

Dome Rooflight

TB200 Dome Rooflight Datasheet

Product Description

Skylights1 Daylight Systems Dome Rooflights are individual polycarbonate dome rooflights with a PVC-U multi-walled kerb intended for installation on flat roofs of all modern building types to provide natural light (and ventilation where specified).

Dome Rooflights are designed and manufactured under an ISO9001 approved quality system. Product options which will help to satisfy differing requirements for light transmission, thermal performance, ventilation and acoustics are available.

Skylights1 Daylight Systems Dome Rooflights have full BBA approval and are certified under 06/4385, and are also available with optional Secured by Design accreditation.



Design Features

- Contemporary low rise profile (dome and pyramid options).
- U-value to as low as 1.01 W/m.K.
- Constant separation of glazing skins across full width of dome including fixing flange on triple skin and better glazing options. This avoids cold spots and minimises the risk of condensation.
- Components of powered opening domes (230V) are hidden for a unobstructed light well.
- Options to satisfy requirements for light transmission, thermal performance, ventilation and acoustics.
- For ease of installation the tapered kerb foot does not require timber fillets and provides a clean external finish for all roofing types.
- Secured by Design option.
- Suitable for flat roof applications with a pitch of typically 0°-15° – speak to technical for pitches greater than this.

Product Options Summary

<p>Variants</p> <ul style="list-style-type: none"> - Fixed - Fixed Secured by Design - Manual opening - Powered with wall-switch (chain actuator) - Optional Remote Controlled Operation - Optional Rain Sensor Operation - Access Hatch 	<p>Optional Ventilation</p> <ul style="list-style-type: none"> - Manual Hit-and-Miss - Automatic Humidity Controlled - Powered extraction 		<p>Glazing Shape</p> <ul style="list-style-type: none"> - Dome - Pyramid <p>Glazing Tint</p> <ul style="list-style-type: none"> - Clear - Patterned - Opal <p>Glazing Type</p> <ul style="list-style-type: none"> - Single Skin Polycarbonate - Double Skin Polycarbonate - Triple Skin Polycarbonate - Quad Skin Polycarbonate - Polycarbonate Dome over: <ul style="list-style-type: none"> - Structured Polycarbonate - Argon Filled Glass
<p>Kerb</p>		<p>Size (roof opening) See table on page 3</p>	<p>Optional Security Grille</p>
<p>Tall 300mm PVCu* Standard 150mm PVCu* - kerb type varies with specification</p>		<p>Structural, Insulated Builders upstand - Direct Fix kerb supplied for vented and opening variants</p>	

*Acoustic Pack available for noise reduction

Dome Rooflight

TB200 Dome Rooflight Datasheet

Appearance

Dome Rooflights provide a clean interior, and unobtrusive external appearance and therefore complement the surrounding environment. The low profile dome improves the aesthetics and also the clarity of light, whilst the PVC-U kerb can conceal actuators and wiring for an obstruction free lightwell.

Composition

The outer dome of Dome Rooflight 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, triple and quad skin options. The kerb and hinge frames are manufactured from Lead & Cadmium free un-plasticised PVC rigid multi-wall extruded profile with internal gloss white finish. The polycarbonate, PVC-U and aluminium which comprise the product can be recycled at the end of useful product life.

Durability

Dome Rooflights 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 Dome 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).
- Insulated glass (where present) used in the construction of the rooflight for 5 years.

Security

The design of the Dome Rooflight rooflight 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. The Skylights1 security grill option is designed to fit beneath the foot of the kerb to provide additional security where required. It is powder coated in a white finish, and available in all sizes.

Fixed variants of Dome Rooflight (SBD option) are accredited by Secured by Design (SBD) based on independently assessed testing in accordance with PAS24:2016.



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

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 dependent 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)

Dome Rooflight 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.

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Dome Rooflight

TB200 Dome Rooflights Datasheet

Safety Requirements and CDM

Dome Rooflights achieve Class B non-fragility to ACR[M]001 when new and fully installed in accordance with Skylights1 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.

Available Sizes & Opening Options

Dome Rooflights are available in a domed or a pyramid profile in a range of sizes listed in the table below.

Dome Rooflights can also be opened on concealed hinges using actuators (manual or powered) to create a large ventilation area, or with gas struts to provide an access hatch. Opening rooflights can contribute to room ventilation as required by Part F of the Building Regulations. Available sizes for opening units are shown in the table below. Please note that restrictions on opening units apply due to wind loading and weight, and powered opening rooflights are not suitable for use in conditions at risk of high humidity (e.g. domestic bathrooms).

