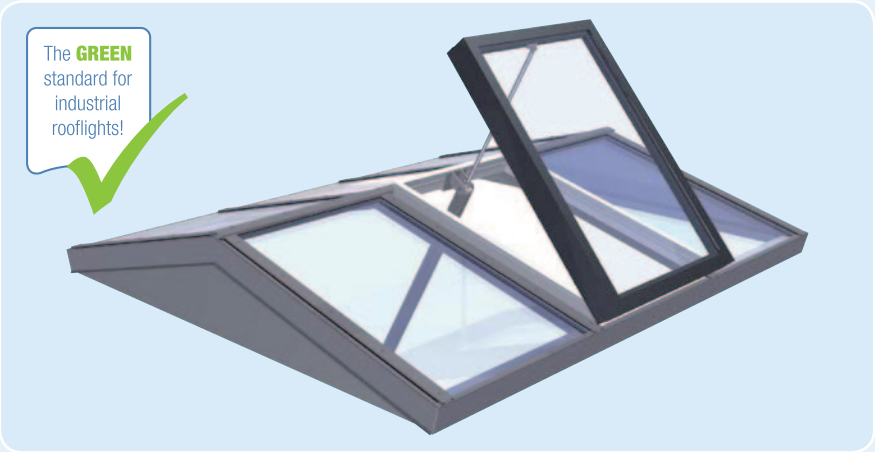
Green Building Products

As a leading partner in its field, Brakel endeavours to remain a forerunner in the area of corporate social responsibility. Given that with our products, we let in the best that nature has to offer, it is only natural that we also care greatly for the environment. We therefore seek to integrate sustainable solutions in our working methods, products and services, wherever possible.

We have categorised our highly extensive product range according to the levels of sustainability and comfort applicable. The many energy efficient products and systems in the range can be recognised by the butterfly icons that they bear.

We classify our products, ranging from functional to sustainable, as follows:

F	functionally applicable in accordance with current qualifications / standards
✓	compliant with raised sustainability requirements
✓ ✓	compliant with high sustainability requirements
✓ ✓ ✓	entirely in keeping with a sustainable solution



++ Benefits of the Duralite system ++

- Thermally separated saddle roof with a gradient of 15°
- Trouble-free integration of smoke & heat extraction / ventilation windows
- Favourably priced
- Short delivery period
- Simple installation (system is supplied in kit form, including double glazing and instruction manual)

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Advantages of glazed as opposed to plastic rooflights

- Longer life expectancy
- Higher insulation value
- Consistent performance, ingress of light, insulation and comfort throughout its life span
- Permanently transparent (no discolouration or scratching)
- Resistant to weather conditions
- No noise nuisance during rain / hail showers
- Fall protection
- Optimum integration Smoke & heat extraction / ventilation
- Low maintenance
- Aesthetically pleasing (added value to property)
- Sustainable

Energy efficient

The Duralite system was designed in such a manner as to achieve thermal separation throughout the range of profile sections. The system vouches for even distribution of the heat flow, devoid of hot spots. This minimises the occurrence of condensation in normal circumstances.

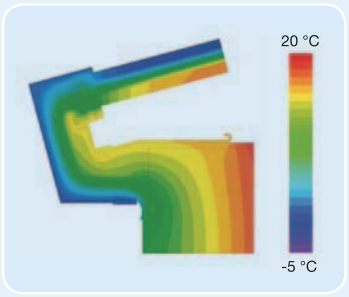


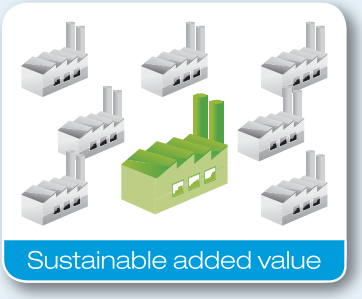
Image shows the heat flow with a temperature variation from -5 °C outdoors to 20 °C indoors.

Improved performance

When it comes to the installation of industrial rooflights in new building and renovation projects, one has the choice of either plastic or glass. In a world in which the demand for sustainable products is growing, it is only logical that the use of glass increasingly applies as standard. Glass lasts twice as long, after all, while it offers excellent resistance to weather conditions (hail and wind), causes no noise nuisance and provides considerably improved and consistent performance in terms of ingress of light, insulation and comfort throughout the useful life of the rooflight. This also lends the property added value.

Total cost of ownership

The Duralite rooflight has a payback period of seven years, while it also yields considerable energy savings in relation to curved synthetic rooflights. The Duralite therefore certainly deserves to be given priority when considering the total costs of construction and operation.



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Dimensions

Dimensions rooflight	Width of upstand	Clear width
Width 2160 mm	80 mm	2000 mm
Width 2660 mm	80 mm	2500 mm
Width 3160 mm	80 mm	3000 mm

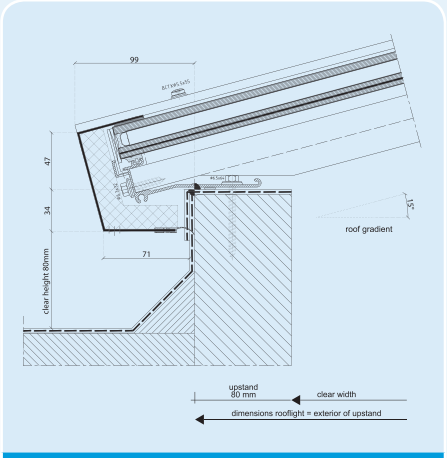
Specifications

- Available in three standard clear widths: 2000 / 2500 / 3000 mm.
- Standard modular size of 900 mm, aluminium sandwich panel end pieces, and mill finish profiles.

Glass composition	Glass thickness	U-value (W/m²K)
6-12-4.4.2 HR+	27 mm	1.3
6-15-4.4.2 HR++	30 mm	1.1

Options

- Integration of EN 12101-2 certified smoke & heat extraction windows, ventilation windows or louver ventilators.
- Surface treatment:
  - RAL colour 1-coat 60µ; optional 2-coat 120µ (Qualicoat);
  - Anodised blank finish 20µ (Qualanod).



Base with glass thickness 27 mm

Fall protection

The Duralite system is compliant with the SB1200 fall protection standard.

Substructure requirements

- Can be assembled on wooden or steel builders upstand.
- The upstand should be capable of withstanding forces compliant with the EN 1873 classification contained in the table below. Should this prove insufficient, then additional provisions may be fitted in the form of a tie rod.

Thrust forces Duralite 15°

Clear width rooflight (mm)	Dimensions rooflight (mm)	Snow load (N/m²)	Wind suction (N/m²)	Glass weight (kg/m²)	Standard modular dimensions (mm)	Glass length (mm)	Gradient 15°	
							Reactive forces per cross bar	
							Horizontal (KN)	Vertical (KN)
2000	2160	750	1500	35	900	1160	-3,4 / 2,9	-2,0 / 1,5
2500	2660	750	1500	35	900	1420	-4,1 / 3,5	-2,4 / 1,9
3000	3160	750	1500	35	900	1680	-4,9 / 4,2	-2,9 / 2,2

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Brakel® Greenlite

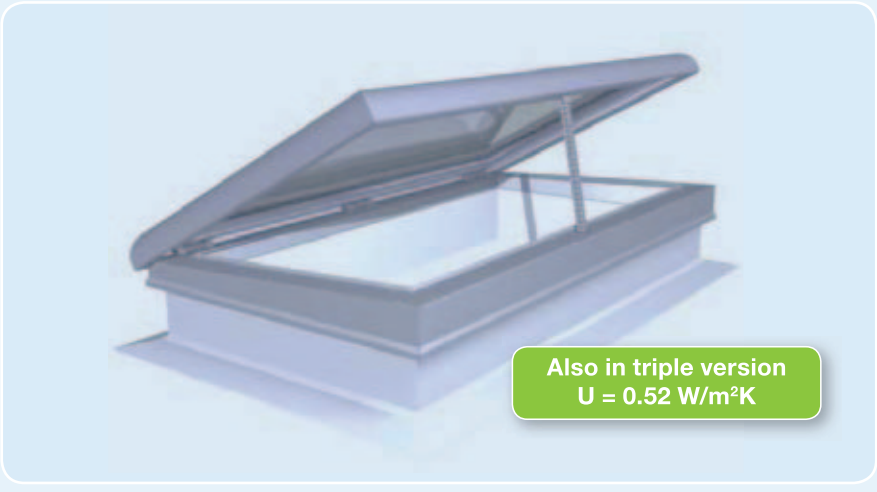
Greenlite, the ‘green’ glass rooflight

The sustainable alternative to plastic

Rooflights and skylights are highly popular means of allowing in natural light. In the past they were made nearly exclusively of synthetic materials. As the market leader in glass roof structures, Brakel now introduces a glass rooflight that makes the most effective possible use of the valuable natural sources of light and air.

Daylight system of the future

Sustainable, energy efficient and transparent. Besides allowing daylight ingress, the Brakel glass rooflight also makes an effective contribution towards daily ventilation. The Greenlite triple version thereby delivers, with a U-value of 0.52 W/m²K, the highest performance thanks to a triple-wall structure and glazing.



Made to measure: thus suitable for newbuild and renovation projects

Greenlite combines a high insulation value with excellent transparency. The glass rooflight has a pitch of 3° and is available with short delivery times in any desired dimensions and flange size. Always ensuring a perfect fit to both existing and new substructures. Also, the Greenlite’s modern design is pleasing to the eye.

Green Building Products

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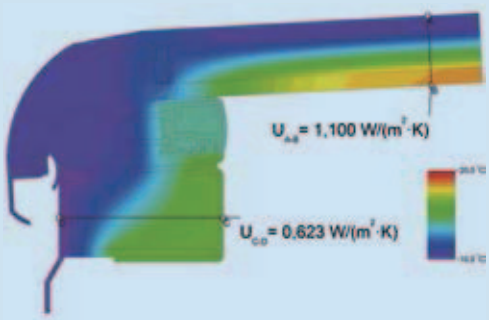
F	functionally applicable in accordance with current qualifications / standards
	compliant with raised sustainability requirements
	compliant with high sustainability requirements
	entirely in keeping with a sustainable solution

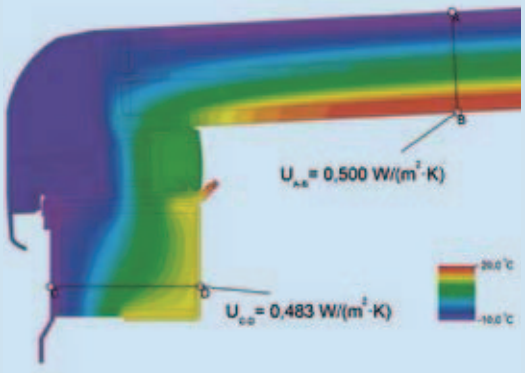
Greenlite

- Twin-wall structure
- Double glazing U = 1.1 W/m²K
- Total U-value = 0.97 – 1.02 W/m²K



Greenlite triple

- Triple-wall structure
- Triple glazing U = 0.5 W/m²K
- Total U-value = 0.52 – 0.53 W/m²K



Dimensions throat size

		FLEXIBLE LENGTH					
	in mm	600 mm - ≤ 1900 mm	≤2000	≤2100	≤2200	≤2300	≤2400
FLEXIBLE WIDTH	600						
	≤700						
	≤800						
	≤900						
	≤1000						
	≤1100						
	≤1200						
	≤1300						

= Greenlite + Greenlite triple

= only available in triple model

= not available

Composition highly insulated safety glass:

- Greenlite model:
  6 mm (toughened*) float - 15 mm Argon 90% - 3.3.2 laminated safety glass

- Greenlite triple model:
  6 mm (toughened*) float - 16 mm Argon 90% - 4 mm float - 16 mm 90% Argon - 3.3.2 laminated safety glass

(* Toughened outer sheet depending on the span of the glass)

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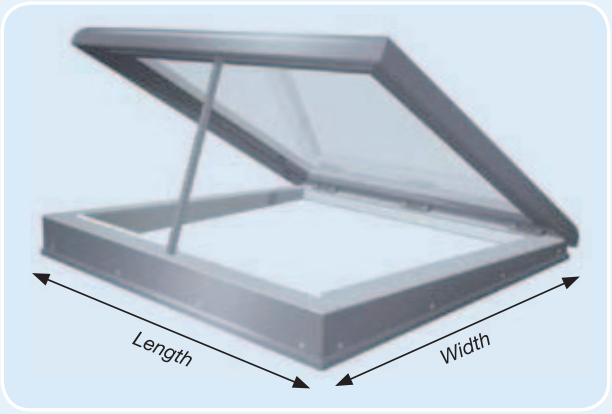
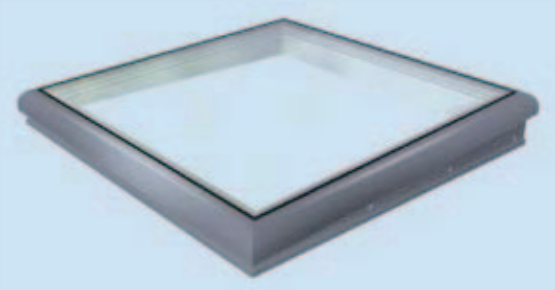
Greenlite: made to measure

Greenlite is tailor-made according to specifications, ensuring a perfect fit to every structure. This makes Greenlite ideal for both newbuild and renovation projects!

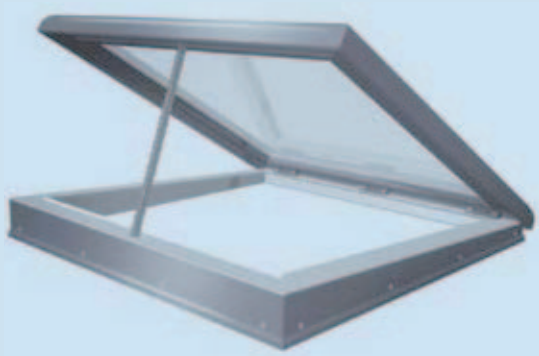


GREENLITE - fixed model



- High insulation value, air & watertightness
- High transparency
- Anti-burglary
- Fire spread resistance
- Excellent comfort level
- Ordered to size
- Flexible flange size for any support width

GREENLITE - ventilation model



+ Suitable for daily ventilation
+ Large opening height: 300 mm
+ Motor controls 230V
+ Including remote control
+ Various options available

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Highly energy efficient rooflight

Sustainability was key in the development of the Greenlite. The glass rooflight has a fully thermally separated system with various coldflow blocks.

