EN12101-2 Smoke Vent

Product Description

Brett Martin Daylight Systems Mardome Trade 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 Trade 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. For full specification see table 5 on page 4.

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.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.

Available Options

- Curved dome or a pyramid profile.
- Double or triple skin glazing.
- 100mm vertical direct fix kerb (for mounting to 200mm high builders upstand), or 365mm sloped kerb (for mounting at roof surface level).
- Wind Deflectors for an enhanced aerodynamic performance.
- Control Panel System, Fire Switch, Fireman's Priority Switch and Smoke Detector (see page 3 - *Product Accessories* for details.

For full range of Cv values and Aerodynamic Free ventilation area for each size, please see Table 1 on page 2.

Safety Requirements/CDM Regulations

Mardome Trade Smoke Vents achieve Class B non-fragility to ACR[M]001 when new and fully installed in accordance with Brett Martin Daylight System's installation guides *(See TB 286).*
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.
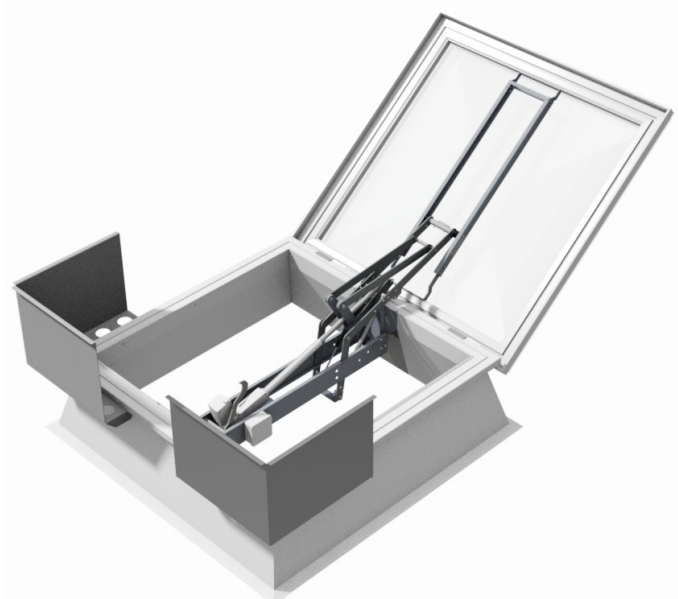
Fire Rating

Building Regulations Approved Document B (2006 edition, amended 2007) sets out the rules for fire safety of buildings, which can be met by achieving specific fire ratings to either British (BS476) or European (BS EN 13501) test standards.

Brett Martin Daylight Systems Mardome Trade Smoke Vents achieve Class B-s1,d0 to BS EN 13501: Part 1. Building Regulations state they can therefore be regarded as $B_{ROOF}(t4)$.

Mardome Trade Smoke Vent on 100mm vertical Direct Fix kerb

Mardome Trade Smoke Vent on 365mm sloped kerb - with Wind Deflectors

Durability

Mardome Trade Smoke Vents are guaranteed to remain fit for purpose in normal industrial conditions for a period of 10 years i.e. they will not become perforated, lose significant structural integrity, or distort to the extent of losing weather-tightness. In addition, the polycarbonate used in Mardome Rooflights is guaranteed against loss of light transmission, discolouration or loss of impact strength for 10 years.

Electrical actuators are guaranteed for a period of 1 year unless otherwise agreed. Actuators have a design life of at least 10,000 comfort opening cycles and 1000 fire opening cycles.

Security

Please refer to BBA Certificate 06/4385, Section 14.

The design of the Mardome Trade 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.

Composition

The outer dome of Mardome Trade Smoke Vent is manufactured from 3mm impact resistant Marlon FSX Longlife polycarbonate sheet which is co-extruded with a UV protective coating to both sides. The inner domes are manufactured from 2mm impact resistant Marlon FSX Longlife 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 365mm sloped kerb is lined with sheet metal in white finish. The actuators are all mill finish in zinc plated steel.

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

Table 1
Available Sizes and Aerodynamic Free Area (A_a)

Smoke Vent Size (mm)	Daylight Size (mm)	Mardome Smoke Vent on 100mm Vertical Direct Fix Kerb					Mardome Smoke Vent on 365mm Sloped Kerb					Free Area# (m^2)
		Roof opening area (m^2)	Standard		With Wind Deflectors		Roof opening area (m^2)	Standard		With Wind Deflectors		
			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**
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**
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**
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**
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**
1350 x 1350	1200 x 1200	1.44	0.4	**0.67**	0.61	**0.88**	1.82	0.43	**0.78**	0.63	**1.14**	**1.34**
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**
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**
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**
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**
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**
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**
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**
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**
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**
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**
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**
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**
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**
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**
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**

*Aerodynamic Free Area (A_a) 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 C

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Smoke Vent Rooflights

Glazing Options & Transmission Values

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

Table 2

Tint	Lighting Effect	Light Transmission (%) DIN 5036	
		Double Skin	Triple Skin
Clear	High Visibility	85%	78%
Textured	Privacy	78%	72%
Bronze	Solar Control	39%	36%
Opal	Diffused Light & Solar Control	35%	32%

Total transmittance (g Value)		
Tint	Double Skin	Triple Skin
Clear	0.73	0.66
Opal	0.33	0.30

Overall Shading Coefficient		
Tint	Double Skin	Triple Skin
Clear	0.84	0.76
Opal	0.38	0.34

Thermal Performance

The thermal transmittance of Mardome Rooflights is measured by the Guarded Hot Box method according to BS EN ISO 12567-2: 2005.