Square Size		Rectangular Size									
600 x 600	450 x 450	600 x 750	450 x 600	750 x 1650	600 x 1500	1050 x 1500	900 x 1350	1200 x 2400	900 x 2100	1500 x 2400	1350 x 2250
750 x 750	600 x 600	600 x 900	450 x 750	750 x 1800	600 x 1650	1050 x 1650	900 x 1500	1350 x 1500	1200 x 1350	1650 x 1800	1500 x 1650
900 x 900	750 x 750	600 x 1050	450 x 900	750 x 1950	600 x 1800	1050 x 1800	900 x 1650	1350 x 1650	1200 x 1500	1650 x 1950	1500 x 1800
1050 x 1050	900 x 900	600 x 1200	450 x 1050	900 x 1050	750 x 900	1050 x 1950	900 x 1800	1350 x 1800	1200 x 1650	1650 x 2100	1500 x 1950
1200 x 1200	1050 x 1050	600 x 1350	450 x 1200	900 x 1200	750 x 1050	1050 x 2100	900 x 1950	1350 x 1950	1200 x 1800	1650 x 2250	1500 x 2100
1350 x 1350	1200 x 1200	600 x 1500	450 x 1350	900 x 1350	750 x 1200	1050 x 2250	900 x 2100	1350 x 2100	1200 x 1950	1650 x 2400	1500 x 2250
1500 x 1500	1350 x 1350	600 x 1650	450 x 1500	900 x 1500	750 x 1350	1200 x 1350	900 x 1050	1350 x 2250	1200 x 2100	1800 x 1950	1650 x 1800
1650 x 1650	1500 x 1500	600 x 1800	450 x 1650	900 x 1650	750 x 1500	1200 x 1500	900 x 1200	1350 x 2400	1200 x 2250	1800 x 2100	1650 x 1950
1800 x 1800	1650 x 1650	750 x 900	600 x 750	900 x 1800	750 x 1650	1200 x 1650	900 x 1350	1500 x 1650	1350 x 1500	1800 x 2250	1650 x 2100
		750 x 1050	600 x 900	900 x 1950	750 x 1800	1200 x 1800	900 x 1500	1500 x 1800	1350 x 1650	1800 x 2400	1650 x 2250
Rooflight size		750 x 1200	600 x 1050	900 x 2100	750 x 1950	1200 x 1950	900 x 1650	1500 x 1950	1350 x 1800		
Daylight area		750 x 1350	600 x 1200	1050 x 1200	900 x 1050	1200 x 2100	900 x 1800	1500 x 2100	1350 x 1950		
		750 x 1500	600 x 1350	1050 x 1350	900 x 1200	1200 x 2250	900 x 1950	1500 x 2250	1350 x 2100		

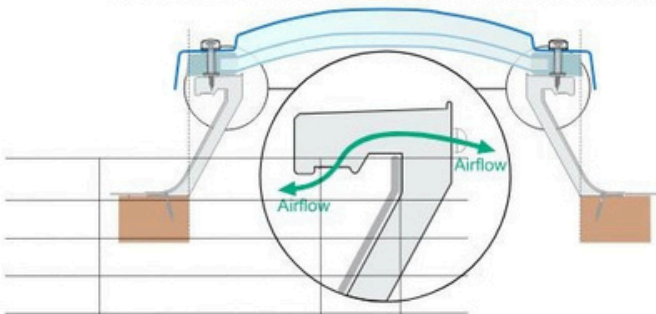
Available Sizes Key				
Key	Fixed	Powered Opening (PCD,PCR & PCS)	Manual Opening	Access Hatch
Green	✓	✓	✓	✓
Blue	✓	✓	✓	
Yellow	✓	✓		
	✓			

*Not available with dome over glass

Opening Options			
Opening Type	Description	Geometric Ventilation Area	
		Min	Max
Manual Opening (MLD)	Hinged opening rooflight which is operated manually via a worm gear drive with an extension pole	0.300 m ²	0.714 m ²
Powered Opening (PCD/PCR)	Powered hinged opening rooflight with completely concealed operating mechanism. Opened and closed using a control switch or remote control	0.210 m ²	1.176 m ²
Sensor Controlled Powered Opening (PCS)	Powered hinged opening rooflight which includes rain sensors for automatic operation	0.210 m ²	1.176 m ²
Access Hatch*	To gain entry to a roof. Unit held open by two gas struts	Opening Angle of 69.0° to 84.0°	

Ventilation

Ventilation can help reduce humidity, and reduce risk of condensation and should be considered in any areas of high humidity. Dome Rooflight kerbs may be unvented or can incorporate vents. These can either be hit-and-miss manually controlled trickle vents, automatic humidity controlled vents or high powered extraction ventilation.