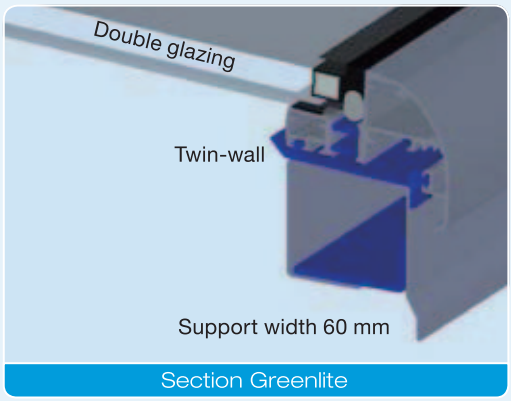
This system guarantees a uniform heat flow spread without significant local differences, thereby excluding the chance of condensation under normal conditions.

Large opening angle for maximum ventilation

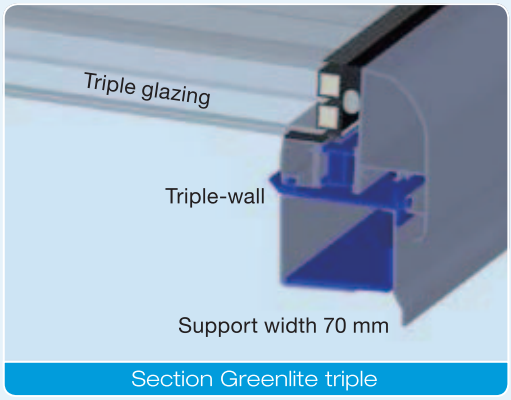
A healthy interior climate requires the discharge of contaminated air, moisture and heat through well-balanced daily ventilation. With a large opening height of 300 mm the ventilated model of Greenlite provides a generous vent. This allows in plenty of fresh air and sunlight for a good indoor climate.

Flexible flange size

Greenlite has a standard support width of 60 mm, (triple model = 70 mm). In case of a broader substructure, a flange adapter up to max. 200 mm is available for every flange type. The result is a perfect fit each time, regardless of the substructure.



Section Greenlite



Section Greenlite triple

Specifications

- Fixed or ventilated under an angle of 3°
- Structurally bonded highly insulated safety glass (LTA 77 / ZTA 54), triple model (LTA 63 / ZTA 36)
- Coating exterior RAL 7047 / interior RAL 9010
- Frame fitted with high-quality insulation material
- Invisible hinges

Test results

- U value in accordance with EN 10077-2:
  - Greenlite = 0.97 – 1.02 W/m²K
  - Greenlite triple = 0.52 – 0.53 W/m²K
- Air permeability: EN 1026: 600 Pa, EN 12207: Class 4
- Water tightness: EN 1027: 1050 Pa, EN 12208: Class E1050
- Resistance to varying wind loads: Class C5, 1000 Pa (= P2) deflection < 1/300 in accordance with EN 12210 / EN 12211
- Acoustics: Rw = 31 dB in accordance with EN ISO 10140-2
- Impact resistance: 1200 J

Options

- Highly insulated solar control safety glass (LTA 58 / ZTA 34), triple model (LTA 54 / ZTA 31)
- Inner pane opal 3.3.2 (LTA 59 / ZTA 51), triple model (LTA 49 / ZTA 35)
- Flange adapter for flexible flange size and type
- Sun screen: windproof version (color cloth gray)
- Interior sun blind pleated (color cloth silver)
  - manual (stick with length 2 m)
  - motorized with remote control
- Anti-insect mesh
- Rain sensor
- Solar panel for solar power (M24V)
- Upstand PVCu 16/0
- Coated in any standard RAL colour

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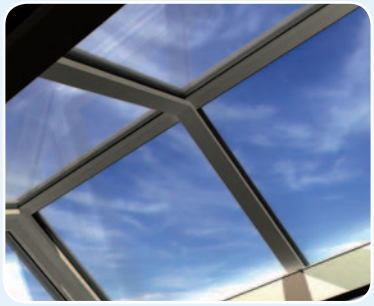
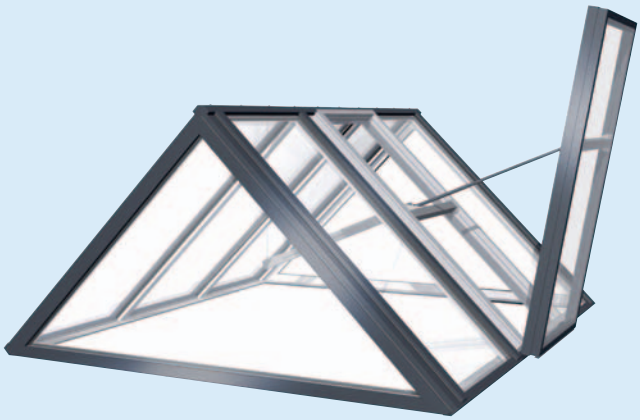
Brakel® Arcilite



Thermally separated standard glass roof structure

The thermally separated Arcilite TG glass roof structure is specially developed for standard forms such as pyramid, single pitch and double pitch with an angle of 30° or 45°. It is an easy glass structure with a self-supporting ridge structure combining durability, attractive pricing and easy assembly. What's more, it allows for the trouble-free and aesthetic integration of smoke and heat exhaust ventilation hatches.



High insulation value

The Arcilite TG is a fully thermally separated system. This thermal separation is realised not only by a thermal separator in the screw ducts, but also by the fact that there is no inside/outside connection for the ridge and bottom edge. This, combined with high-efficiency glass, ensures outstanding insulation values.

Integration smoke & heat exhaust / ventilation

The Arcilite TG glazing system is ideal for the aesthetic integration of Brakel casement windows, whether or not EN 12101-2 certified. After all, both high-quality systems are perfectly coordinated and provide an optimal result in terms of daylight ingress, ventilation and fire safety.

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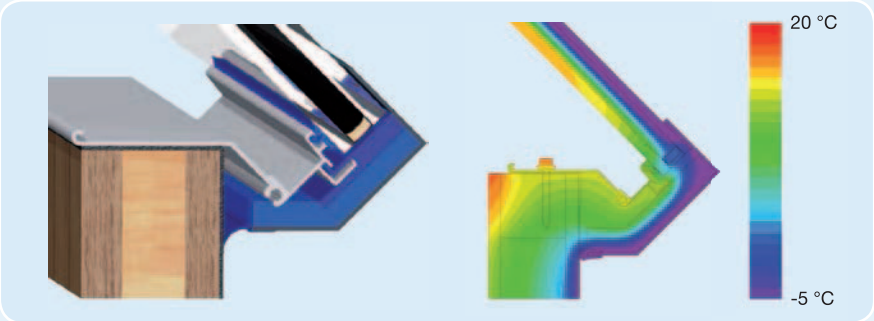
Energy efficient

The Arcilite TG system is designed with completely thermally separated profiles. This system guarantees a uniform heat flow spread without significant local differences, thereby excluding the chance of condensation under normal conditions.



The illustration shows the heat flow with a temperature curve of -5 °C outdoors to 20 °C indoors.

++ Plus points Arcilite TG system ++

- Thermally separated glass structure under a pitch of 30° or 45°
- Trouble-free integration of smoke & heat exhaust windows and / or ventilation hatches
- Flexible dimensions, models and colours
- Favourable pricing
- Short delivery times
- Easy assembly

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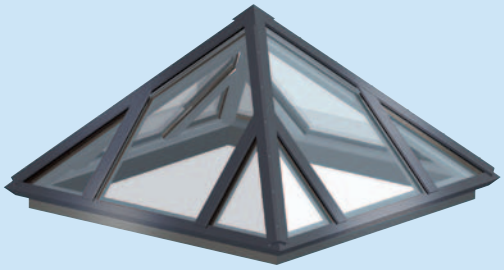
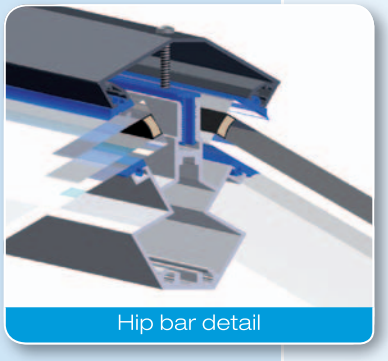
Roof forms Arcilite TG

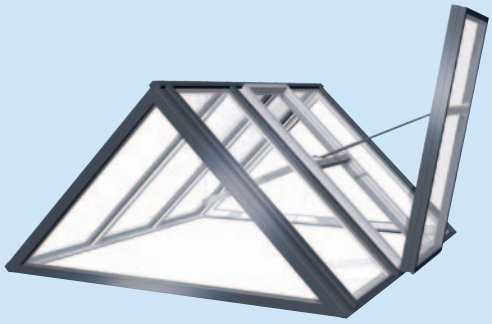
Pyramid





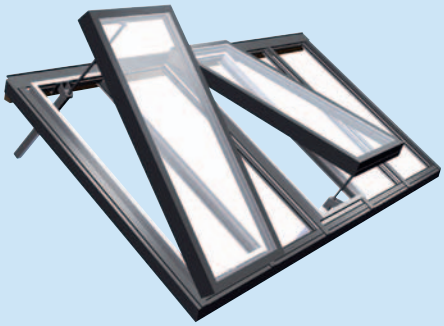
Hip bar detail

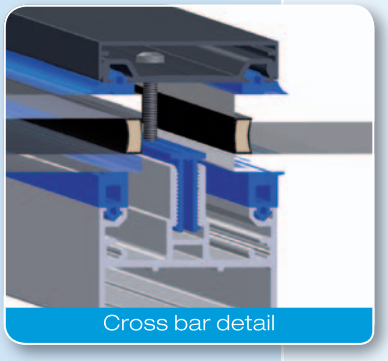
Double pitch



Ridge detail

Single pitch





Cross bar detail

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Dimensioning

		Width = outside upstand	
Pyramid	Pitch 30° or 45°	Width to 4500 mm	Length = width
Double pitch	Pitch 30° or 45°	Width to 4500 mm	Length variable
Single pitch	Pitch min. 15°	Width max. 2500 mm	Length variable

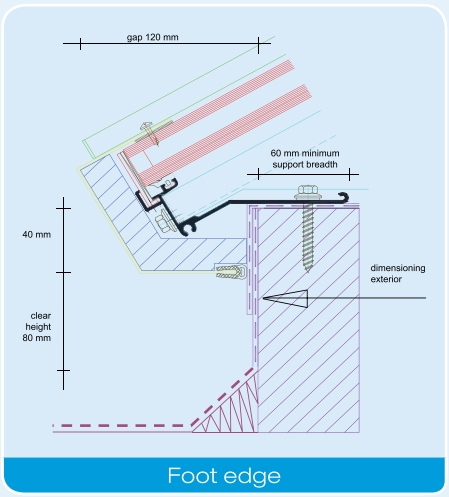
Glass options

Delivery excluding glass, glass sizes will be provided. Prices are based on a glass thickness of 27 or 30 mm. Consult the sales department in case of deviation.

Example glass composition	Glass thickness	U-value (W/m²K)
6-12-4.4.2 HR++	27 mm	1,3
6-15-4.4.2 HR++	30 mm	1,1

Options

- Ideal for combination with EN 12101-2 certified smoke & heat exhaust windows, ventilation hatches or louvered ventilators.
- Surface treatment:
  - RAL colour single layer 60µ; optional double layer 90µ (Qualicoat);
  - Anodic treatment blank (Qualanod).
- End pieces can also be supplied in (enamelled) sandwich panels.
- Perpendicular wall connection possible.



Foot edge

Fall protection

The Arcilite TG system provides fall protection in accordance with SB1200.

Base structure requirements

- Can be assembled on wooden or steel builders upstand.
- The upstand must be able to withstand thrust forces set out in the table below in accordance with EN 1873 classification. If insufficient, extra provisions in the form of a tie rod can be supplied.

Thrust forces Arcilite 30° and 45°

	Basic specifications				Pitch 30°			Pitch 45°		
Width rooflights = Outside width builders upstand	Snow load (N/m²)	Wind suction (N/m²)	Glass weight (kg/m²)	Standard modular dimensions: (mm)	Reactive forces per cross bar		Glass length (mm)	Reactive forces per cross bar		Glass length (mm)
					Horz. (KN)	Vert. (KN)		Horz. (KN)	Vert. (KN)	
1500	750	1500	35	900	-2,5 / 2,1	-1,5 / 1,1	870	-3,1 / 2,6	-1,8 / 1,4	1060
2000	750	1500	35	900	-3,4 / 2,9	-2,0 / 1,5	1150	-4,1 / 3,5	-2,4 / 1,9	1410
2500	750	1500	35	900	-4,2 / 3,6	-2,5 / 1,9	1440	-5,1 / 4,4	-3,0 / 2,3	1770
3000	750	1500	35	900	-5,0 / 4,3	-2,9 / 2,3	1730	-6,1 / 5,3	-3,6 / 2,8	2120
3500	750	1500	35	900	-5,8 / 5,1	-3,4 / 2,7	2020	-7,1 / 6,2	-4,2 / 3,3	2470
4000	750	1500	35	900	-6,7 / 5,8	-3,9 / 3,1	2310	-8,1 / 7,1	-4,8 / 3,8	2830
4500	750	1500	35	900	-7,5 / 6,5	-4,4 / 3,5	2600	-9,1 / 8,0	-5,4 / 4,3	3180

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Brakel® Estra

Transparent louver ventilator

The Estra is a transparent louver system which is fitted vertically, and is suitable for both daily ventilation and smoke & heat extraction. The Estra's aesthetic and sleek design means that it really comes into its own in projects featuring substantial amounts of glass. The Estra has thermally separated profile sections, and is available with either single or double glazing. The choice of louvers available includes point-fixed, circumferentially framed and (semi-)structural glazing. Fields of application: atriums, shopping centres, industrial buildings and offices.

