Mardome Smoke Vent

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Datasheet

Product Description
Brett Martin Daylight Systems Mardome Smoke Vents are individual polycarbonate dome rooflights intended for installation on flat roofs of all modern building types to provide natural smoke and heat exhaust ventilation and comfort ventilation.

Mardome Smoke Vents are designed and manufactured under an ISO9001 approved quality system. These products are fully tested and certified in accordance with EN12101-2 : 2003.

Design Features
- Design fully tested and certified in accordance with EN12101-2 : 2003.
- Factory fitted 24V electrical actuator opens up to 140 degrees in less than 60 seconds.
- Provides smoke and comfort ventilation.
- Contemporary low rise profile (dome and pyramid options).
- Constant separation of glazing skins across full width of dome including fixing flange on part L compliant triple skin glazing options. This avoids cold spots and minimises the risk of condensation.
- Options to satisfy requirements for light transmission, and thermal performance.
- Optional accessories include wind deflectors for improved aerodynamic area, and control panel system.
- Suitable for flat roof applications with a pitch of typically 0°-15° – speak to technical for pitches greater than this.

Appearance
Mardome Smoke Vent Rooflights have clean, white interior surfaces with a central or offset internal actuator. The unobtrusive external appearance also complements the surrounding environment. The low profile dome improves the aesthetics and also the clarity of light.

Composition
The outer dome of Mardome Smoke Vent is manufactured from 3mm impact resistant Marlon FSX polycarbonate sheet which is co-extruded with a UV protective coating to both sides. The inner domes are manufactured from 2mm impact resistant Marlon FS polycarbonate sheeting for double and triple skin options. The kerb and hinge frames are manufactured from Lead & Cadmium free un-plasticised PVC rigid multi-wall extruded profile. Internal finish of all framework is gloss white. The 300mm sloped kerb is lined with sheet metal in white finish. The actuators are all zinc plated steel.

The polycarbonate, PVC-U, steel and aluminium which comprise the product can be recycled at the end of useful product life.

Durability
Mardome Smoke Vents are expected to remain fit for purpose in normal industrial conditions for a period of 20 years (with a warranty available providing a 10 year guarantee) i.e. they will not become perforated, lose significant structural integrity, or distort to the extent of losing weather-tightness. The available warranty also guarantees:
- Polycarbonate used in Mardome rooflights against loss of light transmission, discolouration or loss of impact strength for 10 years.
- Electrical actuators (where present), for a period of 1 year (actuators have a design life of at least 10,000 cycles).

Safety Requirements and CDM
Mardome Smoke Vents achieve Class B non-fragility to ACR[M]001 when new and fully installed in accordance with Brett Martin Daylight Systems' installation guides. Foot traffic on rooflights should always be avoided; impacts such as foot traffic or a falling person may cause damage which could necessitate rooflight replacement.

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Security
The design of the Mardome Smoke Vent is such that individual fixings are concealed inside security caps. Removal of these caps to gain access to the fixings is extremely difficult. In addition, polycarbonate rooflights have good resistance to impact, making breakage very difficult.

Fire Ratings
Building Regulations Approved Document B: Fire Safety (volume 1 for dwellings and volume 2 for buildings other than dwellings) sets out the fire safety rules for buildings, which can be met by achieving specific European Class reaction to fire ratings to the relevant standard EN 13501-1.

Section B2 (volumes 1 and 2) concerns internal fire spread and defines the classification of linings dependant on building type and size:

	Volume 1 - dwellings (see paragraph 4.1 & table 4.1)	**Volume 2 - non dwellings** (see paragraph 6.1 and table 6.1)
Classification	**Location**	**Location**
D-s3,d2	Small rooms max floor area 4m^2 Garages (as part of dwelling) max floor area 40m^2	Small room in non-residential accommodation max 30m^2
C-s3,d2	Other rooms (including garages) Circulation spaces within a dwelling	Other rooms (including garages)
B-s3,d2	Other circulation spaces (including the common areas of blocks of flats)	Other circulation spaces

Section B4 (volumes 1 and 2) concerns external fire spread and defines limitations on the roof coverings. Coverings with a designation of B_{ROOF}(t4) can be used at any distance from a relevant boundary. It also states that polycarbonate rooflights that achieve at least a class C-s3,d2 rating by test may be regarded as having a B_{ROOF}(t4) classification (see: volume 1 – paragraph 12.7; volume 2 – paragraph 14.7)

Mardome Smoke Vent rooflights achieve a **B-s1,d0** rating when tested in accordance with EN 13501-1 and therefore can also be regarded as having the **B_{ROOF}(t4)** classification defined in section B4.

