ROOF VENTILATION TERMINALS
Passivent offers a range of roof-mounted terminals, primarily for natural ventilation applications in commercial and larger residential buildings.

Airstract terminals are also available as combined daylighting and ventilation units in the form of Litevent and Sunstract (see pages 16 - 19).

Terminal sizing
Passivent is able to provide sizing of roof terminal products for your application using advanced airflow calculation software developed for Passivent and only available to Passivent customers.

Controls
There is a range of control modules for Airstract and Airscoop terminals, ranging from simple switches to intelligent control systems incorporating carbon dioxide sensors, weather stations, and BACnet capability.

The modulating actuators within the Passivent roof ventilation terminals are virtually silent in operation.
AIRSTRACT TERMINALS

Passivent Airstract is a range of roof-mounted natural ventilation terminals which combine low airflow resistance with high airflow capacity and excellent weatherability.

Airstract terminals can be used as part of a sustainable, low-energy, natural ventilation strategy to provide an exhaust outlet for used air. No power is consumed as natural forces move the air.

Airstract applications
Used for passive stack ventilation (PSV) applications in conjunction with Aircool® façade ventilators, they can ventilate deep plan spaces and provide night cooling. They can also be used for multiple extract applications and mechanical extract outlets.

Other options
Aluminium Airstract terminals, available in a larger range of sizes.
Airstract terminals with energy efficient mechanical assistance.

HYBRID PLUS AIRSTRACT TERMINALS

Passivent Hybrid Plus Airstract is a range of roof-mounted terminals which provide a range of additional options to the standard Airstract with an innovative air tempering and mixing unit utilising a single energy-efficient, low-power sweep fan (when required).

As well as in mixing mode, in unusual building occupancy events such as the generation of excessive CO₂ levels or excessive heat gains such as occasional high density occupation, the fan can also be activated to purge the space more rapidly than a passive ventilation system will allow. Alternatively it can still operate in passive stack mode still providing low-level resistance to airflow.

Hybrid Plus Airstract applications
Used for a range of ventilation applications particularly on upper floors of buildings where direct perimeter ventilation is limited or undesirable. Also suitable for large open buildings such as sports halls and auditoriums and can also be used for secure and weatherproof night cooling.

AIRSCOOP TERMINALS

Passivent Airscoop is a range of roof-mounted natural ventilation terminals which provide top-down or displacement ventilation using wind power alone.

Each unit is divided into four separate ducts internally so that wind from any direction is channelled down through the windward chamber(s).

This cooler, denser air flows down into the building, whilst warmer (and therefore lighter) air from inside is displaced upwards and out via the leeward chambers.

Airscoop applications
Particularly designed for large or deep-plan commercial buildings of up to two storeys, where direct perimeter ventilation is limited or undesirable.
Passivent Airstract and Airscoop terminals are available in a variety of shapes, finishes, colours and lid options. Our in-house manufacturing capability allows the designer flexibility to integrate terminals within a project or to emphasise the sustainable design of the building.

**Modern (square and rectangular)**
Modern terminals combine functionality and clean lines in a simple contemporary look. Alternatively they can be contrasted with a range of top designs to create a traditional or bespoke appearance. Suitable for all roof types from flat to 45° pitch.

**Traditional (square)**
Traditional terminals feature a decorative top making them suitable for long established buildings. Suitable for all roofs from flat to 45° pitch.

**Bespoke**
Bespoke designs are available to complement the roof finish and accentuate the roof design without affecting the performance or weatherability of the terminals.

**Circular**
Circular terminals offer a dramatic design alternative, suitable for all roofs from flat to 30° roof pitch. They use standard square base units for ease of flashing and to ensure weather integrity.

Circular terminals feature integral wind deflection posts to maximise their aerodynamic performance and ventilation effectiveness.

Wind can pass around smooth cylindrical shapes relatively uninterruptled, leading to a low ventilation effectiveness. Passivent terminals have vertical airflow deflector posts which project slightly from the louvres so as to disrupt the airflow around the terminal and cause early flow separation. This helps to increase the negative pressure on the leeward side, drawing more air through the louvres and thus improving the overall ventilation performance of the terminal.
PERFORMANCE

**Performance data**
Data from independent testing is available on request.

**Coefficients of discharge**
*Based on double-bank louvres with base dampers*
- Airsttract square/rectangular 0.57
- Hybrid Plus Airstrack 0.57
- Airstrack circular 0.54
- Airscoop not applicable

**Wind resistance**
Resistant to continuous wind loads at 51 m/s, demonstrated by independent BRE tests.

**Airtightness**
Approx 9.7 m³/hr/m² at 50 Pa.

**Fire performance**
The specially developed grade of fire-retardant ABS (or the alternative aluminium) has an EXT SAA classification, independently tested to BS 476: Part 3.