EN 12101-2

Green Building Products

As a leading partner in its field, Brakel endeavours to remain a forerunner in the area of corporate social responsibility. Given that with our products, we let in the best that nature has to offer, it is only natural that we also care greatly for the environment. We therefore seek to integrate sustainable solutions in our working methods, products and services, wherever possible.

We have categorised our highly extensive product range according to the levels of sustainability and comfort applicable. The many energy efficient products and systems in the range can be recognised by the butterfly icons that they bear.

We classify our products, ranging from functional to sustainable, as follows:

F	functionally applicable in accordance with current qualifications / standards
F	compliant with raised sustainability requirements
F F	compliant with high sustainability requirements
F F F	entirely in keeping with a sustainable solution

Estra

The Estra is a transparent louver system which is fitted vertically, and is suitable for both daily ventilation and smoke & heat extraction. The entire Estra range is both functional and sustainable, while it has an aesthetic yet and sleek appearance.

Single glass center pivoted

Estra EG	Sustainability: F

- Single toughened glass
  thickness 6 / 8 / 10 / 12 mm
  Optional laminated glass 12 mm
- Center pivoted
- Overlapping
- Max. width per element:
  - 1500 mm (6 / 8 / 10 mm)
  - 1650 mm (12 mm)
- EN 12101-2 certified

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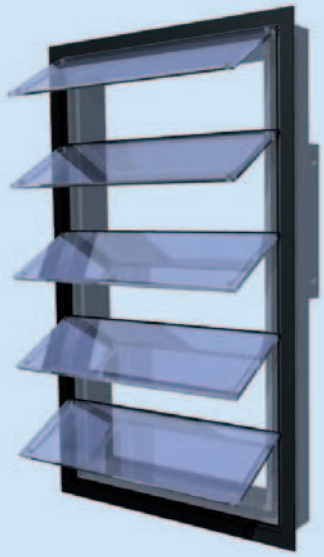
Single glass point-fixed

Estra EG Point-Fix	Sustainability:

- Single toughened / laminated glass thickness 12 mm
- Center pivoted
- Overlapping / Flush connection
- Max. width per element: 1650 mm

Single glass top hinge

Estra EG Top	Sustainability:



- Single toughened / laminated glass thickness 10 / 12 mm
- Top hinge
- Overlapping / Flush connection
- Max. width per element: 1200 mm

Double glazed top hinge

Estra TG Top

Sustainability:

- Thermally separated
- Double glazing thickness 32-40 mm
- Top hinge
- Flush connection
- Circumferentially framed / fully or semi-structural
- Max. width per element:
  - 1200 mm (semi-)structural
  - 1700 mm circumferentially framed
- EN 12101-2 certified (applies solely to fully and semi-structural models)

Double glazed top hinge for roof installation

Estra TG Roof

Sustainability:

- Installed in sloping roof 5°-75°
- Thermally separated
- Double glazing thickness 32-40 mm
- Top hinge
- Flush connection
- Structural
- Max. width per element: 1400 mm

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Double glazed Center pivoted framed

Estra TG

Sustainability:

- Thermally separated
- Double glazing thickness 24 mm
  Optional thickness 30 mm
- Center pivoted
- Flush connection
- Circumferentially framed
- Also available Iso sandwich panel model
- Max. width per element:
  1600 mm (24 mm)
  Optional 1800 mm (30 mm)
- EN 12101-2 certified

Double glazed Center pivoted (semi-)structural

Estra TG Semi-Structural/TG Structural

Sustainability:

- Thermally separated
- Double glazing in case of semi-structural thickness 30 / 40 mm
  Double glazing in case of structural thickness dependent on thickness of structural glazing
- Center pivoted
- Flush connection
- Fully or semi-structural
- Max. width per element:
  1800 mm
- EN 12101-2 certified (applies solely to fully structural model)

Estra product overview

Facade												Roof 5°-75°		
Single glazing						Double glazing								
Estra EG 6 /8 / 10 Overlapping	Estra EG 12 Overlapping	Estra EG 12 Point-Fix Flush	Estra EG 12 Point-Fix Overlapping	Estra EG 10 / 12 Top Flush	Estra EG 10 / 12 Top Overlapping	Estra TG 24 / 30	Estra TG 30 / 40 Semi-Structural	Estra TG Structural	Estra TG 32 / 40 Top Framed	Estra TG 32 / 40 Top Semi-Structural	Estra TG 32 / 40 Top Structural	Estra TG 32 / 40 Roof		
✓	✓	✓	✓			✓	✓	✓					Center pivoted	Louver attachment
✓		✓	✓										Point-fixed	
				✓	✓				✓	✓	✓	✓	Top hinge	
						✓		on the inside	✓				Circumferentially framed	Louver model
✓	✓	✓	✓	✓	✓		✓			✓			Semi-structural (horizontal structural, supported on the side)	
								✓			✓	✓	Structural	
✓	✓		✓		✓								Overlapping	Louver connection
		✓		✓		✓	✓	✓	✓	✓	✓	✓	Flush connection	
✓	✓	✓	✓	✓	✓								Toughened single glass	Glass options
✓	✓	✓	✓	✓	✓								Laminated single glass	
						✓	✓	✓	✓	✓	✓	✓	Double glazing	
						✓	✓	✓	✓	✓	✓	✓	Thermally separated	Further specifications
				✓	✓	✓			✓	✓	✓	✓	Iso sandwich panel	
6 / 8 / 10	12	12	12	10 / 12	10 / 12	24 / 30	30 / 40	-	32 / 40	32 / 40	32 / 40	32 / 40	Glass thickness	
200-300	200-300	200-300	200-300	250-450	250-450	200-300	200-300	200-300	250-700	250-700	250-700	250-650	Louver height (mm)	
✓	✓					✓		✓		✓	✓		EN 12101-2	
max. 1500 mm (6 / 8 / 10 mm)	max. 1650 mm (12 mm)	max. 1650 mm	max. 1650 mm	max. 1200 mm	max. 1200 mm	max. 1600 mm / 24 mm optional: max. 1800 mm / 30 mm	max. 1800 mm	max. 1800 mm	max. 1700 mm	max. 1200 mm	max. 1200 mm	max. 1400 mm	Max. width per element	

Operating systems

- Manually operated by means of a lever or spindle
- Motor 230V / 24V
- Pneumatic cylinder

Interlinking

Elements can be interlinked using a mullion

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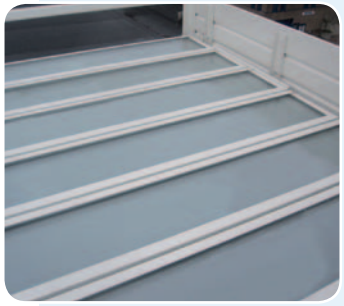
Brakel® Optima



Thermally separated louvred ventilator

Sustainable (fire) ventilation “in optima forma - perfect in form”

The Brakel Optima is the most energy-efficient louvred ventilator for both smoke and heat exhaustion and ventilation. The Brakel Optima offers an optimum contribution to the fire safety, comfort and energy management of a property and is perfect for use in sustainable buildings. In contrast to other louvred ventilators, the Optima is completely thermally separated. Not only the louvres, but also the base gutter construction are thermally insulated, thereby combining the advantages of a louvred ventilator and the unique performance of a double flap ventilator.

Unparalleled in terms of both insulation performance and air and water tightness

The Brakel Optima delivers a remarkable performance. The system is extremely airtight. With a pressure of 600 Pa, the system more than meets the requirements for Class 4 in accordance under EN 12207. The air leakage at 50 Pa is 0.21m³/hour/m², which is unparalleled. The Brakel Optima also performs well in other areas. The louvred ventilator achieves high insulation values from 1.0 W/(m²·K), depending on the type and version. Water tightness testing up to 1050 Pa in accordance with EN 12208 – comparable to hurricane-strength speeds of 144 km/hour! – is a clear indication that this louvred ventilator has the best air and water tightness on the market!

EN 12101-2

Green Building Products

As a leading partner, Brakel likes to be at the forefront when it comes to corporate social responsibility. Our products bring the best that nature has to offer indoors; heedless to say, therefore, nature has a special place in our hearts. Which is why we integrate sustainable solutions, products and services in our approach wherever possible.

We have organised our extensive production programme according to the level of sustainability and comfort. The many energy efficient products and systems can be identified by the butterflies.

We classify our products from functional to sustainable using the following descriptions:

F	functional application in accordance with current qualifications/standards
	meets higher requirements of sustainability
	meets high requirements of sustainability
	fits perfectly as part of a sustainable solution

The new generation of louvred ventilators

More and more requirements with regard to daylight and comfort are being set for public buildings, offices and industrial buildings. The Brakel Optima - leader when it comes to the new, sustainable generation of louvred ventilators - guarantees that these requirements will be met. The wide transparent louvres placed at 400 mm in the translucent version allow daylight penetration and produce an attractive distribution of light. Condensation and air leakage are also a thing of the past with Brakel Optima.

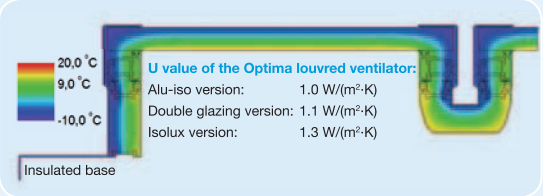


Image demonstrates the heat flow with a temperature pattern of -10 °C outside to 20 °C inside. Flixo U values are determined in accordance with EN ISO 10077-2

Test results

- EN 12101-2 certified: B300, Re 300, WL1500, SL750 (type PB/P2B/M24) T(-15), SL250 (type PBFS) T(-15)
- U value: 1.0 – 1.3 W/(m²·K) depending o the type and size
- Air permeability: EN 1026: 600 Pa, EN 12207: Class 4
- Water tightness: EN 1027: 1050 Pa, EN 12208: Class E1050
- Resistance to varying wind loads: Class C4, 800 Pa (=P2) deflection < 1/300 in accordance with EN12210/EN12211
- Acoustics: RW = 21 / 26 / 31 dB in accordance with EN ISO 10140-2
- Impact resistance: 1200 J

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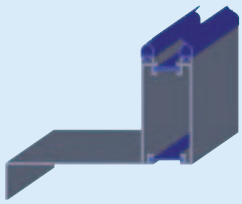
Thermally separated louvred ventilator

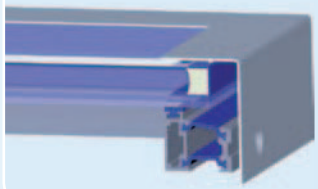
Base



Gutter

Brakel® Thermal Insulator

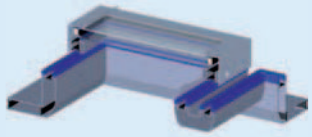
Louvres



Airtight seal

The base and gutters have double EPDM rubbers. This means that four sides of the louvres are on rubbers, creating a very effective seal and a minimum air leakage of 0.21 m^3/hour/m^2 at 50 Pa. As such, Brakel Optima achieves an excellent score in the very highest air tightness class (4).

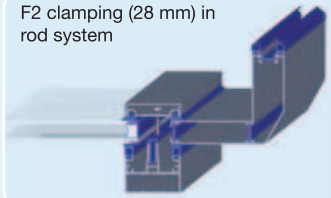
Four-sided treatment on double rubber seals



Installation applications

The flange of the Brakel Optima can be customised for optimum attachment to a upstand (F5) or integration in a glass roof and/or facade system (F2-28mm), making the louvred ventilator suitable for any integration situation.

F2 clamping (28 mm) in rod system



Louvre versions

Alu-iso 25 mm

Isolux 6-wall

Double glazing 4-15-3.3.2

Controls

Natural ventilation:

P	single-action compressed air operation
P2	double-action compressed air operation
M	motor operation (24 VDC or 230 VAC)

Fire ventilation in accordance with EN 12101-2

PB	single-action compressed air operation
P2B	double-action compressed air operation with fire function
PB-FS	single-action compressed air operation with fire function fail-safe
M24V	motor operation 24V

Options

Surface treatment:

- RAL colour 1-layer 60µ; optional 2-layer 90µ (Qualicoat)
- Anodising technical plain (Qualanod)

Regulations

Brakel Optima is certified completely in accordance with EN 12101-2 by a certified independent testing institute.

