Light + Air
International

Kingspan Ecofeu 160 EL /160 EL HPA

Data Sheet

Electrically-operated smoke & heat exhaust vent for waterproofed roofs

Daylighting Solutions
Natural Ventilation Solutions
Smoke Management Solutions
Service & Maintenance
Building Automation

Kingspan Light+Air

Kingspan Ecofeu 160 EL /160 EL HPA

Description

Smoke & heat exhaust vent (SHEV), CE- and NF-certified, with a 160° opening lid, electrical operating system, designed for installation in “waterproofed support” roofs.

160 EL HPA Version:
High-Performance Aeraulic wind baffles

Advantages

- Electric ventilation as standard, at no extra cost, for modular ventilation.
- Unique patented locking system offering high resistance to winds.
- The ISO+ solution optimises exhaust vent insulation: 30% improvement compared with a standard unit.
- Enhanced waterproofing on lid: aluminium F frame with patented, factory-mounted seal.
- Compliant with the CETIM Machinery Directive to ensure optimal operational safety.
- Fitted with metal wind baffles for better smoke ventilation (HPA version).
- Unit delivered “ready for installation”.
- Control system installed by our teams.
- CE-certified smoke exhaust vent compliant with NF EN 12101-2 (CE compliance certificate no.: 0333-CPD-219014).
- NF-certified SHEV smoke exhaust vent compliant with NF S 61937-1.

Standard description

The building’s natural smoke ventilation will be ensured by ECOFEU 160 EL smoke exhaust vents from Kingspan Light + Air, CE-certified compliant with standard NF EN 12101-2, NF-certified SHEV and compliant with the Machinery Directive.

Performance categories meeting requirements of French legislation, including the 10,000-cycle ventilation function. Galvanised, insulated 400mm high kerb, 160° opening lid, 24V DC electric drive, opalescent multiwall polycarbonate lid with fire rating B-s1, d0 (M1) and, for the 160 EL HPA version, wind baffles.

Description

Opening lid

The frame is made of galvanised steel. In the safety position, it is opened 160° by an electric drive. In the stand-by position, it locks under the fixed frame using its unique patented system.

Operating system

The control system is operated by a Control Actuator Device (DAC) with electric opening and closing in compliance with NF S 61-938.

Kerb

The kerb is made from galvanised steel sheet. It is 400mm in height. Thermal insulation is provided by a 15mm thick rock wool insulation layer.

iSO+ range

The ISO+ reinforced insulation range limits heat loss: 30% improvement compared with a standard unit.

Glazing

Multiwall polycarbonate (MWPC) lid. It is integrated into a fully sealed aluminium F frame.

Fire rating: B-s1.d0(M1). (Different types of glazing available)

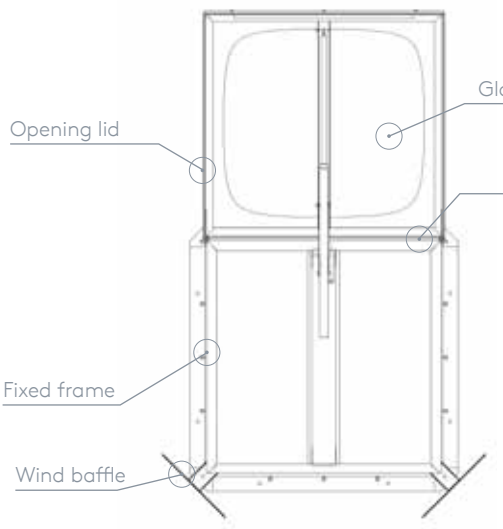
Electric Drive

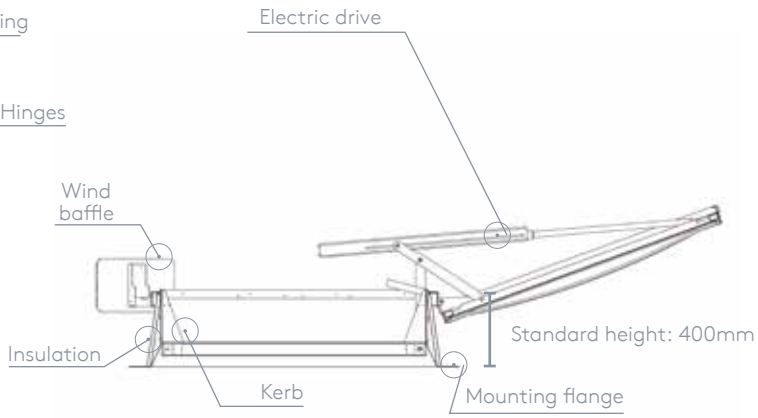
The electric drive operates on 24V DC SELV (safety extra-low voltage)

Wind baffles

(for the HPA version)

Fitted with metal wind baffles for better smoke ventilation efficiency and resistance to outdoor elements.