**Weather resistance**
External louvres have been independently tested at BSRIA to BS EN 13030: 2001 ‘Performance testing of louvres subjected to simulated rain’.

<table>
<thead>
<tr>
<th>Terminal and louvre type</th>
<th>Effectiveness to BS EN ISO 13030: 2001 at given inlet velocity airflow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airstrack, Hybrid Plus Airstrack and Airscoop terminals</strong>, incorporating patented double bank louvres</td>
<td></td>
</tr>
<tr>
<td>Class A 100%</td>
<td>at 0.00 m/s</td>
</tr>
<tr>
<td>Class A 100%</td>
<td>at 0.50 m/s</td>
</tr>
<tr>
<td>Class A 99.71%</td>
<td>at 1.00 m/s</td>
</tr>
<tr>
<td>Class A 99.06%</td>
<td>at 1.50 m/s</td>
</tr>
<tr>
<td><strong>Aluminium Airstrack</strong>, incorporating patented double bank louvres</td>
<td></td>
</tr>
<tr>
<td>Class A 100%</td>
<td>at 0.00 m/s</td>
</tr>
<tr>
<td>Class A 100%</td>
<td>at 0.50 m/s</td>
</tr>
<tr>
<td>Class A 99.3%</td>
<td>at 1.00 m/s</td>
</tr>
<tr>
<td>Class B 97.0%</td>
<td>at 1.50 m/s</td>
</tr>
</tbody>
</table>

**Biological resistance**
Louvres exclude most birds in compliance with BRE Digest 415. 4mm insect screen behind the louvres excludes large insects.

**Acoustic performance**
Air intakes sited at roof level generally allow in less noise.
Acoustic treatment can be applied to Airstrack and Airscoop systems to deliver planned acoustic attenuation performance, based on independent testing by Salford University.
For example:
- Airscoop Basic systems up to 32 dB (Dn,e,w).
- Airscoop DAD systems up to 34 dB (Dn,e,w).
- Airscoop RAD ducted systems up to 42 dB (Dn,e,w).

**Durability and sustainability**
External components are generally manufactured from aluminium or fire-retardant ABS, a robust and durable material proven in use on other exposed roofing products and in the automotive industry.
Airstrack and Airscoop base units are produced from marine grade plywood sourced from managed forests.

**Surface finish and colours**
All exposed ABS surfaces are treated with UV-stable polymeric resin. Aluminium terminals are powder coated. All terminals can be colour matched to standard BS and RAL colours used for roof coverings. Plain, metallic or textured finishes are available that will complement most roof finishes.
AIRSTRACT TERMINALS

Robust terminal with cladding and louvers manufactured from fire-retardant high-impact ABS on an aluminium frame

Unique patented double-bank louvre arrangement including insect mesh combines maximum rain rejection with good airflow performance

Base unit constructed from marine grade plywood from renewable forests with an aluminium frame to mount Airstract terminal on; can be insulated if required. Fixed to roof structure (steelwork or timber) for maximum rigidity, and made weathertight with flashings (by others) before the terminal is fitted

Drain channel

Structural support and fixing point

Brickwork or blockwork duct shown built on site but galvanised steel extension ductwork can be supplied by Passivent

BENEFITS

- Environmentally friendly energy-saving natural ventilation - no power other than natural forces of buoyancy, wind and convection is required to move the air.

- Flexible installation: Airstract terminals are suitable for use on flat and pitched roofs covered with profiled or standing seam sheeting, tiles or slates, and ‘green roofs’.

- Robust two-part construction of terminal and base unit which together provide a maintenance-free and wind-load resistant design. A One Stop Solution.

- Circular terminals are mounted on a square base to make for ease of flashing and ensure weather integrity.

- Motorised base dampers control the airflow, and are available with excellent thermal performance and airtightness levels.

Large terminals

For larger applications, bespoke Airstract terminals can be manufactured in aluminium (see Aluminium Airstract Terminal section). These provide even greater airflow performance whilst still featuring the patented double-bank louvres for maximum weather protection.
Specification clause
Provide ventilation by means of Passivent Airstract ventilation terminals supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU. Telephone: 01732 850770. Fax: 01732 850949. Email: projects@passivent.com. Airstract terminals to have been appraised under BS EN ISO 9001. Terminal cladding and louvres manufactured from fire-retardant high-impact ABS and connected to a base unit of marine grade plywood from renewable forests. Resistant to wind loads up to 51m/s, AA classification to BS 476: Part 3, fitted with 4mm insect screen. Double-bank louvres to achieve 100% rain rejection, class A effectiveness. Terminal width ……mm, length ……mm, ventilation area ……m², roof pitch ……

Colour and texture …… to match roof covering of …… tiles/slates/sheeting*. Multiple outlets: ……

iAT fan installed in terminal.*
Motorised base damper with internal cover grille.*
Installed by an approved MasterCare installer.*
*Delete as applicable

Sizes
Modern and traditional design terminals (up to 45° roof pitch)