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Ventilator dimensions (mm)

Type	Clear width* breadth	Number of louvres (louvre height: 400 mm)							
		3	4	5	6	7	8	9	10
60	600 mm	1100 mm	1500 mm	1900 mm	2300 mm	2700 mm	3100 mm	3500 mm	3900 mm
120	1200 mm								
180	1800 mm								
240	2400 mm								
250	2500 mm								

** Versions with intermediate sizes are possible*

Aerodynamic surface (m^2)

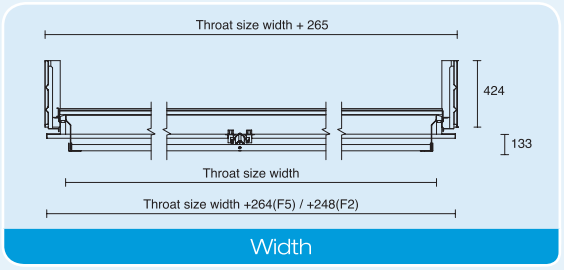
Type	Clear width* width	Number of louvres (louvre height: 400 mm)							
		3	4	5	6	7	8	9	10
		CV values with the use of a wind baffle							
60	600 mm	0.60	0.61	0.61	0.61	0.61	0.62	0.62	0.62
120	1200 mm	0.62	0.63	0.63	0.63	0.64	0.64	0.64	0.64
180	1800 mm	0.63	0.64	0.64	0.64	0.64	0.64	0.65	0.65
240	2400 mm	0.63	0.64	0.64	0.65	0.65	0.65	0.65	0.65
250	2500 mm	0.63	0.64	0.64	0.65	0.65	0.65	0.65	0.65

CV values have been determined in combination with a stand height of 300 mm and apply to roof and facade installation

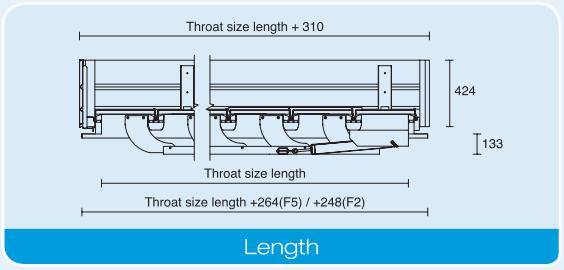
Weight (kg)

Type	Clear width* width	Number of louvres (louvre height: 400 mm)																					
		3			4			5			6			7			8			9			10		
		alu-iso	isolux	double glazing	alu-iso	isolux	double glazing	alu-iso	isolux	double glazing	alu-iso	isolux	double glazing	alu-iso	isolux	double glazing	alu-iso	isolux	double glazing	alu-iso	isolux	double glazing	alu-iso	isolux	double glazing
60	600 mm	19	18	31	25	24	41	31	29	51	37	35	61	44	41	71	50	47	82	56	53	92	62	59	102
120	1200 mm	37	35	61	50	47	82	62	59	102	75	71	122	87	82	143	100	94	163	112	106	184	125	118	204
180	1800 mm	56	53	92	75	71	122	94	88	153	112	106	184	131	124	214	150	141	245	169	159	275	187	176	306
240	2400 mm	75	71	122	100	94	163	125	118	204	150	141	245	175	165	286	200	188	326	225	212	367	250	235	408
250	2500 mm	78	74	128	104	98	170	130	123	213	156	147	255	182	172	298	208	196	340	234	220	383	260	245	425

Diameter



Width



Length

Materials

- Aluminium sheet EN AW5754
- Aluminium profile EN AW6060
- EPDM seal EPDM4431
- Fastening materials, stainless steel A2

Recyclable

The aluminium that is used to produce the Brakel Optima comprises 80% recycled aluminium. Between 60 and 80% less CO_2 emissions are released in the recycling of aluminium than in the production of primary aluminium.

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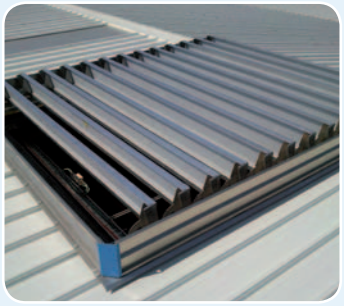
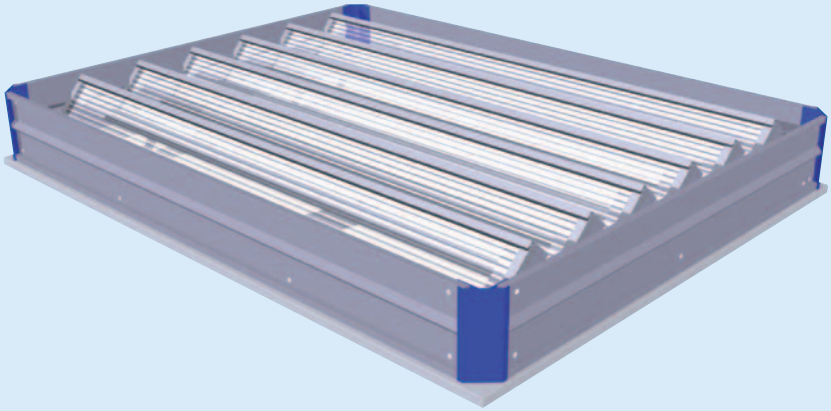
Brakel® Eura



Multilateral louvered ventilator

The Eura is a louvered ventilator that extracts large volumes of warm air and smoke within a short period of time. The Eura is both suitable for air feed (facade) and air extraction (facade and roof). The fail-safe Eura is available with a variety of blade types, including a translucent design. The system offers a favourable price/performance ratio. Application: from industrial buildings and offices to shopping centres and atria.



Materials

Aluminium; tempered, sea water- and corrosion-resistant AlMg3. Corrosion-resistant bearings. Seal incorporating a weather-resistant sealing strip longitudinally and energy strips. The seal is applied in such a manner that there is no risk of freezing and a high level of draft-proofness is guaranteed. The aluminium is completely corrosion-resistant and is supplied untreated as standard. If desired the Eura can be supplied in an anodised or powder-coated design (in any RAL colour you require). The Eura can also be designed to incorporate noise-damping wings and bird or insect mesh.

EN 12101-2

Controls

Natural ventilation:

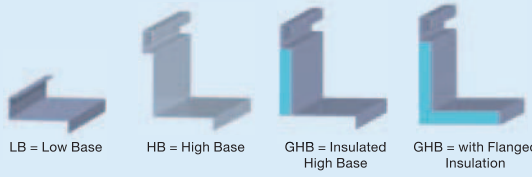
P	single-action compressed air operation
P2	double-action compressed air operation
M	motor operation (24 Vdc of 230 Vac)
K	cable operation

Fire ventilation according to EN 12101-2:

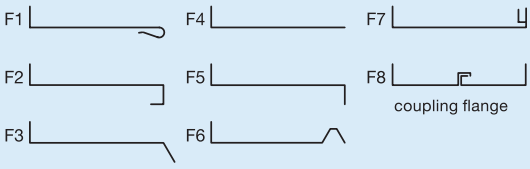
PB	single-action compressed air operation with fire function
P2B	double-action compressed air operation with fire function
PB-FS	single-action compressed air operation with fire function failsafe (up to 13 louvers)
PB-M	single-action compressed air operation with fire function and motor operation
PB-10 bar	single-action compressed air operation with fire function activated at ≥ 10 bar
M24V	motor operation 24V

Regulations

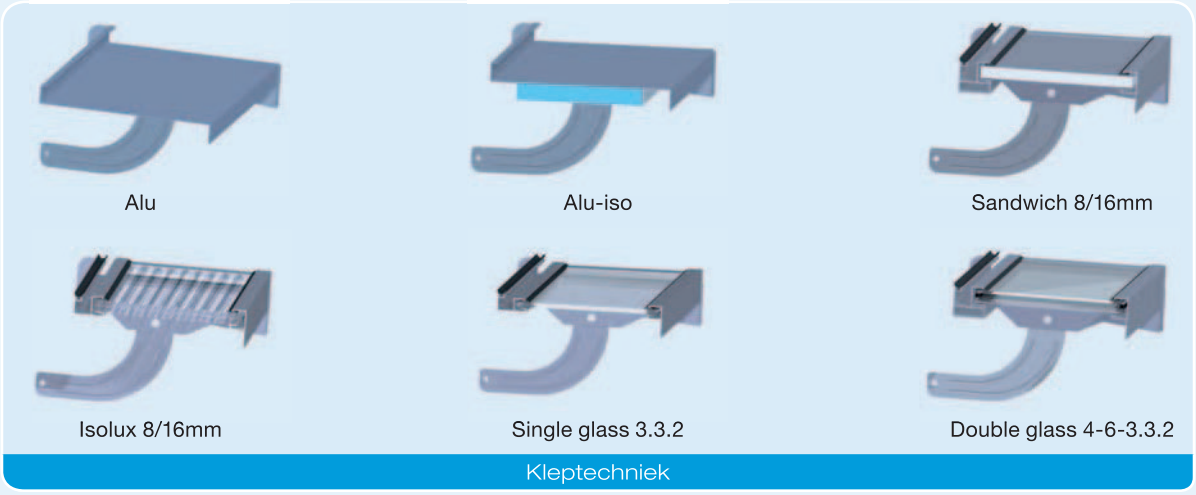
The system has been tested and is certified in accordance with EN 12101-2.



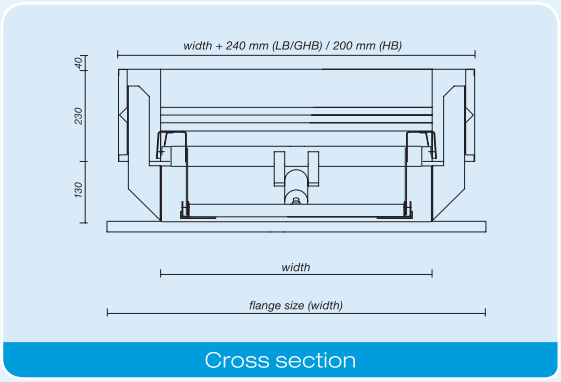
Base



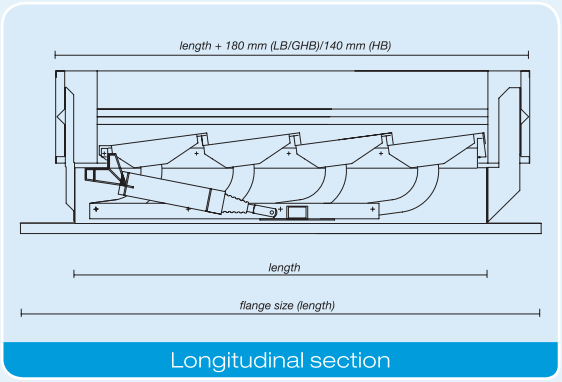
Flanges



Kleptechniek



Cross section



Longitudinal section

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Dimensions ventilator (mm)

		NUMBER OF LOUVERS														
Type		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
LB*/GHB	Width (mm)	Length (mm)														
030	300	720	940	1160	1380	1600	1820	2040	2260	2480	2700	2920	3140	3360	3580	3800
060	600															
120	1200															
180	1800															
240	2400															
HB	Width (mm)	Length (mm)														
030	340	760	980	1200	1420	1640	1860	2080	2300	2520	2740	2960	3180	3400	3620	3840
060	640															
120	1240															
180	1840															
240	2440															

* LB 14 through 17 louvers for assessment: applicable depending on installation situation

Intermediate dimensions possible

Aerodynamic surface (m^2)

		NUMBER OF LOUVERS														
Type		3	4	5	6	7	8	9	10	11	12	13	14*	15*	16*	17*
030	LB/GHB	0,13	0,17	0,21	0,25	0,29	0,33	0,37	0,41	0,45	0,49	0,53	0,57	0,60	0,64	0,68
	HB	0,16	0,20	0,24	0,29	0,33	0,38	0,42	0,47	0,51	0,56	0,60	0,65	0,69	0,74	0,78
060	LB/GHB	0,26	0,34	0,42	0,50	0,58	0,66	0,73	0,81	0,89	0,97	1,05	1,15	1,23	1,31	1,39
	HB	0,29	0,38	0,46	0,55	0,63	0,71	0,80	0,90	0,98	1,05	1,14	1,24	1,33	1,42	1,50
120	LB/GHB	0,52	0,68	0,84	0,99	1,15	1,31	1,47	1,65	1,82	1,94	2,10	2,30	2,46	2,62	2,78
	HB	0,57	0,73	0,89	1,06	1,22	1,38	1,57	1,74	1,91	2,04	2,20	2,40	2,57	2,74	2,90
180	LB/GHB	0,78	1,02	1,25	1,49	1,73	1,97	2,24	2,48	2,72	2,92	3,15	3,50	3,75	3,99	4,24
	HB	0,84	1,08	1,32	1,57	1,84	2,09	2,33	2,58	2,83	3,02	3,27	3,63	3,88	4,13	4,38
240	LB/GHB	1,04	1,35	1,67	1,99	2,34	2,66	2,99	3,31	3,63	3,89	4,20	4,67	5,00	5,33	5,65
	HB	1,11	1,43	1,76	2,08	2,44	2,77	3,10	3,42	3,75	4,01	4,33	4,81	5,15	5,47	5,81

* aerodynamic coefficient (Cv) 14 through 17 louvers based on extended wind baffle

Weight per ventilator (kg)

	NUMBER OF LOUVERS														
Type	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
030	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
060	19	23	27	30	33	36	39	42	45	48	51	54	57	60	63
120	28	33	38	42	47	51	56	60	65	69	74	78	82	86	90
180	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
240	45	52	59	66	73	80	87	94	101	108	115	122	129	136	143

Example type indication: Eura 180-10/ GHB/M24V/F5 means: Eura louvered ventilator, width 1800 mm, length 2260 mm (10 louvers); an isolated high base; 24V motor operation, F5 flange

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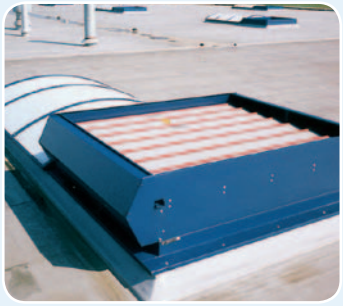
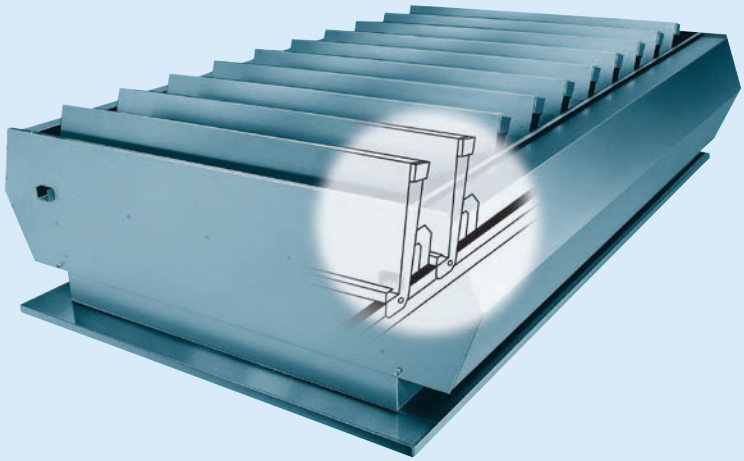
Brakel® Eura-R



Louvered ventilator with rain-proof side blades

The Eura-R is a variation of the standard Eura and is designed to incorporate rainproof side blades. The Eura-R is therefore ideal for all-weather day-to-day ventilation.
The structure has integrated rain gutters for controlled water drainage.
Like the Eura this is product can be customised with a variety of base and flange designs.
Applications: atria, shopping centres, industrial buildings, train stations and ports.