They do not have a fire resistance classification and are not appropriate for applications which require fire resistance performance to BS476 part 22.

Available Sizes & Options
- Curved dome or a pyramid profile.
- Double or triple skin glazing.
- 100mm vertical direct fix kerb (for mounting to 200mm high structural, insulated builders upstand), or 300mm sloped kerb (for mounting at roof surface level).
- Central actuator, or offset for use as an access hatch.
- Wind Deflectors for an enhanced aerodynamic performance (see table below for Free Area).

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Available Sizes & Options Cont.

Size		Smoke Vent on Structural, Insulated Builders Upstand					Smoke Vent with 300mm Kerb					Free Area# (m^2)	Current Draw (A)
		Roof Opening Area (m^2)	Aerodynamic Free Area*				Roof Opening Area (m^2)	Aerodynamic Free Area*					
			Standard		Wind Deflectors			Standard		Wind Deflectors			
Smoke Vent (mm)	Daylight (mm)		C_v	A_a/m^2	C_v	A_a/m^2		C_v	A_a/m^2	C_v	A_a/m^2		
1050 x 1050	900 x 900	0.81	0.48	0.39	0.61	0.49	1.10	0.44	0.49	0.62	0.68	0.72	4
1200 x 1050	1050 x 900	0.95	0.46	0.43	0.61	0.58	1.26	0.42	0.53	0.63	0.79	0.85	4
1200 x 1200	1050 x 1050	1.10	0.47	0.52	0.61	0.67	1.44	0.44	0.63	0.62	0.90	1.01	4
1350 x 1050	1200 x 900	1.08	0.44	0.48	0.61	0.66	1.42	0.40	0.57	0.64	0.90	0.99	4
1350 x 1200	1200 x 1050	1.26	0.45	0.57	0.61	0.77	1.62	0.42	0.68	0.63	1.02	1.16	4
1350 x 1350	1200 x 1200	1.44	0.40	0.67	0.61	0.88	1.82	0.43	0.78	0.63	1.14	1.34	6
1500 x 1050	1350 x 900	1.22	0.42	0.51	0.61	0.74	1.58	0.39	0.61	0.64	1.01	1.12	4
1500 x 1200	1350 x 1050	1.42	0.43	0.61	0.61	0.86	1.80	0.40	0.72	0.64	1.15	1.32	4
1500 x 1350	1350 x 1200	1.62	0.44	0.72	0.61	0.99	2.03	0.41	0.83	0.64	1.29	1.52	6
1500 x 1500	1350 x 1350	1.82	0.45	0.83	0.60	1.09	2.25	0.42	0.95	0.63	1.42	1.72	6
1650 x 1050	1500 x 900	1.35	0.40	0.54	0.61	0.82	1.73	0.37	0.64	0.65	1.13	1.26	4
1650 x 1200	1500 x 1050	1.58	0.41	0.65	0.61	0.96	1.98	0.38	0.75	0.65	1.28	1.48	4
1650 x 1350	1500 x 1200	1.80	0.42	0.76	0.61	1.10	2.23	0.39	0.87	0.64	1.43	1.70	6
1650 x 1500	1500 x 1350	2.03	0.38	0.76	0.60	1.22	2.48	0.37	0.92	0.64	1.58	1.92	6
1650 x 1650	1500 x 1500	2.25	0.44	0.99	0.60	1.35	2.72	0.42	1.14	0.64	1.73	2.14	6
1800 x 1050	1650 x 900	1.49	0.38	0.56	0.61	0.91	1.89	0.35	0.66	0.66	1.25	1.39	4
1800 x 1200	1650 x 1050	1.73	0.39	0.68	0.61	1.06	2.16	0.36	0.78	0.66	1.42	1.64	4
1800 x 1350	1650 x 1200	1.98	0.40	0.79	0.61	1.21	2.43	0.37	0.91	0.65	1.58	1.88	6
1800 x 1500	1650 x 1350	2.23	0.41	0.91	0.60	1.34	2.70	0.39	1.04	0.65	1.75	2.12	6
1800 x 1650	1650 x 1500	2.48	0.42	1.04	0.60	1.49	2.97	0.40	1.18	0.64	1.91	2.37	6
1800 x 1800	1650 x 1650	2.72	0.43	1.17	0.60	1.63	3.24	0.41	1.33	0.64	2.07	2.61	6