<table>
<thead>
<tr>
<th>Terminal sizes (mm)</th>
<th>Roof opening required (mm)</th>
<th>Geometric free area (m²)</th>
<th>Equivalent free area (m²)</th>
<th>Height** (mm)</th>
<th>Weight† (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>575 x 575*</td>
<td>485 x 485</td>
<td>0.157</td>
<td>0.136</td>
<td>818</td>
<td>40</td>
</tr>
<tr>
<td>575 x 800</td>
<td>485 x 710</td>
<td>0.246</td>
<td>0.214</td>
<td>818</td>
<td>52</td>
</tr>
<tr>
<td>575 x 1025</td>
<td>485 x 935</td>
<td>0.319</td>
<td>0.277</td>
<td>818</td>
<td>68</td>
</tr>
<tr>
<td>575 x 1250</td>
<td>485 x 1160</td>
<td>0.368</td>
<td>0.330</td>
<td>818</td>
<td>76</td>
</tr>
<tr>
<td>800 x 800*</td>
<td>710 x 710</td>
<td>0.386</td>
<td>0.335</td>
<td>1109</td>
<td>63</td>
</tr>
<tr>
<td>800 x 1025</td>
<td>710 x 935</td>
<td>0.525</td>
<td>0.456</td>
<td>1109</td>
<td>79</td>
</tr>
<tr>
<td>800 x 1250</td>
<td>710 x 1160</td>
<td>0.625</td>
<td>0.543</td>
<td>1109</td>
<td>91</td>
</tr>
<tr>
<td>1025 x 1025*</td>
<td>935 x 935</td>
<td>0.716</td>
<td>0.622</td>
<td>1350</td>
<td>95</td>
</tr>
<tr>
<td>1025 x 1250</td>
<td>935 x 1160</td>
<td>0.906</td>
<td>0.787</td>
<td>1350</td>
<td>105</td>
</tr>
<tr>
<td>1250 x 1250</td>
<td>1160 x 1160</td>
<td>1.030</td>
<td>0.895</td>
<td>1391</td>
<td>116</td>
</tr>
</tbody>
</table>

Circular terminals (up to 30° roof pitch)

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Roof opening†† required (mm)</th>
<th>Geometric free area (m²)</th>
<th>Equivalent free area (m²)</th>
<th>Height** (mm)</th>
<th>Weight† (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>710 x 710</td>
<td>0.382</td>
<td>0.282</td>
<td>1141</td>
<td>87</td>
</tr>
<tr>
<td>1400</td>
<td>935 x 935</td>
<td>0.700</td>
<td>0.516</td>
<td>1363</td>
<td>134</td>
</tr>
<tr>
<td>1700</td>
<td>1160 x 1160</td>
<td>1.030</td>
<td>0.760</td>
<td>1583</td>
<td>162</td>
</tr>
</tbody>
</table>

* Traditional terminals are only available in these sizes.
** Height figures are based on 0° roof pitch.
† Weight figures are based on 0° roof pitch and include the weight of the standard double-banked terminal and square base of 1000mm in length. Weights are correct at time of going to print, but contact Passivent for current figures.
†† Circular terminals have a square roof opening.
Coefficient of discharge, see Performance section.
Note: The weights and free area do not include the optional base damper.
Description
During peak summer temperatures, the minimal temperature difference between indoors and outside can result in low flow rates for passive stack ventilation, especially on still windless days.

During these periods or at other times of unusual events, such as high occupancy or unusual heat gain, the building will suffer from raised temperatures or higher than normal CO₂ levels leading to reduced air quality and lethargy for the room occupants.

These changes in internal conditions can be identified by the Passivent Intelligent Control System which activates the low energy fan. The fan generates a change in internal pressure which maintains the ventilation system performance until either the temperature or CO₂ levels have achieved the targeted set point.

Performance
*Maximum flow rate when inlet and outlet resistances are equal and fan is in operation:* 580 l/s.
ALUMINIUM AIRTRACT TERMINAL

Description
The Aluminium Airtract is a roof mounted terminal which provides an exhaust for warm air. It combines high airflow capacity with low airflow resistance and patented double-bank weather louvres.

Available in a larger size range than the standard Airstract.