Materials

Aluminium; tempered, sea water- and corrosion-resistant AlMg3. Corrosion-resistant bearings. Seal incorporating a weather-resistant sealing strip longitudinally and energy strips. The seal is applied in such a manner that there is no risk of freezing and a high level of draft-proofness is guaranteed. The aluminium is completely corrosion-resistant and is supplied untreated as standard. If desired the Eura-R can be supplied in an anodised or powder-coated design (in any RAL colour you require). The Eura-R can also be designed to incorporate noise-damping wings and bird or insect mesh.

EN 12101-2

Controls

P single-action compressed air operation

P2 double-action compressed air operation

M motor operation

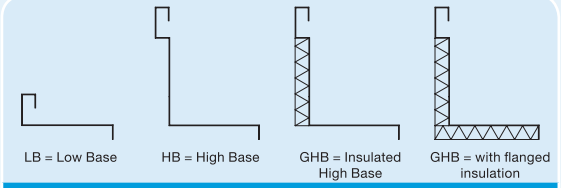
K cable operation

Extras: **B** including fire function

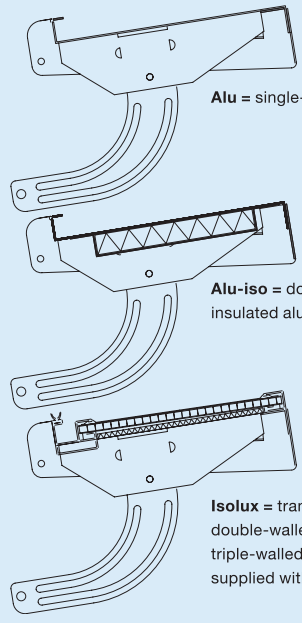
FS failsafe

Regulations

The system is tested and certified in accordance with EN 12101-2.



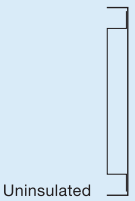
Base



Alu = single-walled aluminium

Alu-iso = double-walled insulated aluminium

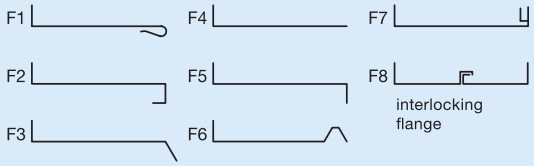
Isolux = transparent or opal, double-walled polycarbonate 8 or triple-walled 16 mm (can also be supplied with (un-)insulated glass)



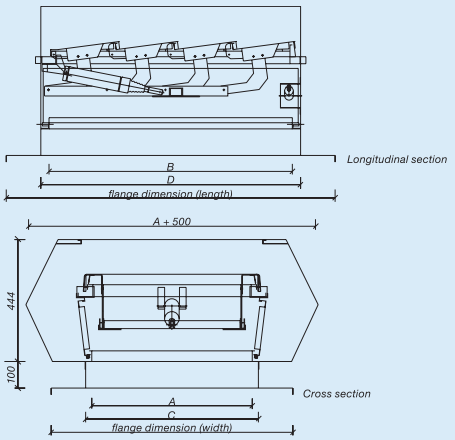
The side blades can be operated independent of the top blades

Blade engineering

Type	Clear width in mm				Aerodynamic surface (m²)		Weight Kg
	LB/GHB		HB				
	A	B	C	D	LB/GHB	HB	
060 - 3	600	720	640	760	0,26	0,29	36
060 - 4	600	940	640	980	0,34	0,38	40
060 - 5	600	1160	640	1200	0,42	0,46	44
060 - 6	600	1380	640	1420	0,50	0,55	49
060 - 7	600	1600	640	1640	0,58	0,63	53
060 - 8	600	1820	640	1860	0,66	0,71	58
060 - 9	600	2040	640	2080	0,73	0,80	62
060 - 10	600	2260	640	2300	0,81	0,90	67
060 - 11	600	2480	640	2520	0,89	0,98	71
060 - 12	600	2700	640	2740	0,79	1,05	76
060 - 13	600	2920	640	2960	1,05	1,14	80
120 - 3	1200	720	1240	760	0,52	0,57	50
120 - 4	1200	940	1240	980	0,68	0,73	57
120 - 5	1200	1160	1240	1200	0,84	0,89	64
120 - 6	1200	1380	1240	1420	0,99	1,06	70
120 - 7	1200	1600	1240	1640	1,15	1,22	77
120 - 8	1200	1820	1240	1860	1,31	1,38	83
120 - 9	1200	2040	1240	2080	1,47	1,57	90
120 - 10	1200	2260	1240	2300	1,65	1,74	96
120 - 11	1200	2480	1240	2520	1,82	1,91	103
120 - 12	1200	2700	1240	2740	1,94	2,04	109
120 - 13	1200	2920	1240	2960	2,10	2,20	116
180 - 3	1800	720	1840	760	0,78	0,84	66
180 - 4	1800	940	1840	980	1,02	1,08	75
180 - 5	1800	1160	1840	1200	1,25	1,32	84
180 - 6	1800	1380	1840	1420	1,49	1,57	93
180 - 7	1800	1600	1840	1640	1,73	1,84	102
180 - 8	1800	1820	1840	1860	1,97	2,09	111
180 - 9	1800	2040	1840	2080	2,24	2,33	120
180 - 10	1800	2260	1840	2300	2,48	2,53	129
180 - 11	1800	2480	1840	2520	2,72	2,83	138
180 - 12	1800	2700	1840	2740	2,92	3,02	147
180 - 13	1800	2920	1840	2960	3,15	3,27	156



Flanges



Cross sections

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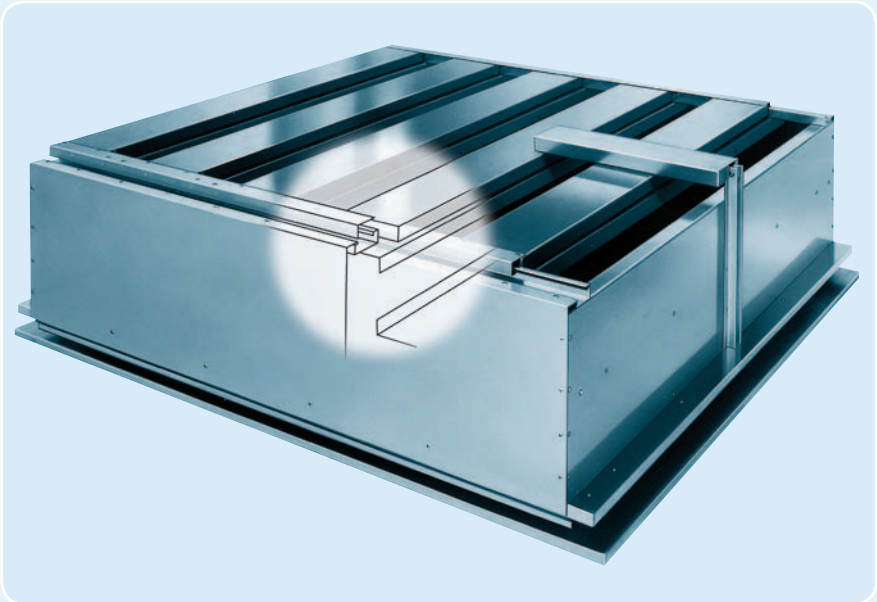
Brakel® Microlab

Continuous natural air ventilator

The Microlab labyrinth construction is weatherproof and was specially developed for the continuous extraction of large volumes of air. The system was designed for use in areas from which constant processing heat emission must be extracted. The Microlab can be applied in roofs or walls, and is suitable for a wide range of applications, thanks to its simple and effective design and compact height. The labyrinth construction was designed to achieve a high level of acoustic damping in an open setting. The application of a well thought-out internal structure has led to its exceptionally high aerodynamic value.



Material

Hardened, sea water and corrosion resistant aluminium (AlMg3). The partition section is sealed by means of weatherproof brushes. The Microlab is supplied untreated, or enamelled in any RAL colour on request. It can also be supplied with gauze screens and acoustic damping links.

Versions

- Single-walled aluminium, acoustically insulated & (highly) insulated.
- Adapted dimensions.
- Partitioned version is fitted with a sliding section mounted on maintenance-free bearings.

Operation

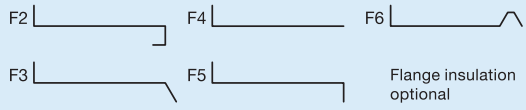
P single-acting compressed air operation

P2 double-acting compressed air operation

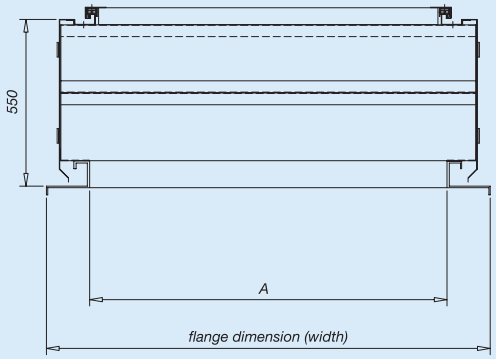
M motor operation

Type	Geom. surface m²	Aërod. surface m²	Weight kg	Minimum throat size A x B (mm)
600 - 120	0,72	0,14	25	600 x 1200
600 - 160	0,96	0,19	34	600 x 1600
600 - 200	1,20	0,24	42	600 x 2000
600 - 240	1,44	0,29	51	600 x 2400
600 - 280	1,68	0,34	59	600 x 2800
1300 - 80	1,04	0,21	37	1300 x 800
1300 - 120	1,56	0,31	55	1300 x 1200
1300 - 160	2,08	0,42	73	1300 x 1600
1300 - 200	2,60	0,52	91	1300 x 2000
1300 - 240	3,12	0,63	109	1300 x 2400
1300 - 280	3,64	0,73	127	1300 x 2800
1900 - 80	1,52	0,30	53	1900 x 800
1900 - 120	2,28	0,46	80	1900 x 1200
1900 - 160	3,04	0,61	106	1900 x 1600
1900 - 200	3,80	0,76	133	1900 x 2000
1900 - 240	4,56	0,91	160	1900 x 2400
1900 - 280	5,32	1,06	186	1900 x 2800

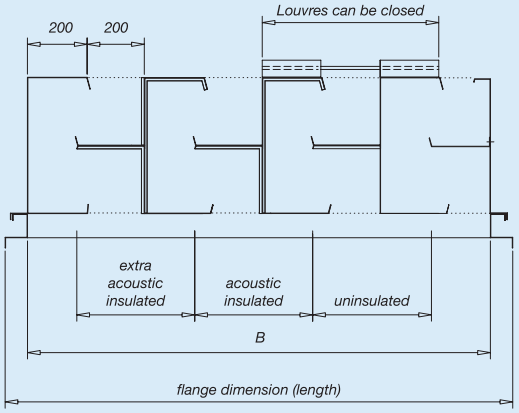
Intermediate sizes possible
Units connectable in length



Flanges



Transverse section



Longitudinal section

Cross sections

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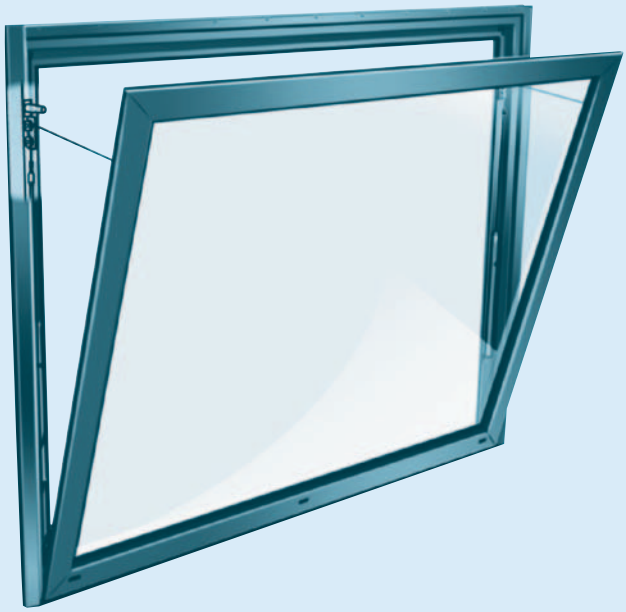
Brakel® Inova

Stylish ventlight for facade application with concealed controls

The Inova is a natural ventilation window that is suitable for natural, day-to-day ventilation and for fire ventilation. The Inova - with its slim profile - is an aesthetic, high-grade ventlight for facade applications. The controls for the frame have been completely embedded in the structure. Applications: atria, shopping centres, train stations and airports.



Options

The Inova can be supplied untreated, anodised or powder-coated (in any RAL colour you require). The following designs can be supplied in the ventlight: single-walled aluminium, double-walled aluminium insulated, laminated glass, insulated glass and double-walled polycarbonate.

EN 12101-2

Designs

The Inova has an extremely slim profile which means that the system is ideally suited for use in facades. The mounting angle is 90°, the opening angle in relation to the base structure is 30° as standard. The Inova is used for both day-to-day ventilation and fire ventilation. The structure consists of a completely thermally insulated aluminium profile section.

The design ensures that the external appearance has also been perfectly finished in detail. The frame is sealed with EPDM rubbers.

Regulations

The system is tested and certified in accordance with EN 12101-2.

Flanges

The flange thickness of the Inova can be varied from 5 mm to 55 mm.

External appearance

Any rectangular shapes are possible as standard with:

- frame height of 780 - 2280 mm
- frame width of 780 - 2580 mm
- maximum panel surface area of 3,5 m^2
- glass thickness 6-40 mm
- opening angle of 30° as standard (variations by agreement)

The weight depends on dimensioning and panel. The maximum weight of the panel is 45 kg/m^2.