Ecofeu EL 160 | Aeraulic performance

Dimensions & aeraulic performance

Aa (aerodynamic free area of smoke exhaust ventilator) = Aa in m² / Av (geometric area of smoke exhaust ventilator) = Width (W) x Length (L) = Av in m²

W (cm) / L (cm)	100		110		120		130		140		150	
100	0.69	0.63										
110	0.76	0.70	0.80	0.73								
120	0.82	0.75	0.87	0.80	0.92	0.85						
130	0.89	0.82	0.95	0.88	0.99	0.92	1.04	0.97				
140	0.96	0.89	1.02	0.95	1.07	1.00	1.11	1.04	1.15	1.08		
150	1.02	0.95	1.09	1.02	1.14	1.07	1.19	1.12	1.23	1.16	1.26	1.19
160	1.09	1.02	1.16	1.09	1.21	1.14	1.27	1.20	1.31	1.24	1.34	1.28
170	1.15	1.08	1.22	1.15	1.29	1.22	1.34	1.27	1.39	1.33	1.42	1.36
180	1.22	1.15	1.29	1.22	1.36	1.29	1.42	1.35	1.46	1.40	1.50	1.45
190	1.28	1.21	1.36	1.29	1.43	1.36	1.49	1.43	1.54	1.49	1.58	1.54
200	1.35	1.28	1.43	1.36	1.50	1.44	1.57	1.51	1.62	1.57	1.66	1.62
210	1.41	1.34	1.50	1.43	1.57	1.51	1.64	1.59	1.69	1.65		
220	1.48	1.41	1.57	1.51	1.64	1.59	1.71	1.67	1.77	1.74		
230	1.54	1.47	1.63	1.57	1.71	1.66	1.79	1.75	1.85	1.83		
240	1.64	1.58	1.73	1.68	1.78	1.74	1.86	1.83	1.92	1.91		
250	1.71	1.65	1.80	1.75	1.88	1.84	1.94	1.92	1.99	1.99		
260	1.77	1.71	1.87	1.83								
270	1.84	1.79	1.94	1.90								
280	1.91	1.86	2.01	1.98								
290	1.97	1.93	2.08	2.06								
300	2.04	2.00	2.15	2.13								

SL250 - Aa Standard (m²) / Aa with anti-fall and anti-burglary protection grid (RE) (m²)

Ecofeu EL 160 HPA | Aeraulic performance with wind baffles

Dimensions & aeraulic performance

Aa (aerodynamic free area of smoke exhaust ventilator) = Aa in m² / Av (geometric area of smoke exhaust ventilator) = Width (W) x Length (L) = Av in m²

W (cm) / L (cm)	100		110		120		130		140		150	
100	0.81	0.75										
110	0.89	0.83	0.97	0.90								
120	0.96	0.89	1.06	0.99	1.15	1.08						
130	1.04	0.97	1.14	1.07	1.24	1.17	1.34	1.27				
140	1.12	1.05	1.22	1.15	1.33	1.26	1.43	1.36	1.54	1.47		
150	1.19	1.12	1.31	1.24	1.42	1.35	1.53	1.46	1.65	1.58	1.75	1.68
160	1.27	1.20	1.39	1.32	1.51	1.44	1.63	1.56	1.75	1.68	1.83	1.77
170	1.35	1.28	1.48	1.41	1.60	1.53	1.73	1.66	1.83	1.77	1.91	1.85
180	1.42	1.35	1.56	1.49	1.69	1.62	1.82	1.75	1.90	1.84	1.98	1.93
190	1.50	1.43	1.64	1.57	1.78	1.71	1.89	1.83	1.97	1.92	2.05	2.01
200	1.58	1.51	1.73	1.66	1.87	1.81	1.96	1.90	2.04	1.99	2.13	2.09
210	1.65	1.58	1.81	1.74	1.94	1.88	2.03	1.98	2.11	2.07		
220	1.73	1.66	1.89	1.83	2.01	1.96	2.10	2.06	2.18	2.15		
230	1.81	1.74	1.98	1.92	2.08	2.03	2.17	2.13	2.26	2.24		
240	1.88	1.82	2.05	2.00	2.14	2.10	2.24	2.21	2.33	2.32		
250	1.96	1.90	2.12	2.07	2.21	2.17	2.31	2.29	2.35	2.35		
260	2.04	1.98	2.18	2.14								
270	2.11	2.06	2.25	2.21								
280	2.19	2.14	2.31	2.28								
290	2.26	2.22	2.38	2.36								
300	2.34	2.30	2.45	2.43								

SL250 - Aa Standard (m²) / Aa with anti-fall and anti-burglary protection grid (RE) (m²)

Electrical characteristics

Electric drive **24 V DC**

Rated current: **2.6 A** for dimensions from 100 x 100 to 100 x 150
4 A for dimensions from 100 x 160 to 120 x 250
6 A for dimensions from 130 x 130 to 150 x 200

Protection rating: **IP 54**

Drives equipped with **electronic stroke end contacts**.