Sizes

<table>
<thead>
<tr>
<th>Terminal dimensions (mm)</th>
<th>Geometric free area (m²)</th>
<th>Equivalent free area (m²)</th>
<th>Height* (mm)</th>
<th>Builder’s kerb dimensions internal (mm)</th>
<th>Builder’s kerb dimensions external (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>813 x 813</td>
<td>0.33</td>
<td>0.36</td>
<td>680</td>
<td>577 x 577</td>
<td>837 x 837</td>
</tr>
<tr>
<td>813 x 1113</td>
<td>0.50</td>
<td>0.55</td>
<td>680</td>
<td>577 x 877</td>
<td>837 x 1137</td>
</tr>
<tr>
<td>1113 x 1113</td>
<td>0.76</td>
<td>0.85</td>
<td>900</td>
<td>877 x 877</td>
<td>1137 x 1137</td>
</tr>
<tr>
<td>1113 x 1412</td>
<td>1.03</td>
<td>1.13</td>
<td>900</td>
<td>877 x 1176</td>
<td>1137 x 1436</td>
</tr>
<tr>
<td>1412 x 1412</td>
<td>1.38</td>
<td>1.51</td>
<td>1208</td>
<td>1176 x 1176</td>
<td>1436 x 1436</td>
</tr>
<tr>
<td>1412 x 1787</td>
<td>1.82</td>
<td>2.00</td>
<td>1208</td>
<td>1176 x 1551</td>
<td>1436 x 1811</td>
</tr>
<tr>
<td>1787 x 1787</td>
<td>2.41</td>
<td>2.64</td>
<td>1582</td>
<td>1551 x 1551</td>
<td>1811 x 1811</td>
</tr>
<tr>
<td>1787 x 2012</td>
<td>2.75</td>
<td>3.02</td>
<td>1582</td>
<td>1551 x 1776</td>
<td>1811 x 2036</td>
</tr>
<tr>
<td>2012 x 2012</td>
<td>3.15</td>
<td>3.46</td>
<td>1740</td>
<td>1776 x 1776</td>
<td>2036 x 2036</td>
</tr>
</tbody>
</table>

Coefficient of discharge, see Performance section.

Contact Passivent for Aluminium Airstract terminal weights.

Other sizes are available on request. Please email projects@passivent.com for more information.

*Heights are based upon a flat builder’s kerb (by others).

Specification clause
Provide ventilation by means of Passivent Aluminium Airstract ventilation terminals supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU.
Telephone: 01732 850770. Fax: 01732 850949.
Email: projects@passivent.com.
Terminals to have been appraised under BS EN ISO 9001.
Louvres to be extruded aluminium with mitred corners, EXT SAA classification to BS 476: Part 3, fitted with 4mm insect screen.

Louvres double-bank to achieve 100% rain rejection, class A effectiveness.

Terminal width ……mm, length ……mm, ventilation area ……mm².

Colour to match your roof covering.

Terminal to be mounted on a structural builder’s kerb by others; all necessary flashings, secret gutters etc to be provided and installed by others.

Installed by an approved MasterCare installer.*

*Delete as applicable
HYBRID PLUS AIRSTRACT TERMINAL

Installation
Hybrid Plus Airstract Roof Terminal comprises two main elements: the sub-base unit, which houses the insulated and modulating damper, mixing chamber and fan, and the terminal which provides the weatherproof and low resistance outlet/inlet. The sub-base unit is fixed to the structure to support the terminal. It is supplied with the necessary fixing brackets and can be used on flat roofs or builders’ kerbs. The louvred terminal is fixed in position over the sub-base assembly.

Dimensions
Terminal: 1250 x 1250mm
Roof opening required: 1160 x 1160mm
Height, standard modern terminal: 1391mm
Weight: Terminal base with mixing chamber 100kg. Terminal 50kg.

BENEFITS

- A number of different modes can be programmed to allow the most energy efficient option to be used as and when required.
- In low winter temperatures to avoid draughts, recirculation mode mixes incoming fresh air with interior warm air to provide tempered fresh air to the space.
- In peak summer temperatures to avoid overheating, enhanced mode allows for high levels of air movement.
- Single low-power fan uses minimal energy only when required during peak summer and low winter temperatures.
- High-level inlets in summer allow the system to operate a night-cooling strategy, using cooler night time air to reduce the temperature of the building’s thermal mass.
- The unique terminal design does not require a vertical internal divider, and therefore the flow performance is independent of wind direction. This ensures the system flow performance does not stall with changing wind directions.
- Controlled through an intelligent Passivent iC8000 Control System. iC8000 ensures the system operates in the correct mode according to factors such as CO₂ concentrations, internal and external temperatures.
- Based primarily on natural ventilation strategy so does not require large and costly mechanical plant.

Colour
Base unit: white clad below roof line.
Ceiling cover grille: white as standard, or any standard RAL/BS colour.

Specification clause
Provide ventilation by means of Passivent Hybrid Plus Airstract terminals supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU.
Tel: 01732 850770.
Fax: 01732 850949.
Email: projects@passivent.com.
Passivent Hybrid Plus Airstract terminals appraised under BS EN ISO 9001.
Terminal cladding and louvres manufactured from fire-retardant high-impact ABS with integral low energy fan and controllable inner shaft to enable mixing of air, night cooling and passive ventilation, connected to a base unit of marine grade plywood from renewable forests.
Resistant to wind loads up to 51m/s. AA classification to BS 476: Part 3, fitted with 4mm insect screen. Louvres double-bank to achieve 100% rain rejection, class A effectiveness. Dimension 1250 x 1250mm.
Colour and texture … to match roof covering of… tiles/slates/sheeting*.
Motorised base louvre with white internal cover grille. Installed by an approved MasterCare installer.