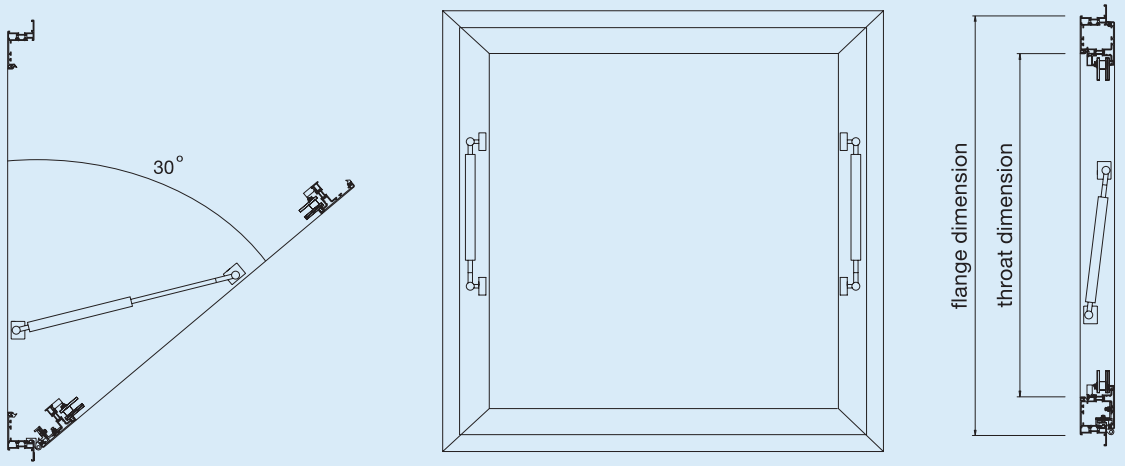
Control system

The entire control system for the Inova is completely concealed inside the structure in its closed state. Gas springs or motors are not therefore visible, which means that the Inova can be used in any situation. It is also possible to very easily clean the window.

M chain motor 24V

MB chain motor 24V with electric fire switch

Extras: **FS** failsafe



Cross sections

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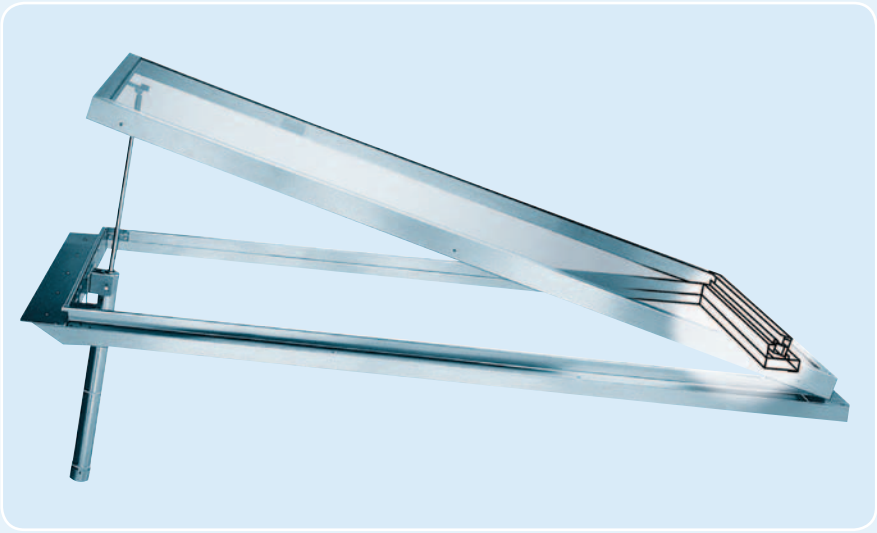
Brakel® Ventria

Stylish ventlight

This transparent top-hung window provides natural ventilation for both smoke and hot air. Thanks to its attractive external design the Ventria is often integrated into glazed facades and glazed roofs for air feed and air extraction. The Ventria is available in both a thermally insulated and standard insulated/uninsulated design and is suitable for all types of glass up to a thickness of 40 mm. Applications: from industrial to decorative glazed roof constructions.



Controls

Compressed air cylinder, CO_2 control, electric spindle motors or rotary spindle with control block. Opening angle depends on the selected stroke length for the control mechanism. Brakel supplies the compressed air controls with a double-action compressed air cylinder that is locked in its open and closed state.

EN 12101-2

Designs

The Ventria is a hinged ventlight that can be incorporated into glazed roofs and glazed walls. The opening angle of the window in relation to the base structure is variable up to a maximum of 75°. The structure consists of tempered aluminium, sea water corrosion-resistant AlMg3. Extruded material made of AlMg Si 0.5. The frame is sealed with EPDM rubbers to ensure optimal sealing. The Ventria can be supplied both uninsulated (Ventria-O), insulated (Ventria G) and heat-insulated (Ventria TG). The Ventria can be supplied in both untreated and anodised designs or powder-coated (in any RAL colour you require). Amongst other things, the following infills can be integrated into this ventlight: single- or double-walled aluminium panel, laminated glass, insulated glass, double-walled and triple-walled polycarbonate.

External appearance, dimensions, weight etc.

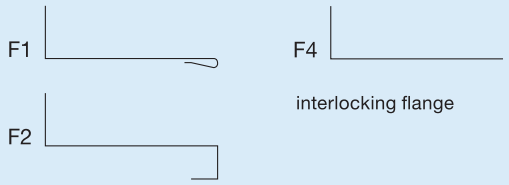
Any rectangular shapes are possible as standard with a:

- maximum height of 2700 mm
- maximum width of 2000 mm
- maximum surface area of 3.5 m^2
- maximum weight of the panel is 35 kg/m^2

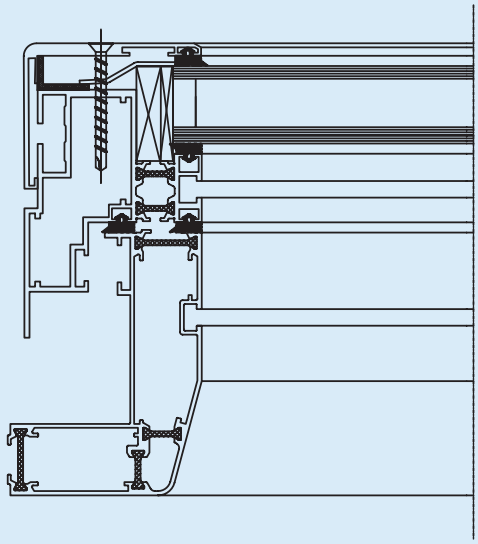
Alternative dimensions, panels and shapes can be supplied on demand.
The weight depends on dimensioning and panel.
The maximum weight of the panel is 35 kg/m^2.

Regulations

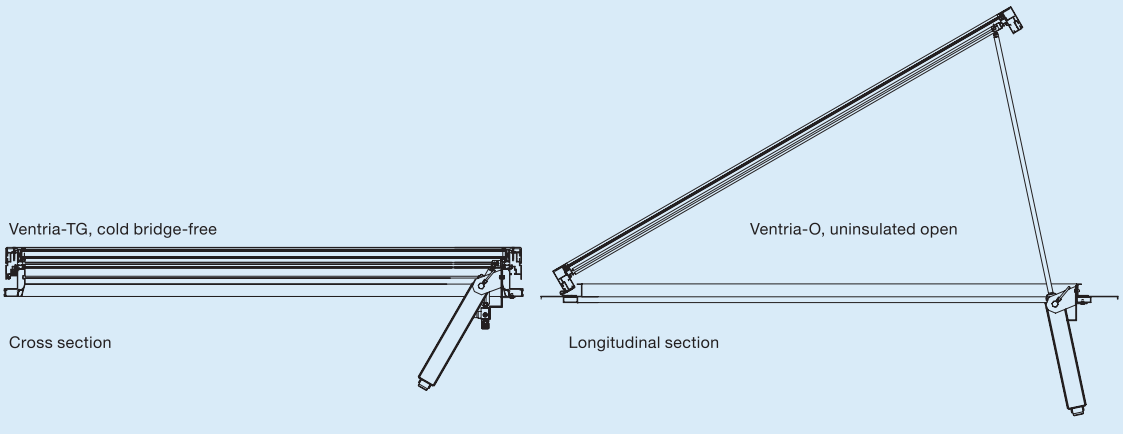
The system is tested and certified in accordance with EN 12101-2.



Flanges



Cold bridge-free



Cross sections

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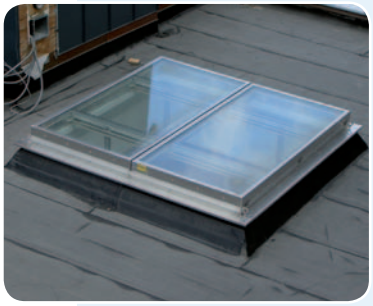
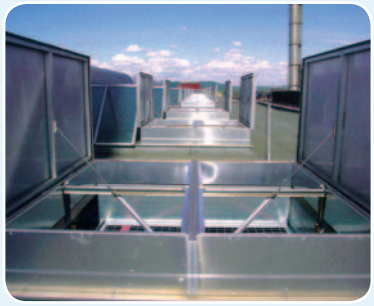
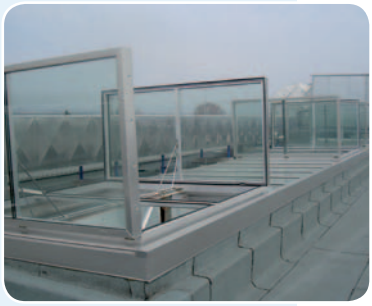
Brakel® DuoTherma







Twin flap ventilator

The Duo Therma is a twin flap system suited for both smoke & heat extraction and daily ventilation. This system is certified in accordance with the EN 12101-2 standard, while it is also highly air and watertight. The countless options available in terms of the base and flaps, as well as numerous operating systems and accessories, enable the creation of a functional solution for any type of building: From industrial properties to cold stores, and from commercial centres to theatres and offices premises. The system is also available as a single flap version, which is known as the Mono Therma.

The cold bridge-free Duo Therma TG fitted with a thermally separated base and flaps offers a high level of durability. It minimises condensation forming and offers advanced comfort features. In the event that sound insulation is also required, two fully acoustic versions of the Duo Therma TG model are available, which have Rw values of 34 dB and 44 dB, and are fully compliant with the EN 12101-2 standard.

EN 12101-2

Green Building Products

As a leading partner in its field, Brakel endeavours to remain a forerunner in the area of corporate social responsibility. Given that with our products, we let in the best that nature has to offer, it is only natural that we also care greatly for the environment. We therefore seek to integrate sustainable solutions in our working methods, products and services, wherever possible.

We have categorised our highly extensive product range according to the levels of sustainability and comfort applicable. The many energy efficient products and systems in the range can be recognised by the butterfly icons that they bear.

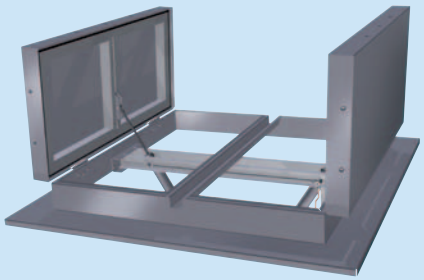
We classify our products, ranging from functional to sustainable, as follows:

F	functionally applicable in accordance with current qualifications / standards
F	compliant with raised sustainability requirements
F F	compliant with high sustainability requirements
F F F	entirely in keeping with a sustainable solution

Duo Therma AT uninsulated

F F

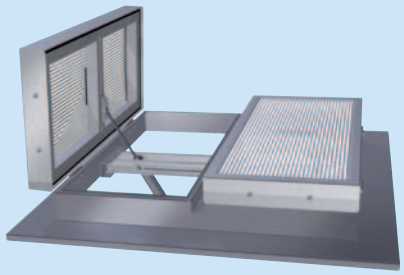
- Sea water and corrosion-resistant aluminium EN AW 5754 (AlMg3)
- High air and watertightness
- Considerable flexibility in terms of dimensions and flange type
- Convenient installation



Duo Therma AT insulated

F F

- Optional transparent polycarbonate flaps allow daylight entrance
- Broad range of operating systems and accessories available
- Suitable for all types of buildings and roof applications



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Specifications Duo Therma

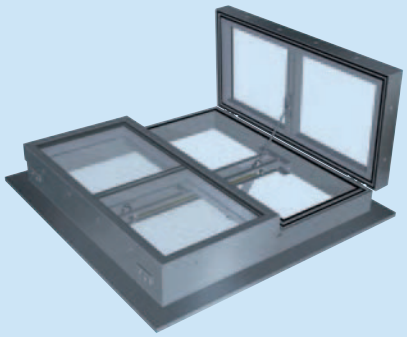
EN 12101-2 CERTIFIED

						Duo Therma AT (un)insulated				Duo Therma TG Thermally broken			
						Weight (kg)							
Type	Throat size width x length (mm)	Geometric surface m^2	Aerodynamic surface m^2	Cv-value	Height mm TG Acoustic =250mm	Uninsulated aluminium	Insulated aluminium	Transparent multi-wall polycarbonate Isolux	Single laminated safety glass	Insulated aluminium	Transparent multi-wall polycarbonate Isolux	Laminated insulation glass	Acoustic insulated
1010	1000 x 1000	1,00	0,60	0,60	200	31	41	32	63	44	43	72	88
1015	1000 x 1500	1,50	0,90	0,60	200	38	49	39	80	53	51	93	120
1020	1000 x 2000	2,00	1,20	0,60	200	45	57	46	98	62	59	115	153
1025	1000 x 2500	2,50	1,50	0,60	200	52	65	53	116	72	68	137	185
1510	1500 x 1000	1,50	0,90	0,60	200	37	48	37	81	53	51	94	119
1515	1500 x 1500	2,25	1,35	0,60	200	44	57	45	103	64	60	122	163
1520	1500 x 2000	3,00	1,80	0,60	200	52	67	53	126	75	69	150	206
1525	1500 x 2500	3,75	2,25	0,60	200	60	76	61	148	86	78	179	250
2010	2000 x 1000	2,00	1,30	0,65	200	42	55	43	98	63	59	115	151
2015	2000 x 1500	3,00	1,95	0,65	200	51	66	51	126	75	69	151	205
2020	2000 x 2000	4,00	2,60	0,65	200	60	77	60	153	88	79	186	260
2025	2000 x 2500	5,00	3,25	0,65	200	69	88	68	181	100	88	221	315
2510	2500 x 1000	2,50	1,63	0,65	200	48	61	48	116	73	67	137	182
2515	2500 x 1500	3,75	2,44	0,65	200	58	74	57	149	87	78	179	248
2520	2500 x 2000	5,00	3,25	0,65	200	68	86	66	181	100	88	222	314
2525	2500 x 2500	6,25	4,06	0,65	200	78	99	75	214	114	99	264	379

Comment: The Cv-value of the Duo Therma is tested in combination with wind baffles. Deviations can be made depending on the situation in which it is installed. Also available with a single flap: Mono Therma (from 1000 x 1000mm to 1250 x 2500mm).