Part L Building Regulations require a U-value of at least 2.2W/m²K: Brett Martin Daylight Systems recommend the use of at least triple skin rooflights in all applications.
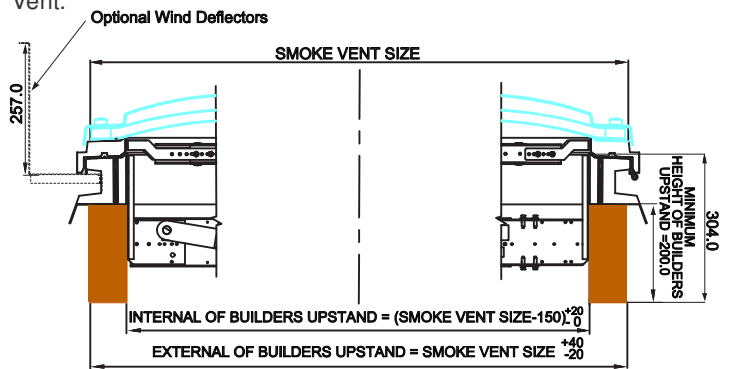
Mardome Trade Smoke Vent (triple skin) is designed for optimal thermal performance and resistance to condensation. This provides full insulation across the whole width of the rooflight (including the fixing flange), eliminating any cold spots associated with traditional methods of dome rooflight construction and giving a much higher f-factor. The elimination of cold spots and the highly insulated frame means that these areas are even more resistant to condensation than the main areas of glazing, where performance is governed by U-value.
See BBA certificate 06/4385 section 8 "Condensation risk" for further details.

The performance is declared as the U_d-value (defined in accordance with NARM NTD2). This performance, and the centre pane U-value of the glazing system, is shown in Table 3.
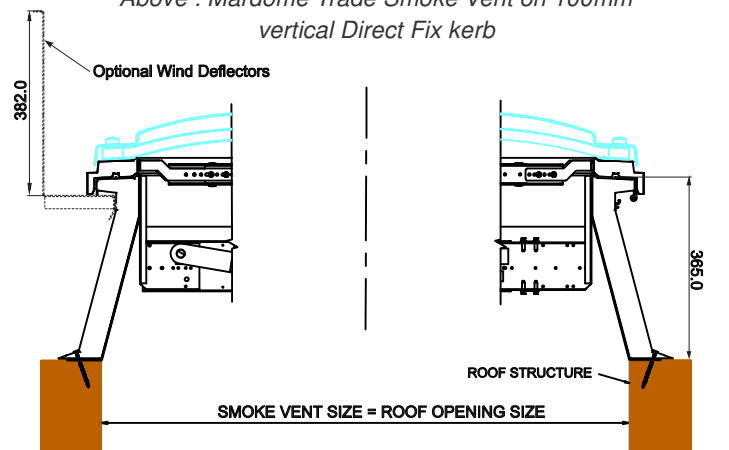
Table 3	Mardome Thermal Efficiency		
	Centre Pane U-Value (W/m²K)	U_d-Value (W/m²K)	
		1050x1050mm	1800x1800mm
Double Skin Polycarbonate	2.70	1.80	2.04
Triple Skin Polycarbonate	1.80	1.37	1.49

Product Accessories

Control Panel System:
See Technical Bulletin 286 for more information.
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.

Fire Switch:
The Mardome Fire Switch (IP40) is developed to be used together with the Mardome Trade 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 Trade 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.

General Product Dimensions

Where Mardome Trade Smoke Vents are required to fit onto a builders upstand, the minimum height of the upstand must be 200mm, external dimensions to match nominal size of Smoke Vent.

Above : Mardome Trade Smoke Vent on 100mm vertical Direct Fix kerb

Above : Mardome Trade Smoke Vent on 365mm sloped kerb

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Height and width of Mardome Trade Smoke Vents vary with size, a range of values is quoted below. For more details contact Brett Martin Daylight Systems.

Table 4 Product Overall Height & Weight				
Nominal Smoke Vent size (mm)	on 100mm vertical kerb		on 365mm sloped kerb	
	H (mm)	W (Kg)	H (mm)	W (Kg)
Min 1050 x1050	248 (321)	45.2 (49.2)	509 (710)	64.5 (72.6)
Max 1800 x 1800	351 (351)	78.6 (82.6)	612 (710)	111.2 (119.3)

Note: Weights based on triple skin dome.
Values with wind deflectors are given in brackets.

EN12101-2 : 2003 Performance

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

Mardome Trade 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 Table 5.

Table 5		
ESSENTIAL CHARACTERISTICS	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	WL 1500	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

Test Certificate number - 0402-CPR-SC1063-17

Installation, Handling, Maintenance & Storage

Full installation details, maintenance and product care details, can be found in the relevant Technical Bulletins.

Table 6 Technical Bulletins	
Technical Bulletin	Technical Bulletin Description
TB 286	Installation for Mardome Trade Smoke Vent
COSHH12	COSHH Data Sheet for Dome Rooflights - Product Safety and Handling Data Sheet
TB 203	Polycarbonate Dome: Product care before & after installation