*Delete as applicable
**Single-space system, 3 operating modes**
The system uses one of three operating modes depending on the needs of the building and outside temperatures.

---

**Mode 1 Natural**

*Most of the year*

In natural mode the Hybrid Plus Airstract Roof Terminal acts as a passive stack. Fresh air enters the space via low level air inlets, for example Passivent Aircool ventilators, or opening windows. Warm air rises and is exhausted at high level through the Hybrid Plus Airstract Roof Terminal.

This is a purely passive mode and the fan does not operate. This mode enables control over indoor air quality and temperatures.

---

**Mode 2 Enhanced**

*Peak summer temperatures*

To avoid overheating within the room, the single low power fan in the Hybrid Plus Airstract terminal extracts high volumes of air from the space and exhausts it to the outside. Fresh air is brought in through low-level air inlets.

This mode allows the ventilation rate to be increased to control peak summer temperatures.

---

**Mode 3 Recirculation**

*Low winter temperatures; summer night cooling*

Low-level air inlets are closed, preventing cold draughts. Fresh air is brought in at high level through the Hybrid Plus Airstract terminal. With the fan running, the incoming fresh air mixes with interior warm air in the Hybrid Plus Airstract mixing chamber, providing tempered fresh air to the room.

During unoccupied periods when the air inlets are closed and the temperature rises, the Hybrid Plus Airstract terminal both supplies and exhausts air. This ensures a fresh environment when the room is occupied again.

The same strategy can be used for secure night cooling in summer especially if there are no low-level inlets or to open them would present a security risk.
**AIRSCOOP TERMINALS**

**BENEFITS**

- Environmentally friendly energy-saving natural ventilation; no power is required to move the air. Can reduce or eliminate the capital and running costs of ventilation or air conditioning plant.
- Range of systems: basic, enhanced DAD or enhanced RAD.
- On enhanced systems, four automatically controlled dampers regulate airflow according to ambient conditions.
- Optimised segmented design combined with unique computational fluid dynamics (CFD) designed inlets/outlets delivers maximum airflow capacity with minimal pressure drop through the system.
- Complete separation of chambers where they exit the Airscoop prevents 'short-circuiting' of inward and outward air flows within the building.
- Unique and purpose-designed software based on field testing has been developed with EDSL/Tas to calculate the ventilator sizes required for the application.

**Structural base unit divided into four separate chambers, provides structural support to terminal and damper housing**

**Patented double-bank louvres for maximum rain rejection and optimum airflow**

**Complete separation of chambers prevents 'short-circuiting'**

**Modern, square terminal design shown. Other design options available**

**Unique quad arrangement of CFD-designed inlets/outlets. Provides efficient passage of air movement at low velocities and good air distribution, preventing 'short-circuiting'**

**Patented motorised insulated four-way volume control dampers within sub-base, controlled by single actuator. The dampers simultaneously control the flow of air into and out of the unit**

**Fixed ceiling grilles and ductwork connected to inlet/outlet for RAD application**
### Sizes

**Modern and traditional design terminals (up to 45° roof pitch)**

<table>
<thead>
<tr>
<th>Terminal sizes (mm)</th>
<th>Roof opening (mm)</th>
<th>Height** (mm)</th>
<th>Weight† (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>575 x 575*</td>
<td>485 x 485</td>
<td>818</td>
<td>69</td>
</tr>
<tr>
<td>800 x 800*</td>
<td>710 x 710</td>
<td>1109</td>
<td>110</td>
</tr>
<tr>
<td>1025 x 1025*</td>
<td>935 x 935</td>
<td>1350</td>
<td>166</td>
</tr>
<tr>
<td>1250 x 1250***</td>
<td>1160 x 1160</td>
<td>1391</td>
<td>209</td>
</tr>
</tbody>
</table>

**Circular terminals (up to 30° roof pitch)**

<table>
<thead>
<tr>
<th>Diameter (mm)</th>
<th>Roof opening†† required (mm)</th>
<th>Height** (mm)</th>
<th>Weight† (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>710 x 710</td>
<td>1141</td>
<td>128</td>
</tr>
<tr>
<td>1400</td>
<td>935 x 935</td>
<td>1363</td>
<td>197</td>
</tr>
<tr>
<td>1700***</td>
<td>1160 x 1160</td>
<td>1583</td>
<td>246</td>
</tr>
</tbody>
</table>

* Traditional terminals are only available in these sizes.
** Height figures are based on 0° roof pitch.
*** Basic Airscoop system only in this size.
† Weight figures are based on 0° roof pitch and include the weight of the standard double-banked terminal and square base of 1000mm in length.Weights are correct at time of going to print, but contact Passivent for current figures.
†† Circular terminals have a square roof opening.