Stainless steel rod - **anodised aluminium body**

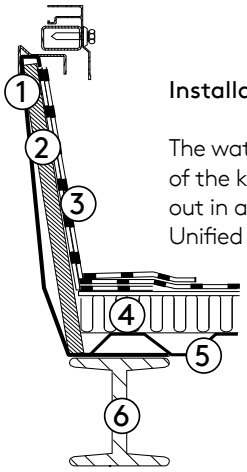
Temperature withstand: -20°C to + 60°C

Performance and classifications (according to EN 12101-2)*

Name	Class	Meanings / Observations
Functioning	Type B	Opening and closing from the ground
Useful surface area	Aa	See "Dimensions and aeraulic performance" table
Reliability	RE 300 (10,000 cycles in ventilation)	Number of open/close smoke ventilation test cycles
Snow load	SL250	Permissible load in N/m² in the smoke ventilation test
Wind load	WL 1500	Resistance to wind suction force (in N/m²)
Low temperature	T (00)	Unit meets French requirements
Resistance to heat	B300	Operating test at a temperature of 300°C

* The exact technical specifications depend on the dimensions of the units. To be checked on a case-by-case basis.

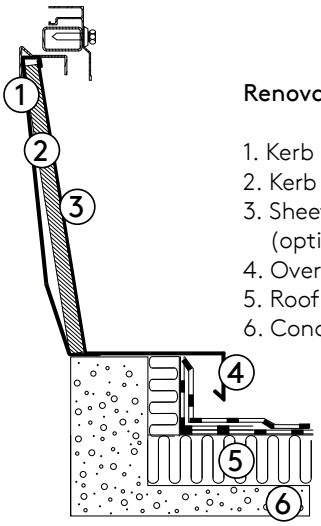
Installation examples



Installation of kerb - weathering

The waterproofing and the fastening of the kerb to the support must be carried out in accordance with the applicable Unified Technical Document (D.T.U.)

1. Kerb
2. Kerb insulation
3. Waterproofing
4. Roof insulation
5. Steel roof deck
6. Joist



Renovation set-kerb

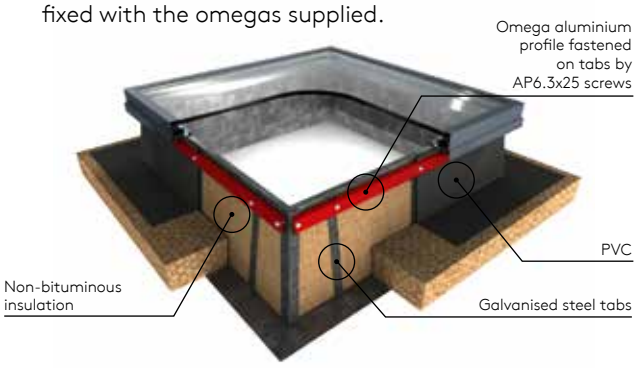
1. Kerb
2. Kerb insulation (optional)
3. Sheet metal laminate (optional)
4. Overlap
5. Roof insulation
6. Concrete slab

Options

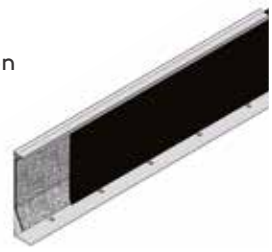
Kerb and equipment

1. **Anti-fall and anti-burglary protection grid (RE) 1,200 Joules**
   The Kingspan Light + Air RE grid complies with CRAM recommendations for the protection of personnel working on roofs, and is in conformity with the French Labour Code. It passed the standardised test for resistance to a person tripping and falling over: dynamic 1,200 Joule test. (see datasheet)

2. **Kerb equipped for PVC waterproofing**
   The insulation is laid upside down at a manufacturing stage, with the non-bituminous side facing outwards to allow the PVC membrane to be assembled and fixed with the omegas supplied.



3. **Stroke end contacts**
   Two position contacts (safety position / standby position) can be connected to a control panel. This system allows the positions of all the installation's exhaust vents to be checked without climbing on the roof. This option is required when installing the SHEV in a Category A or B Fire Safety System.



4. **Reinforced thermal insulation**
   The ISO+ reinforced insulation range provides better airtightness and reduces heat loss thanks to more efficient MWPC glazing (16 or 32mm), an insulating gasket between the lid and the kerb, and improved kerb insulation (30mm). I.e. a 30% improvement in thermal efficiency compared with a standard unit. Urc = 1.7 W/m².K

iSO+ range

5. **Painting**
   The inside of the kerb and security bars are supplied already painted: all RAL colours available on request.