Ventilation Options		
Ventilation Type	Description	Rating
Trickle Ventilation (Hit-and-Miss)	Manually operated trickle ventilation provides background ventilation to the interior	Provides 8400mm ² Equivalent Area Ventilation*
Automatic Humidity Controlled Trickle Ventilation	Humidity controlled trickle ventilation is sensor controlled to open and close in response to room humidity levels	Provides 7822mm ² Equivalent Area Ventilation and provides superior protection against condensation*
'Powervent' high extraction ventilation	Kerb mounted, electrically powered fans providing excellent extraction rates for a variety of applications	Ventilation levels between 55-880 m ³ /hr depending on number of fans and rooflight size**

* Trickle ventilation may be restricted on some Access Hatch options.

**1-4 extraction fans available - maximum quantity dependent on rooflight size.

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Dome Rooflights

TB200
Dome Rooflight
Datasheet

Security Grille Option

Designed to fit beneath the foot of the kerb to provide additional security where required. It is powder coated in a white finish, and available in all sizes where a PVC kerb is an option.

Standard Glazing Values

Dome Rooflights 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	Quad Skin	Double Skin	Triple Skin	Quad Skin	Double Skin	Triple Skin	Quad Skin
Clear	High Visibility	85%	78%	72%	0.84	0.76	0.70	0.73	0.66	0.61
Opal	Diffused light & Solar Control	35%	32%	30%	0.38	0.34	0.32	0.33	0.30	0.28
Patterned	Privacy	78%	72%	66%						

Thermal Performance

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

Dome rooflights have been assessed using the methodology in EN 1873:2014 and in accordance with NARM NTD2. Thermal transmittance is defined as a U_{ic} value for a rooflight with combined PVC kerb and a U_i value for a rooflight fitted to a builders upstand. Dome rooflights with triple skin, quad skin, dome over glass or dome over structured glazing have a better thermal transmittance than the limiting value in Part L of 2.2 W/m^2K . 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	TRIPLE SKIN	QUAD SKIN	DOME OVER GLASS	DOME OVER STRUCTURED
				U_i / U_{ic} value	U_i / U_{ic} value	U_i / U_{ic} value	U_i / U_{ic} value	U_i / U_{ic} value
				W/(m ² .K)	W/(m ² .K)	W/(m ² .K)	W/(m ² .K)	W/(m ² .K)
Unvented, Fixed Rooflight on Builders Upstand	(U _i)	600 x 600	1.11	1.94	1.26	1.01	1.04	1.39
		1800 x 2400	1.03	2.66	1.77	1.35	1.25	1.37
Vented or Opening Rooflight on Builders Upstand	(U _i)	600 x 600	1.72	2.24	1.79	1.63	1.66	1.88
		1800 x 2400	1.22	2.67	1.93	1.56	1.48	1.58
Rooflight with standard 150mm Sloped Kerb	(U _{ic,150})	600 x 600	2.52	2.14	1.84	1.73	1.75	1.90
		1800 x 2400	1.44	2.56	1.92	1.62	1.55	1.63
Rooflight with standard 300mm Tall Kerb	(U _{ic,300})	600 x 600	3.59	1.96	1.75	1.67	1.68	1.79
		1800 x 2400	1.74	2.38	1.85	1.60	1.54	1.61

Dome Rooflight (triple skin and better insulated variants) are 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. See BBA certificate 06/4385, product sheet 3, section 8 "Condensation risk" for further details.

Acoustic Performance

For applications where acoustic performance is particularly important the Dome rooflight acoustic pack is an option. The acoustic pack is not available with opening or vented products, but is offered with all other variants and has a positive contribution on acoustic attenuation levels and rain penetration noise and can assist in achieving BREEAM credits. For a triple skin polycarbonate glazed Dome Rooflight the addition of an acoustic pack reduces the rain noise penetration by $LiA=15dB$, (when every 10dB represents a halving of noise levels).

An alternative to the acoustic pack is to specify a dome with the argon filled double glazed glass inner option. Whilst not as effective as the Acoustic Pack, this option is available in conjunction with ventilation, and in some opening options, if required. 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 Single Skin Polycarbonate		12 dB
Standard Double Skin Polycarbonate		20 dB
Standard Triple Skin Polycarbonate	61.8 dB	22 dB
Argon Filled Glass Inner Glazing	53.9 dB	
Triple Skin Polycarbonate with acoustic pack*	46.7 dB	

10dB reduction equates to a drop of 50% in the sound level.
*Acoustic pack is only available with fixed, unventilated products.