---

**Specification clause**

Provide ventilation by means of Passivent Basic/DAD/RAD* Airscoop roof-mounted ventilation terminals with automatic damper control, supplied by Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU. Telephone: 01732 850770, Fax: 01732 850949. Email: projects@passivent.com.

Terminals to have been appraised under BS EN ISO 9001.

Terminals of high-impact ABS with all exposed surfaces treated with UV-stable polymeric resin, base of marine grade plywood.

Weather performance tested to BS EN 13030

Performance testing of louvres subjected to simulated rain: double-bank louvres Class A 100% at 0.00 m/s, Class A 100% at 0.50 m/s.

Thermal insulation U-value 1.6W/m²K when basic dampers are closed, resistant to continuous wind loads at 51 m/s.

AA classification tested to BS 476: Part 3, 4mm insect screen.

Colour and texture ……… to RAL / BS colour ……… or to match roof covering.

Installed by an approved MasterCare installer.*

*Delete as required
AIRSCOOP SYSTEMS

Enhanced Airscoop systems

Direct Air Dispersal system (DAD)
Suitable for buildings with large open voids where there is no intermediate ceiling, such as sports, concert and meeting halls, factory spaces, warehouses etc. The four separate air inlets/outlets on the Enhanced Airscoop ensure that the airflow is always separated regardless of wind direction. This also provides much improved distribution and mixing of air preventing ‘short-circuiting’ at the unit. The patented system has been designed to optimise the flow characteristics within the Airscoop, keeping pressure losses to a minimum.

Remote Air Dispersal (ducted) system (RAD)
Suitable for all building types with intermediate ceilings such as offices and classrooms. The system utilises the same Airscoop design as above but the inlets/outlets are connected via flexible ductwork to four diffusers in the ceiling of the ventilated space. This ensures effective air distribution within the space and enables the ceiling diffusers to be sited for maximum benefit in relation to space utilisation. The ductwork losses have been minimised, allowing runs up to 10m to be used. Since airflow is controlled within the Airscoop, ductwork only needs to be insulated when running through cold voids.

Insulated volume control dampers
Enhanced systems incorporate unique patented four-way dampers for high-efficiency airflow either direct or remotely via ductwork.

Basic Airscoop systems
The Basic system is suitable for use in buildings with and without intermediate ceilings. The air is ducted down from the Airscoop to controllable double skin aluminium louvres with ABS thermal break through a diffuser grille mounted within the ceiling or base unit for controlling airflow directly into the occupied space. The dampers ensure that draughts under the outlets are minimised, especially important in spaces occupied during the day. The angle of the louvres also assists in spreading the airflow within the ventilated space.
Passivent has been a major partner in the BSRIA-chaired Pil research project ‘Wind Driven Natural Ventilation Systems’. The BSRIA guide BG2/2005, which is the major output of the project, confirms the principles by which Airscoop type systems work and provides guidance on their use. It highlights the importance of key design parameters such as driving rain resistance and optimised flow characteristics following extensive wind tunnel testing and analysis of installed systems in the field.

Passivent has also invested heavily in further applied research at Silsoe Research Institute over a period of three years. Airscoop systems have been monitored both in the field and in the unique flow test laboratory. The research has also focused on the performance of the ventilation delivery and the distribution and mixing of airflows. This has been linked back to CFD modelling of the flow characteristics both in building spaces and within the Airscoop unit itself. This has led to the development of the patented Enhanced Airscoop systems incorporating the unique four-way damper device and triangular-to-round inlets/outlets.

TAS Airscoop Builder is a new utility for modelling Airscoop roof-mounted ventilation terminals and their benefits to building performance. TAS is a building thermal analysis tool commonly used for calculating energy consumption and assessing peak summer temperatures.

For more information visit www.edsl.net
LITEVENT AIRSTRACT ROOFLIGHT/VENTILATOR

The Litevent combines a controllable ventilator and a rooflight, for installation on flat or low-pitched roofs. It is designed to contribute to reduction of energy demand in commercial buildings.

**BENEFITS**

- Combines natural ventilation and natural daylighting functions in one unit.
- Provides controllable ventilation with minimal energy consumption.
- Reduces the need for artificial lighting, thereby further reducing energy expenditure.
- Thermally insulated upstand and triple-skin glazing minimise heat loss.
- Height of upstand will accommodate both warm and cold deck constructions without the need for an additional timber kerb.

**Appearance**

Aluminium upstand and glazing frame are mill finish as standard. Frame can be supplied polyester powder coated to order. Cowl is aluminium, mill finished as standard. Glazing is clear, diffused or bronze. Shape: dome. Internal surfaces finished in white for maximum light reflectance.

**Composition**

Aluminium upstand with insulated core, incorporating insulated ventilation doors on all four sides, controlled by linked actuators (24V modulating). Weather cowl is mill finish aluminium, and has an aluminium insect screen.