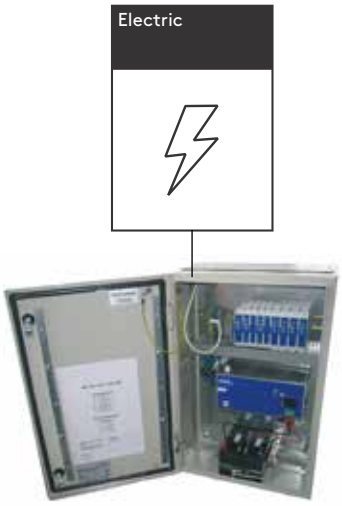
Specially for Renovation

Renovation set for 160° opening system

The steel renovation set upstand for smoke exhaust vents, CE and NF-certified, with a 160° opening, is designed for renovation and compliance retrofit work.

Electric ventilation control panel

The 160° electric ventilation function is ensured by the unit without modification. However, the electric control panel must be equipped with ventilation control buttons. Please consult your Kingspan Light + Air sales representative or our website for more information.



Kingspan Light + Air electric control panel for smoke exhaust vent and natural ventilation

Ecoradio

The electric ventilation of your opening system is easily controlled by a radio remote control and receiver.

Types of glazing

1. **MWPC lid**
   Our choice in multiwall polycarbonate (MWPC).
   Other characteristics on request.

2. **Polyester lid and dome**
   Completely opaque lid with black interior to avoid any light reflection.
   It is suitable for use on sites where overhead lighting is to be avoided: cellar, chemical sites, cinemas, etc. Also for sites exposed to aggressive chemical products.
   Thickness: 25mm. Light transmission: 0%.
   Thermal transmittance coefficient:
   U = 0.8 W/m².K.

3. **Aluminium lid**
   This lid has the best fire rating. Thickness: 50mm.
   Light transmission: 0%.
   Thermal transmittance coefficient:
   U = 0.8 W/m².K. Fire rating: A2 – s1, d0 (M0).
   Not combustible.

4. **Sound-proofing**
   Insulated aluminium lid 50mm thick. According to CSTB tests, 29 dB Rw acoustic reduction.

5. **PMMA dome**
   Polymethylmethacrylate dome. Single or double wall.
   Fire rating: E (M4).

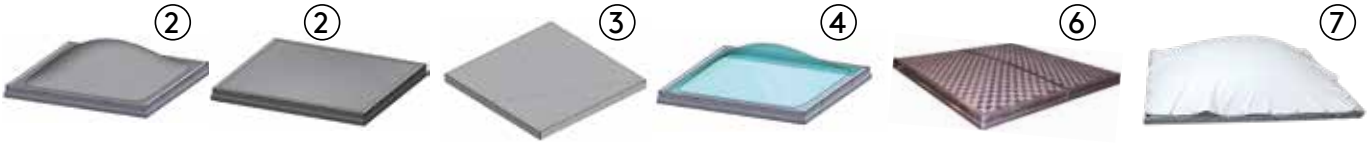
Polycarbonate Version	Thickness	Number of walls
Opalescent	10 mm	4
	16 mm	5
	16 mm	7
	32 mm	5
Translucent	10 mm	4
	16 mm	5
	16 mm	7
	32 mm	5
Heat reduction	10 mm	4
	16 mm	5
	16 mm	7
	32 mm	5
Grey opaque	10 mm	4
	16 mm	7

For any other requirements, please contact us.

Solar protection

6. **Ecosun solar protection**
   The Ecosun solar protection provides a sustainable and economical solution to the problem of overheating in buildings. It is a high performance aluminium system, combined with the multiwall polycarbonate glazing in our rooflights. CSTB tests show that the energy transmission factor is only 15%.

7. **Detachable external sun screens**
   Made to measure tarpaulin, PVC coated for a longer lifetime, with strengthened edges and eyelets.
   These screens are delivered ready to be installed, and are secured using a bungee cord threaded through the eyelets.



Kingspan Light + Air at your service:

Kingspan Light + Air is a manufacturer as well as a service provider with a network of service engineers and in-house CFD and fire engineering expertise. Proper, preventative, pre-emptive maintenance of Smoke & Heat Exhaust Systems undertaken by qualified specialists will not only ensure the highest levels of safety and security but also mean savings in time and money.

The comfort of a partner who takes care of everything: ask your local representative for more information about the services available in your country.

Certifications

INTERNATIONAL

Kingspan Light + Air
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www.kingspanlightandairinternational.com

For the product offering in other markets please contact your local sales representative or visit www.kingspanlightandairinternational.com

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