*Aerodynamic Free Area (Aa) of NSHEV in accordance with EN12101-2 : 2003 Annex B, Test Report No. 1368-CPR-T-040/2017-B
Free Area in accordance with Approved Document B (Volume 2), Appendix D5

Accessories

- **Control Panel System:** The EN12101-10:2005 approved and certified Mardome Smoke Vent Control Panel System is available in 5A and 8A options and comes with a built-in comfort switch at the front. See TB286 for more information.
- **Fire Switch:** The Mardome Fire Switch (IP40) is developed to be used together with the Mardome Smoke Vent Control Panel System. Its function is to open the Smoke Vent and activate the alarm. It comes with a breakable glass and is available in orange colour as standard.
- **Fireman's Priority Switch:** The Mardome Fireman's Priority Switch (IP40) is developed to be used together with the Mardome Smoke Vent Control Panel System. Its function is to open/close the Smoke Vent without influencing the alarm situation. It comes with a breakable glass.
- **Smoke Detector:** The Mardome Smoke Detector allows early fire detection with a visual 'release' display. It is available in white as standard.

Please contact Brett Martin Daylight Systems to discuss options.

Standard Glazing Values
Mardome Smoke Vents are available with a selection of glazing tint options depending on the required level of light transmission.

Glazing Performance							
Tint	Light Effect	Light Transmission		Shading Coefficient		Transmittance (G-Value)	
		Double Skin	Triple Skin	Double Skin	Triple Skin	Double Skin	Triple Skin
Clear	High Visibility	85%	78%	0.84	0.76	0.73	0.66
Opal	Diffused light & Solar Control	35%	32%	0.38	0.34	0.33	0.30
Patterned	Privacy	78%	72%				

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Thermal Performance
Thermal transmittance of rooflights is assessed in the horizontal plane for compliance with Part L of building regulations.

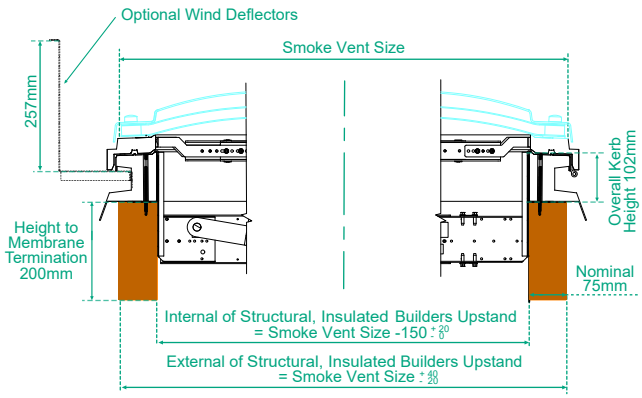
Mardome Smoke Vent rooflights have been assessed using the methodology in EN 1873:2014 and in accordance with NARM NTD2. Thermal transmittance is defined as a U_{rc} value for a rooflight with combined PVC kerb and a U_r value for a rooflight fitted to a builders upstand. Mardome Smoke Vent rooflights with triple skin glazing have a better thermal transmittance than the limiting value in Part L of 2.2 W/m²K. The thermal transmittance values (assessed horizontally) are shown below. For U_d values calculated in the vertical plane please contact Brett Martin Daylight Systems.

Rooflight Variant		Size range	Surface:area ratio	DOUBLE SKIN U_{rc} value W/(m².K)	TRIPLE SKIN U_{rc} value W/(m².K)
Fixed on Builders Upstand	(U_r)	1050 x 1050	1.42	2.46	1.86
		1800 x 1800	1.25	2.64	1.91
Fixed with 300mm Tall Kerb	($U_{rc\ 300}$)	1050 x 1050	2.46	2.14	1.79
		1800 x 1800	1.84	2.33	1.84

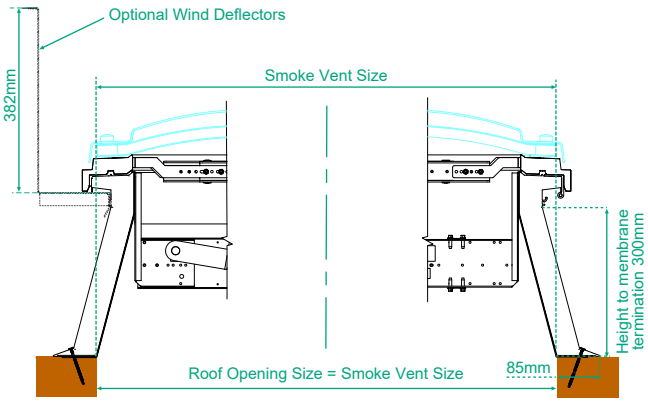
Acoustic Performance
Mardome Rooflights are independently tested for Rain Noise Penetration to BS EN 140-18: 2006.