Rooflight has triple-skin 3mm to 4mm polycarbonate glazing with vented air gap, in an extruded aluminium frame with mitred and secret-welded corners. Glazing has a 10-year postformed warranty from the material sheet supplier against yellowing and loss of light transmission, and for impact resistance.

**Sizes**

<table>
<thead>
<tr>
<th>Litevent size* (mm x mm)</th>
<th>Daylight area (m²)</th>
<th>Ventilation geometric free area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 x 600</td>
<td>0.270</td>
<td>0.550</td>
</tr>
<tr>
<td>750 x 750</td>
<td>0.448</td>
<td>0.630</td>
</tr>
<tr>
<td>900 x 900</td>
<td>0.672</td>
<td>0.690</td>
</tr>
<tr>
<td>1050 x 1050</td>
<td>0.941</td>
<td>0.770</td>
</tr>
<tr>
<td>1200 x 1200</td>
<td>1.254</td>
<td>0.860</td>
</tr>
<tr>
<td>1200 x 900</td>
<td>0.918</td>
<td>0.770</td>
</tr>
</tbody>
</table>

*Roof opening size
PERFORMANCE DATA

Ventilation performance
Maximum ventilation area: see sizes table. Passivent can advise on the size of Litevent Airstract terminal in relation to volume of air movement required, likely external conditions and internal temperatures. Cd value = 0.77.

Data from independent testing is available on request.

Impact strength
The unit has been subjected to large, soft-body impact testing by BRE and may be considered non-fragile to HSG 33. It will resist a soft-body impact of at least 1200 Joules.

Fire spread: internal and external
Ratings to BS 476: Part 7: 1987 are Class 1 for internal surfaces of the upstand and frame, and Class 1Y for the polycarbonate glazing.

Under Building Regulations Approved Document B4 paragraph 15.7, a polycarbonate rooflight with a Class 1 rating may be regarded as having an AA designation for external fire spread.

By virtue of the above performance, under Approved Document B2 Table 11 and B4 Section 14, Litevent ventilators can be used without restriction on size or spacing in all types of occupiable and circulation space except protected stairways.

Weather resistance
Driving and deluge rain resistance demonstrated by test.

Biological resistance
4mm screen in cowl excludes large nesting insects.

Thermal insulation
The upstand and triple-skin glazing give good thermal insulation and minimise the risk of condensation. Our Technical Department can provide computer calculations of U-values for given sizes in different roof constructions to comply with Building Regulations Part L 2013.

Light transmission
For daylight areas see dimensions table. Average visible light transmission for 3mm glazing: clear 92%, diffused 85%, and bronze 50%. G-values: clear = 0.39, diffused = 0.56 and bronze = 0.43.

Clear glazing allows the greatest amount of daylighting, making it ideal when seeking passive solar gain. Diffused glazing diffuses the light and cuts down shadows and bright spots. Bronze glazing provides a good combination of light transmission with greater control of passive solar gain.

Specification clause
Provide controllable ventilation combined with rooflighting by means of Litevent Airstract ventilators.

Supplier: Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN31 9QU
Telephone: 01732 850770, Fax: 01732 850949.
Email: projects@passivent.com
Ventilator to comprise mill finish aluminium upstand with insulated core, aluminium cowl, vents and insect screen. Internal surfaces white. Glazing triple skin 3mm to 4mm polycarbonate with ventilated air gap in extruded aluminium frame with mitred and secret-welded corners. Glazing to have 10-year postformed warranty from the material sheet supplier against yellowing and loss of light transmission, and for impact resistance.

*Glazing frame polyester powder coated, colour ....
Glazing clear/ diffused/bronze*, shape: dome.
Ventilator size: ...mm
Ventilator to be resistant to soft-body impact of 1200 Joules; classed as non-fragile to HSG 33; internal fire spread rating Class 1Y, external fire spread designation AA.

Lining to lightwell (by others)
Insulated aluminium upstand
Ventilation door
4mm insect screen

Specification clause
Provide controllable ventilation combined with rooflighting by means of Litevent Airstract ventilators.

Supplier: Passivent, North Frith Oasts, Ashes Lane, Hadlow, Kent TN31 9QU
Telephone: 01732 850770, Fax: 01732 850949.
Email: projects@passivent.com
Ventilator to comprise mill finish aluminium upstand with insulated core, aluminium cowl, vents and insect screen. Internal surfaces white. Glazing triple skin 3mm to 4mm polycarbonate with ventilated air gap in extruded aluminium frame with mitred and secret-welded corners. Glazing to have 10-year postformed warranty from the material sheet supplier against yellowing and loss of light transmission, and for impact resistance.