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Dome Rooflight

TB200 Dome Rooflight Datasheet

Wind and Snow Loads

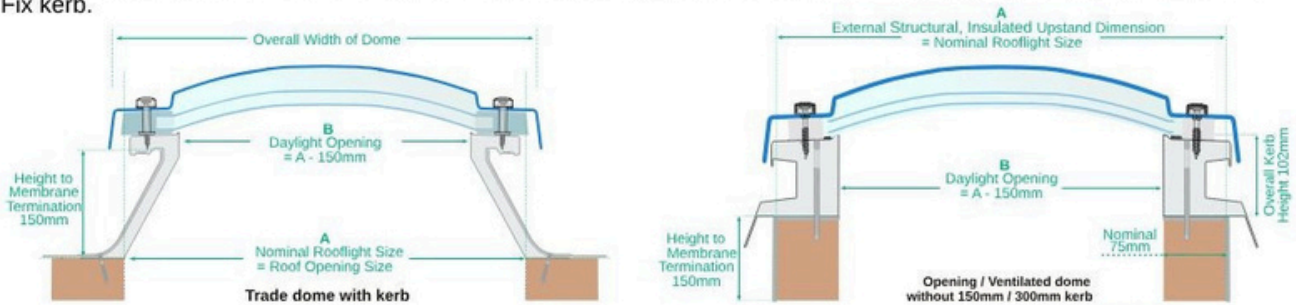
Dome Rooflight have been independently tested to show that when correctly fitted in accordance with our instructions, they will resist wind loads calculated in accordance with BS EN 1991-1-4: 2005, and imposed loads in accordance with BS EN 1873: 2005.

Resistance to Snow & Wind Loads			
Rooflight Variant	Dimensions (mm)	Snow Load (N.m ²)	Wind Load (N.m ²)
Domed	1200 x 2400	1125	1500
Pyramid	1500 x 1500	1750	3000

Please refer to BBA Certificate 06/4385, Product Sheet 3, Section 9 for more info.

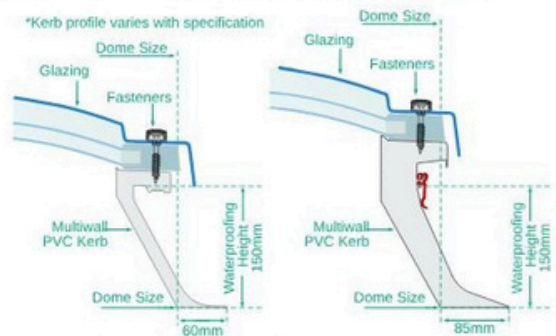
Product Dimensions

Dome Rooflights offer differing kerb options depending on project specification. The Dome 150mm or 300mm Kerb is offered for use when there is no pre-existing structural, insulated upstand, or when over-sailing the current upstand is preferred. When the rooflight is to be fitted to an existing structural, insulated upstand, unventilated Trade rooflights are to be fitted directly, whilst ventilated or opening Trade rooflights are supplied complete with a Direct Fix kerb.



Product Overall Height & Weight							
Rooflight Variant	Nominal Size	Direct Fix Kerb		150mm Kerb		300mm Kerb	
		H (mm)	W (kg)	H (mm)	W (kg)	H (mm)	W (kg)
Fixed Trade Dome	600 x 600	197	7.1	311	10.9	461	13.3
	2400 x 1800	313	62.9	427	71.9	577	79.7
Opening Trade Dome	600 x 600	232	12.1	346	15.0	496	17.4
	1800 x 1800	348	54.1	462	61.6	612	68.3

Note: Weights based on triple skin dome.
Not all product options available - contact Brett Martin Daylight Systems for advice



Dome Rooflight products have differing height and weight. As this value varies with rooflight size and specification, a range of values are quoted in the table above. For more details contact Skylights1 Daylight Systems.

Installation, Handling, Maintenance & Storage

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

Technical Bulletins	
Code	Description
TB186	Installation for Dome Rooflight on 150mm, 300mm AND Direct Fix kerb
TB188	Installation for Dome Rooflight with Manual (MLD and Access Hatch) Opening Options
TB189	Installation for Dome Rooflight with PCD/PCR/PCS Powered Opening Options
TB193	Installation Dome Rooflight on 150mm and 300mm Kerb with acoustic pack
TB194	Installation Dome Rain Sensor PCS Units Only
TB196	Installation Dome Rooflight Powervent
TB203	Polycarbonate Dome: Product care before & after installation
TB287	Installation Dome Security Grille
TB404	Installation Dome Rooflight Secured by Design
COSHH12	COSHH Data Sheet for Dome Rooflights - Product Safety and Handling Data Sheet