Acoustic Performance		
Rooflight Variant	Rain Noise Penetration (LiA)	Airborne Sound Index (Rw)
Standard Double Skin Polycarbonate		20 dB
Standard Triple Skin Polycarbonate	61.8 dB	22 dB

Product Dimensions
Where Mardome Smoke Vents are required to fit onto a structural, insulated builders upstand, the minimum height of the structural, insulated upstand must be 200mm, to meet the requirements of EN12101-2. External dimensions of builders upstand to match nominal size of Smoke Vent. Internal and external upstand dimensions are critical, see diagram below.



Smoke Vent Fixed to Structural, Insulated Builders Upstand



Smoke Vent with 300mm PVC kerb

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Product Dimensions Cont.

Mardome Smoke Vents have differing heights and weights. As this value varies with rooflight size and specification, a range of values are quoted in the Product Overall Height & Weight table. For more details contact Brett Martin Daylight Systems.

Product Overall Height & Weight

Rooflight Variant	Nominal Size	Height (mm)	Weight (kg)
Smoke Vent on Structural, Insulaed Builder's Upstand	1050 x 1050	248 (321)	46.9 (50.9)
	1800 x 1800	351 (351)	82.3 (86.3)
Smoke Vent with 300mm Kerb	1050 x 1050	509 (710)	66.6 (74.7)
	1800 x 1800	612 (710)	115.6 (123.7)

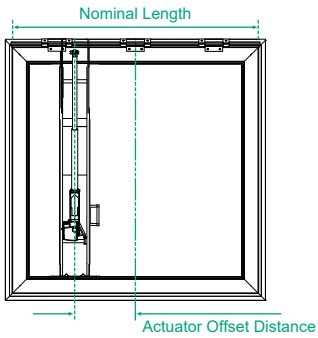
Weight based on triple skin.
Values with wind deflectors are given in brackets.

Offset Actuator Dimensions
When specified with an offset actuator for access, offset distance varies with size. The offset distances are shown in the Offset Actuator Offset Distance table.

Offset Actuator Offset Distance

Nominal Smoke Vent Length (mm)	Actuator Offset Distance (mm)
1050	275
1200	300
1350	225
1500	150
1650	75
1800	0*

* Units of length 1800 are not available with offset actuator. The space either side of the centrally mounted actuator is suitable for access



EN12101-2 : 2003 Performance
Mardome Smoke Vents have been independently tested to show that when correctly fitted in accordance with our instructions (see TB 286), they will perform in accordance with EN12101-2 : 2003 as shown in Performance Criteria Table.

Please refer to Declaration of Performance CE-SMV-001 for more details.

Certificate number - 0086 CPR 745300 (UK CA)
- 2797 CPR 745301 (CE)

Performance Criteria

Essential Characteristic	Performance / Classification	Harmonised European Standard (hEN)
Aerodynamic free area (Aa)	See details on page 2	EN12101-2 : 2003 Annex B
Reliability	Re 1000	EN12101-2 : 2003 Annex C
Snow Load	SL 500	EN12101-2 : 2003 Annex D
Low ambient temperature	T (-15)	EN12101-2 : 2003 Annex E
Wind Load (Central Actuator)	WL 1500	EN12101-2 : 2003 Annex F
Wind Load (Offset Actuator)	WL 1000	EN12101-2 : 2003 Annex F
Heat Exposure	B 300	EN12101-2 : 2003 Annex G
Reaction to Fire	F	EN12101-2 : 2003 7.5.2.1

Installation, Handling, Maintenance & Storage
Full installation details, maintenance and product care details, can be found in the relevant Technical Bulletins.

Technical Bulletins

Code	Description
TB203	Polycarbonate Dome: Product care before & after installation
TB286	Installation Mardome Smoke Vent
COSHH12	COSHH Data Sheet for Dome Rooflights - Product Safety and Handling Data Sheet

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