*Glazing frame polyester powder coated, colour ....
Glazing clear/ diffused/bronze*, shape: dome.
Ventilator size: ...mm
Ventilator to be resistant to soft-body impact of 1200 Joules; classed as non-fragile to HSG 33; internal fire spread rating Class 1Y, external fire spread designation AA.

*Delete as applicable.
The Sunstruct combines controllable natural ventilation with the ability to provide natural daylight, meaning the product can contribute to the reduction of energy demand in commercial buildings.

**Composition**
3mm to 4mm polycarbonate double or triple skin glazing, formed with a dome or pyramid finish. Glazing has a 10 year postformed warranty from the sheet supplier against yellowing and loss of light transmission, and for impact resistance.

External weather louvres manufactured from extruded aluminium with a 30mm pitch.

Insulated controllable louvres with 24V modulating actuators.

Marine grade plywood structural sub-base lined with 98% reflective material.

The sub-base offers a secure roof fixing up to 51m/s wind speed and is independently tested by the BRE.

A frosted recessed diffuser suspended within the ceiling adaptor has an adjustable sleeve to accommodate variations in final duct length. Suitable for use in plasterboard and suspended ceilings.

**Performance**
The ventilation geometric free area of the Sunstruct system is 0.5m² and a cd value of 0.34.

The overall calculated U-value for a Sunstruct terminal with double glazed top is 2.06W/m²K and 1.79W/m²K with triple glazing.

**BENEFITS**
- Combines natural ventilation and natural daylighting functions in one unit.
- Provides controllable ventilation with high lumen output.
- 885mm square ducted system for greater structural stability and light output.
- Structural sub-base provided for ease of installation and weathering into a wide range of roof coverings.
- Diffused glazing reduces ‘hot spots’ and spreads the light for ducting down the system.
- Reduces the need for artificial lighting or ventilation, also reducing energy costs.
- Thermally insulated upstand to minimise energy losses.
- Double or triple glazing to minimise heat loss.

**Specification clause**
Natural daylight and ventilation to … rooms to be provided by means of Passivent Sunstruct system comprising:

- Roof-mounted unit incorporating triple / double glazed dome / pyramid* of 3.0mm clear uv-stabilised polycarbonate covered by 10-year warranty against loss of impact strength, excessive yellowing and loss of light transmission.
- Aluminium double bank weather louvres to achieve 100% rain rejection to BS EN 13030:2001.
- Controllable insulated louvres on 4 sides to provide ventilation area of 0.5m².
- To have AA fire rating to BS 476: Part 3: 2004.
- Duct sections to be 750 / 500 / 250mm to be SR98 Mirror with reflectance 98% and 25-year warranty.

**System size:**
- 885mm square
- Recessed ceiling diffuser of diffused polycarbonate within ventilated ceiling adaptor incorporating adjustable sleeve.
- All exposed ducting within unheated voids to be wrapped with tube insulation. Sunstruct terminal will achieve an overall U-value of 2.06W/m²K for double glazed top / 1.79 W/m²K for triple glazed top.*

**Supplier:**
- Passivent, North Frith Oasts, Ashes Lane, Hadlow. Kent TN11 9QJ
- Telephone: 01732 850770, Fax: 01732 850949.
- Email: projects@passivent.com

*Delete as applicable
Internal mirrored louvres

Insulated controllable dampers

Roof mounted diffused polycarbonate double or triple glazing

Aluminium external weather louvres

Insulated structural sub base

80% reflective ducting guides daylight down to the ceiling adaptor

Light diffuser

Ceiling adaptor (white internal) with adjustable sleeve

Terminal top cutaway

Aluminium external weather louvres

Secondary weather baffles

Insulated controllable louvres in closed position

Looking up the Sunstruct shaft with the ceiling diffuser removed.
Services
Installation and commissioning service through an independent network of Passivent MasterCare® installers.

Quality assurance
Passivent products are designed, developed and manufactured under a BS EN ISO 9001 quality management system, giving an independently audited assurance that the products will fulfil their intended purpose.

Operational commitment
As part of our commitment to minimising our impact on the environment, and to continuous improvement in our methods of operation, Passivent is accredited to ISO 14001 Environmental Management, OHSAS 18001 Health and Safety Management, and to ISO 9001 Quality Management Systems.

Other products
Passivent markets a range of other natural ventilation and daylighting products for commercial buildings including:

- Aircool ventilators for windows, curtain walling and walls.
- Framed louvres and cover grilles.
- Ventilation control systems.
- Natural ventilation systems for commercial buildings.
- Fresh wall ventilators.
- Tricklevent window ventilators.
- SoundScoop acoustic transfer ventilation products.
- iMEV intelligent mechanical extract ventilation systems.

PASSIVENT
North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU Tel: 01732 850770 Fax: 01732 850949
Email: projects@passivent.com Web: www.passivent.com

Passivent maintains a policy of continuous development and reserves the right to amend product specifications without notice.

A division of Building Product Design Ltd. Company Registration No. 3944121