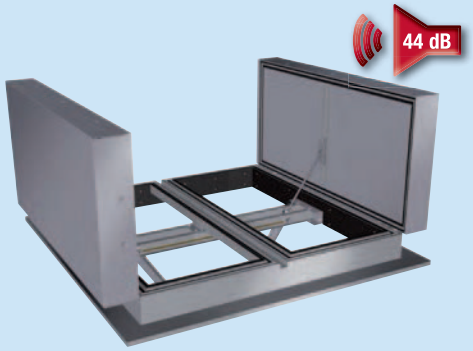
Duo Therma TG thermally separated

- Entirely thermally separated base and flaps
- Extensive choice of flap types
- Standard noise reduction (Rw) of 31 dB
- Increased level of comfort, with U-values of up to 1.0 W/m^2K
- Air and watertightness tested accordance NEN EN 1026 / 1027 and DIN EN 12208



Duo Therma TG thermally separated / acoustically insulated

- Thermally separated base and flaps, with additional acoustic insulation
- Available in two EN 12101-2 / EN ISO 140-3 certified types, with Rw-values of 34 dB and 44 dB
- Compliant with highly stringent acoustic requirements
- U-values of up to 0,9 W/m^2K



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Materials

Base and flanges: Sea water and corrosion-resistant EN AW 5754 (AlMg3) sheet aluminium is used in the Duo Therma AT models; the Duo Therma TG models are made of EN AW 606035 (AlMgSi0,5) extruded profile sections which are thermally separated.

Sealing: All-round, using coated EPDM rubbers, which prevent freezing while guaranteeing a high level of airtightness.

Hinges: Stainless steel.

Flaps: With or without thermal separator

Choice of: uninsulated or mineral wool-insulated aluminium flap, 16 to 55 mm transparent multi-wall polycarbonate filler, single safety glass, insulated safety glass, or a high quality acoustically insulated flap.

Finishing: Standard blank aluminium or coated in a standard RAL colour.

Controls

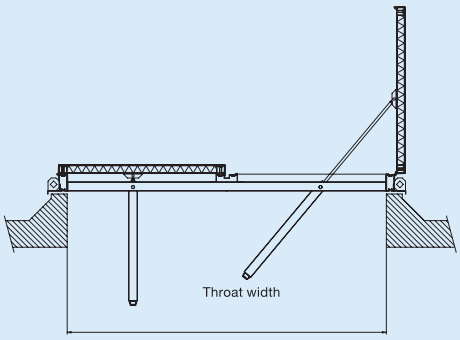
P2: Double-action compressed air operation

M: Motor operation

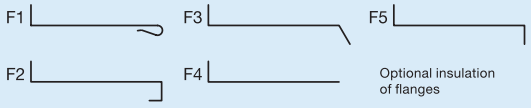
Optional: **B:** including fire function **FS:** failsafe

Accessories

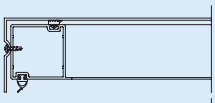
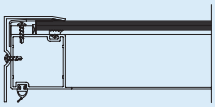
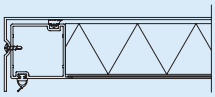
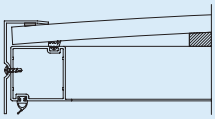
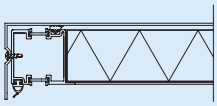
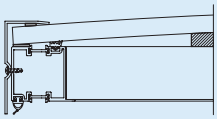
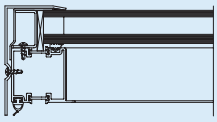
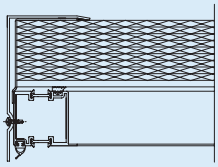
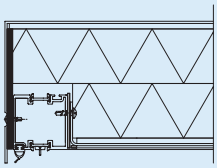
- Bird or insect mesh
- Fall protection
- Burglary prevention features
- Insulated flanges
- RAL colour / Anodised



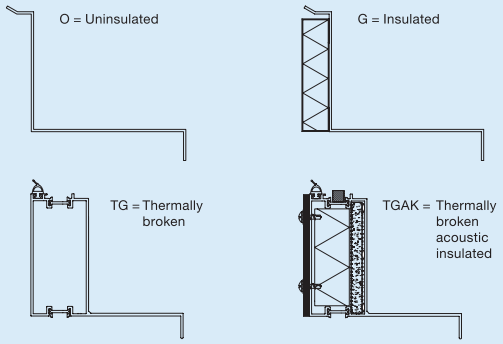
Cross section



Flanges

AT-flaps		U-value W/m² K
	Uninsulated	6,0
	Single laminated glass	5,7
	Insulated	2,0
	Isolux 16 mm	1,8 - 2,3
TG-flaps		**U-value W/m² K**
	Thermally broken insulated	2,0
	Thermally broken Isolux 16 mm	1,8 - 2,3
	Thermally broken laminated insulation glass	1,1 - 2,8
	Thermally broken Isolux 55 mm	1,0
	Thermally broken acoustic insulated	0,9

Flaps



Base

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Brakel® fixed smoke curtain

Brakel® accredited fixed smoke curtains for compartmentalisation

Accredited fixed smoke curtains for compartmentalisation
Fixed smoke curtains are often for fire compartmentalisation purposes in buildings such as warehouses, distribution centres, commercial centres and hangars larger than 1600 m². The Brakel smoke curtain is ideally suited for this application, while it has also been (CE) EN12101-1 Class D120 accredited by MPA.

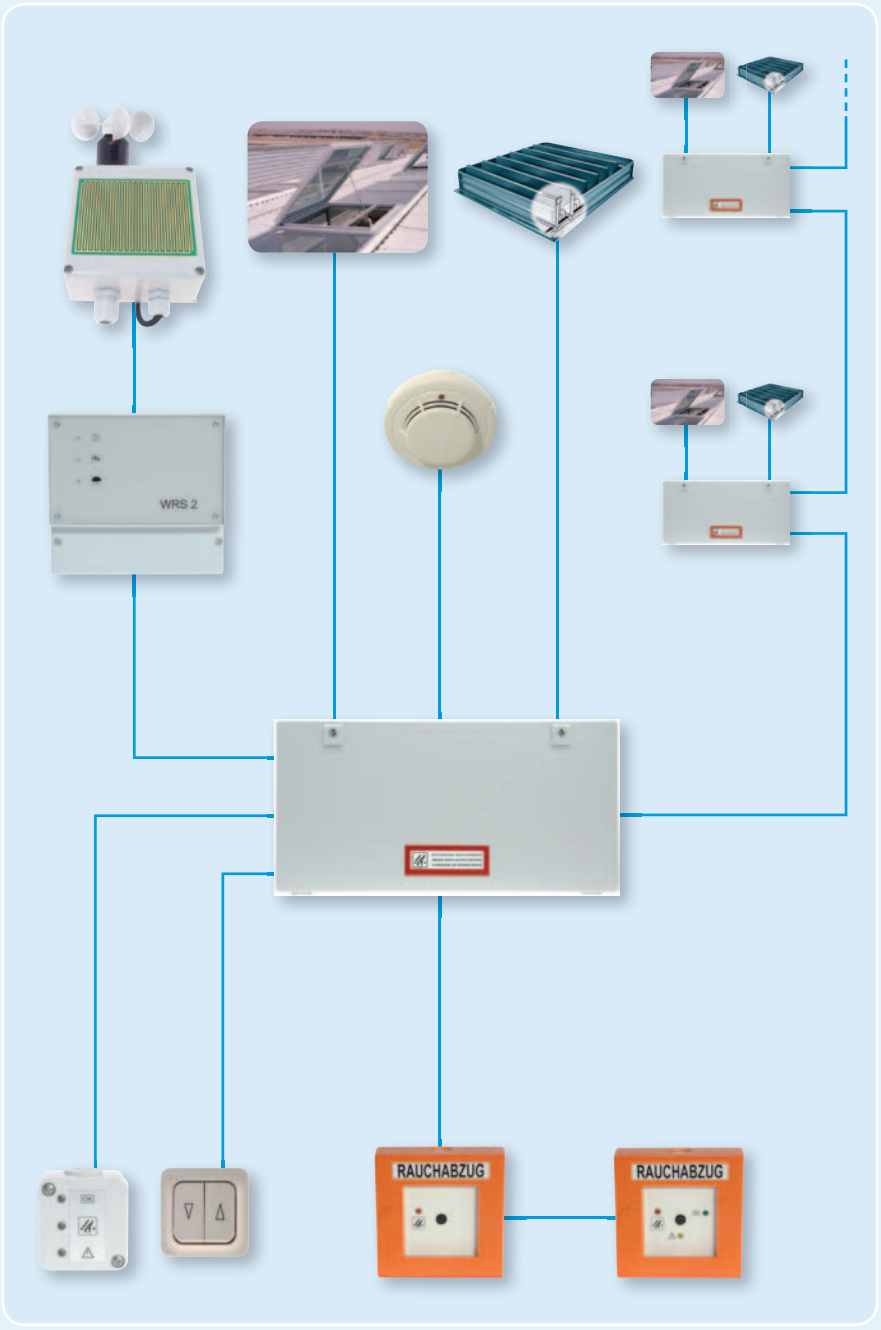
The Brakel smoke curtain is supplied as standard in the colour grey, while it is also available in white. The mesh fitted has a double-sided polyurethane coating, weighs 450 gram/m² and is 0.45 mm thick.

The curtains are tailor made – in sections with a 20 cm overlap – and have a seamed bottom edge to enable the insertion of a weight rod or chain or a steel fixing wire.

Decentralised SHEV control panel

Decentralised SHEV control panel

- Systems with practically any desired number of SHEV or ventilation zones can be arranged
- Control of 24V~ actuators
- Release by override push-buttons, automatic fire detectors, fire alarm control panel
- Ventilation control by push-buttons, wind and rain control



Decentralised: SHEV control panel

- Control for arranging a decentralised SHEV-system with 24V~ actuators. Very short cable lengths and small cross sections to the actuators due to control location near the SHEV (smoke and heat exhaust ventilator)
- A communication line enables individual controls to be combined to an SHEV group with different ventilation zones. In this way, systems with practically any desired number of SHEV and ventilation zones can be arranged
- Output power 192W (24V~/ 8A) or 384W (24V~/ 16A)
- Signal lines for automatic fire detectors, override push-buttons and fire alarm control panel (FACP)
- Other monitored lines: alarm message / malfunction message from the upstream control system
- Reset of alarm / fire detectors by push-button in the main alarm point or in the control
- Cycle repetition function in the event of alarm to VdS 2581
- Monitoring of signal lines, actuator supply line, fuses, accumulators and power line
- Standby power supply for at least 72 hours with accumulator management to VdS 2593
- Reverse connection and deep-discharge protection for the accumulators (2 VdS approved accus included)
- Possibility of connecting ventilation push-buttons, also with indication of position OPEN A
- Adjustable ventilation position and ventilation time
- Possibility of connecting an external wind and rain control (WRC), optionally internal WRC
- Configurable functions: “Auto-Close”, “Malfunction = Alarm”, “Malfunction Power Supply = Alarm”, “Thermal Alarm”, “Travelling time 3 min”, “Dead Man’s Ventilation Control”, “Wind and Rain Control”, etc.
- Including external status display with indications Operation ‘O’, Alarm ‘R’ and Malfunction ‘S’
- Connectable actuators: 24V~ actuators, travelling time for full stroke at rated load < 1,5 or < 3 minutes
- Sheet steel enclosure, protection rating IP54, W 600 x H 300 x D 155mm, light grey (RAL 7035)
- Cable entries through membrane grommets from the left (10 x M16, 3 x M 20 and 2 x M25)

Options / accessories:

- Potential-free contacts for transmission of alarm or malfunction signals
- Integrated wind and rain control
- Integrated Parallel Actuator Cut-off or Synchronising Control for two actuators
- Service display unit for detailed status information (alarms, malfunctions, charging condition)
- Possibility of connecting a weather vane
- Special accumulator mounting bracket for overhead mounting of the control
- Battery backed Service Module for indication of due maintenance action

SHEV / Ventilation Units

- Eura / Eura-R
- Mono Therma / Duo Therma
- Luma / Lumera
- Inova
- Ventria
- Estra

SHEV - manual fire detector

- Secondary alarm point with indication Alarm ‘R’
- Main alarm point with indications Operation ‘O’, Alarm ‘R’, Malfunction S and button “Reset R”. Connection of main alarm point with mini buzzer ‘S’ and indication of position OPEN A also possible
- Lockable aluminium or plastic enclosure
- Colours available: grey, blue, red, yellow, orange (version in orange with VdS approval)

Automatic fire detectors

- Optical smoke detectors
- Optical / thermal smoke detectors
- Fixed temperature thermal detector
- Rate of rise heat detector
- The detectors are VdS approved

Ventilation buttons

- Surface or flush mounted. Cream white. Also available as key operated or twist knob switch
- Surface mounted damp proof type switch. Also available as key operated switch

Wind and Rain Control

- Control unit WRS (connection of wind sensor and / or rain sensor required)
- Actuators will be automatically closed upon response
- Adjustable response thresholds of wind and rain sensor, adjustable closing time
- Status LEDs for Operation ‘O’, Wind ‘W’ and Rain ‘R’
- Four integrated change-over contacts for controlling several control panels / zones
- Switching capacity of each contact: 5A / 30V~, 5A / 230V~
- Plastic enclosure, protection rating IP40 (optionally IP54), W 165 x H 155 x D 95mm, grey

- Wind sensor

- Rain sensor (heated)

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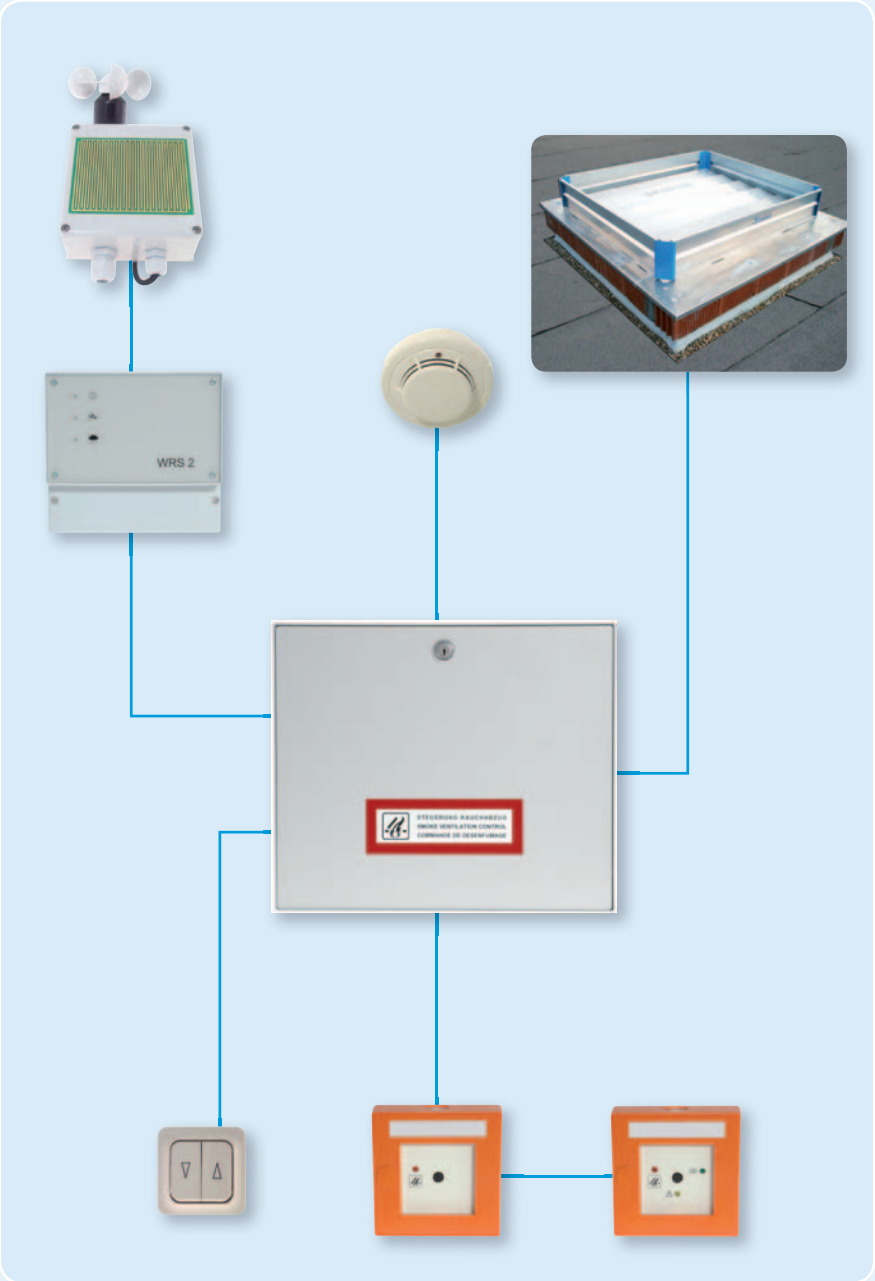
SHEV stairwell control panel

SHEV stairwell control panel

- Control of 24V~ actuators
- Release by override push-buttons, automatic fire detectors, fire alarm control panel
- Ventilation control by push-buttons, wind and rain control
- VdS approval for control panel and system



SHEV control panel

- SHEV control panel for connection of 24V~ actuators
- Output power 62W (24V~ / 2,6A) or 96W (24V~ / 4A)
- Signal line for connection of automatic fire detectors or fire alarm control panel (FACP)
- Signal line for connection of override push-buttons (manual fire detectors)
- Reset of alarm / fire detectors by push-button in the control panel or the main alarm point
- Monitoring of signal lines, actuator lines, fuses, accumulators and power supply
- Standby power supply for at least 72 hours
- Possibility of connecting ventilation buttons, also with indication of position OPEN A
- Adjustable ventilation position and ventilation time
- Possibility of connecting an external wind and rain control (WRC), optionally internal WRC
- Configurable functions:
  - “AUTO-CLOSE” (closes automatically when alarm has been reset)
  - “Malfunction = Alarm” (malfunction in a signal activates alarm)
- Including 2 accumulators, VdS approved
- Connectable actuators: 24V~ actuators, travelling time for full stroke at rated load (total travelling time) < 1,5 minutes (VdS), up to 6 minutes in other systems
- Sheet steel enclosure, protection rating IP30, W 320 x H 270 x D 110 mm, light grey (RAL7035)
- Cable entries from above, below or behind

Options / accessories:

- Potential-free contacts for transmission of alarm or malfunction signals
- Integrated wind and rain control
- Service display unit for detailed status information (alarms, malfunctions, charging condition)
- Battery backed Service Module for indication of due maintenance action

SHEV / Ventilation Units

- Eura / Eura-R
- Mono Therma / Duo Therma
- Luma / Lumera
- Inova
- Ventria
- Estra

SHEV - manual fire detector

- Secondary alarm point with indication Alarm ‘R’
- Main alarm point with indications Operation ‘O’, Alarm ‘R’, Malfunction ‘S’ and button “Reset R”. Connection of main alarm point with mini buzzer ‘S’ (Alarm / Malfunction) also possible
- Lockable aluminium or plastic enclosure
- Colours available: grey, blue, red, yellow, orange (version in orange with VdS approval)
- Only detectors in orange are allowed to be operated in approved systems

Automatic fire detectors

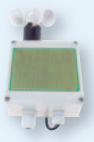
- Optical smoke detectors
- Optical / thermal smoke detectors
- Fixed temperature thermal detector
- Rate of rise heat detector
- The detectors are VdS approved

Ventilation buttons

- Surface or flush mounted. Cream white. Also available as key operated or twist knob switch
- Surface mounted damp proof type switch. Also available as key operated switch

Wind and Rain Control

- Control unit WRS (connection of wind sensor and / or rain sensor required)
- Actuators will be automatically closed upon response
- Adjustable response thresholds of wind and rain sensor, adjustable closing time
- Status LEDs for Operation ‘O’, Wind ‘W’ and Rain ‘R’
- Four integrated change-over contacts for controlling several control panels / zones
- Switching capacity of each contact: 5A / 30V~, 5A / 230V~
- Plastic enclosure, protection rating IP40 (optionally IP54), W 165 x H 155 x D 95 mm, grey



- Wind sensor

- Rain sensor (heated)

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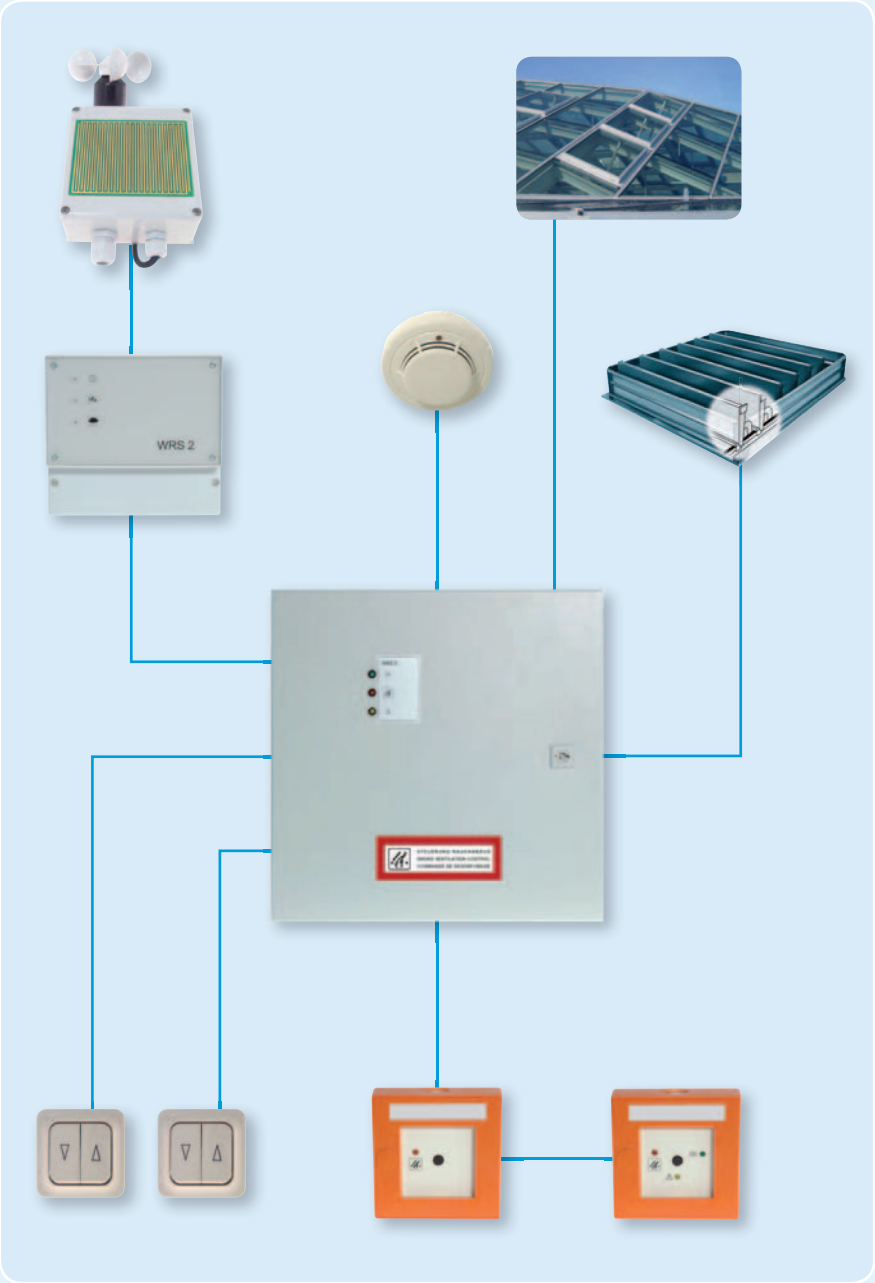
SHEV control panel

SHEV control panel

- One or two SHEV zones, up to four ventilation zones (programmable)
- Control of 24V~ actuators
- Release by override push-buttons, automatic fire detectors, fire alarm control panel
- Ventilation control by push-buttons, wind and rain control



SHEV control panel

- SHEV control panel for connection of 24V~ actuators
- One or two SHEV zones, two ventilation zones
- Output power 192W (24V~ / 8A) or 384W (24V~ / 2x 8A)
- Signal line for connection of automatic fire detectors
- Signal line for connection of override push-buttons
- Signal line for connection of fire alarm control panel (FACP)
- Reset of alarm / fire detectors by push-button in the control centre or the main alarm point
- Cycle repetition function in the event of alarm to VdS 2581
- Monitoring of signal lines, actuator lines, fuses, accumulators and power supply
- Standby power supply for at least 72 hours with accumulator management to VdS 2593
- Possibility of connecting ventilation buttons for each ventilation zone, also with indication of position OPEN
- Adjustable ventilation position and ventilation time for each ventilation zone
- Possibility of connecting an external wind and rain control (WRC), optionally internal WRC
- Configurable functions:
  - “AUTO-CLOSE” (closes automatically when alarm has been reset)
  - “Malfunction = Alarm” (malfunction in a signal activates alarm)
  - “Thermal Alarm” (alarm when enclosure inside temperature rises above 70°C)
  - “Travelling time 6 min” (actuators will stop after 6 minutes travelling time)
  - “One ventilation zone” (both ventilation zones will open / close at the same time)
- Status lights Operation ‘O’, Alarm ‘R’ and Malfunction ‘S’ in the enclosure door
- Including 2 accumulators, VdS approved
- Connectable actuators: 24V~ actuators, travelling time for full stroke at rated load (total travelling time) < 3 minutes or < 6 minutes
- Sheet steel enclosure, protection rating IP30, W 320 x H 270 x D 110 mm, light grey (RAL7035)
- Cable entries through membrane grommets from above (11 x M16 and 3 x M25)

Options / accessories:

- Potential-free contacts for transmission of alarm or malfunction signals
- Outputs for controlling external warning devices (e.g. multiple tone sounder and strobe lightlight)
- Integrated wind and rain control
- Service display unit for detailed status information (alarms, malfunctions, charging condition)

SHEV / Ventilation Units

- Eura / Eura-R
- Mono Therma / Duo Therma
- Luma / Lumera
- Inova
- Ventria
- Estra

SHEV - manual fire detector

- Secondary alarm point with indication Alarm ‘R’
- Main alarm point with indications Operation ‘O’, Alarm ‘R’, Malfunction ‘S’ and button “Reset R”. Connection of main alarm point with mini buzzer S and indication of position OPEN A also possible
- Lockable aluminium or plastic enclosure
- Colours available: grey, blue, red, yellow, orange (version in orange with VdS approval)

Automatic fire detectors

- Optical smoke detectors
- Optical / thermal smoke detectors
- Fixed temperature thermal detector
- Rate of rise heat detector
- The detectors are VdS approved

Ventilation buttons

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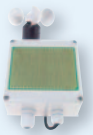
- Surface mounted damp proof type switch. Also available as key operated switch

Wind and Rain Control

- Control unit WRS (connection of wind sensor and / or rain sensor required)
- Actuators will be automatically closed upon response
- Adjustable response thresholds of wind and rain sensor, adjustable closing time
- Status LEDs for Operation ‘O’, Wind ‘W’ and Rain ‘R’
- Four integrated change-over contacts for controlling several control panels / zones
- Switching capacity of each contact: 5A / 30V~, 5A / 230V~
- Plastic enclosure, protection rating IP40 (optionally IP54), W 165 x H 155 x D 95 mm, grey



- Wind sensor

- Rain sensor (heated)

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