# PARASOL Zenith

## 4-way blow comfort module

## QUICK FACTS

- High-performance 4-way blow comfort module available with cooling, heating, and ventilation
- Large span between the lowest and highest airflow
- Few variants for easier sizing and variable airflow control
- Optimized for low energy consumption
- Manages high airflow at low inlet pressure
- Easy installation on account of low weight, compact dimensions, and air connections on short or long sides
- Hygenic design option for healthcare applications
- Quick bracket for time-saving installation
- Upgradable from Constant Air Volume to Variable Air Volume
- Standard color White RAL 9003
  - 5 alternative standard colors
  - Other colors upon request

| Variant | | Supply air | | Performance | |
|---|---|---|---|---|---|
| Size | Air connection | IN WG * | CFM | Total cooling capacity | Sound level |
| ft. | in. | | | BTUH** | db |
| 2 | 5 | 0.3 | 42 | 1683 | 26 |
| 2 | 5 | 0.3 | 53 | 1925 | 28 |
| 2 | 5 | 0.3 | 64 | 2154 | 30 |
| 2 | 6 | 0.3 | 53 | 1932 | 27 |
| 2 | 6 | 0.3 | 74 | 2379 | 30 |
| 2 | 6 | 0.3 | 95 | 2761 | 33 |
| 4 | 5 | 0.3 | 53 | 3010 | 26 |
| 4 | 5 | 0.3 | 74 | 3676 | 28 |
| 4 | 5 | 0.3 | 95 | 4157 | 30 |
| 4 | 6 | 0.3 | 64 | 3072 | 23 |
| 4 | 6 | 0.3 | 127 | 4693 | 28 |
| 4 | 6 | 0.3 | 170 | 5430 | 34 |
| 6 | 8 | 0.3 | 127 | 5427 | 30 |
| 6 | 8 | 0.3 | 170 | 6451 | 33 |
| 6 | 8 | 0.3 | 212 | 7287 | 35 |

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# Contents

## Advantages of PARASOL Zenith

The list below shows a few of the benefits enjoyed by the consultant, architect, installer, and user

### The Consultant appreciates

- Energy efficient product - high cooling capacity at low inlet pressure
- Few variants with large application area – Large span regarding minimum to largest airflow
- Available in three sizes 2, 4 and 6 ft.
- High comfort irrespective of room placement – Easy to adapt to the room dimensions and space occupancy
- Easy planning through alternative air connections – choose short or long side connection
- Variable airflow control minimizes variants and simplifies selection

### The Architect appreciates

- The face plate is always at the same level as the suspended ceiling, irrespective of the operating mode
- Space efficient – takes up very little ceiling space
- Numerous options with different colors

### The Installer appreciates

- Lowest weight on the market – simpler and more ergonomic handling
- Compact dimensions - can often be installed in the existing roof system, without the need to dismantle this
- Possibility of air connection on the short side - faster installation with less material usage
- Easily accessible water connections
- Easier commissioning - select factory setting k-factor or adjustment on-site

### The User appreciates

- Low energy consumption - high capacity at low inlet pressure
- High comfort - double outlet provides improved Coanda effect even at low pressure
- 4-way air distribution ensures very good room air mixing
- ADC air deflector - change the airflow pattern as required for each side
- Low sound levels

# Technical description

## Comfort module PARASOL Zenith

The new generation of Parasol Zenith features variable airflow control, which makes selection easier, has fewer variants, and simplified logistics on-site in addition to greater flexibility and simplicity in terms of future renovation work and customization.

The increased cooling capacity also enables a lower duct pressure or a higher cooling water temperature can be used, which saves energy and improves room comfort further.

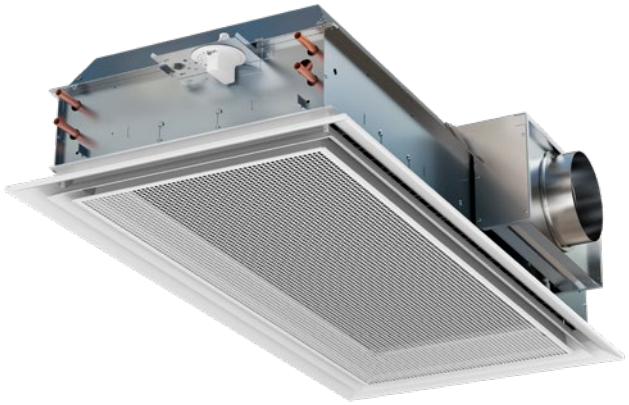


*Figure 1. Product image (PARASOL Zenith, 4 ft.)*

PARASOL Zenith is available in the following variants:

| | |
|---|---|
| Variant A: | Supply air and waterborne cooling, (2, 4, and 6 ft.) |
| Variant B: | Supply air, waterborne cooling, and heating (2, 4, and 6 ft.) |
| Installation: | Flush mounting for suspended ceilings |

## Range of application

Parasol Zenith is ideal for use as a standard application in such premises as:

- Offices and conference rooms
- Classrooms
- Hotels
- Restaurants
- Hospitals
- Shops
- Shopping centres

## Design

The face plate of the Parasol Zenith is always “flush”, i.e. always in line with the suspended ceiling which gives a stylish and discreet installation. The double outlets mean that there is no need to lower the face plate for high air-flow rates, maximum capacity (induction) is still achieved.

## Color

The product is painted as standard in our standard color RAL 9003 signal white, gloss ratio 30 ± 6%. The product can also be ordered in the following colors.

RAL 7037 dusty grey, gloss ratio 30-40%

RAL 9010 pure white, gloss ratio 30-40%

RAL 9005 jet black, gloss ratio 30-40%

RAL 9006 white aluminum, gloss ratio 70-80%

RAL 9007 grey aluminum, gloss ratio 70-80%

### Special types

On request, the product can also be obtained with e.g.:

- Optional color or relief finish paint.
- Face plate with different perforation pattern

For further particulars about special types, get in touch with your nearest Swegon representative.

## Function

Parasol Zenith is a 4-way air discharge comfort module with an induction function. Exactly as in a chilled beam, the supply air is used to provide the terminal cooling and heating function of a central air handling unit and therefore does not include an integrated fan or other moving parts. This gives very quiet operation and minimal maintenance requirements. Unlike a 2-way air discharge chilled beam, air distribution to the room occurs from all 4 sides of the unit, which means as large areas of the ceiling as possible are used to spread the air, thus ensuring comfort in the occupied zone.

PARASOL Zenith has a variable k-factor setting and a large airflow range. The product is available both as a CAV product with a fixed K-factor and is easy to upgrade to a VAV function with the help of different accessories. It is also possible to order as a VAV variant from the factory fitted with a control or actuator for airflow control (0-10 V) (see PARASOL Zenith VAV).

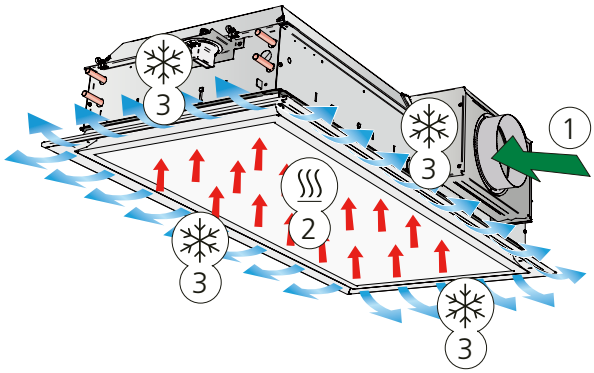



*Figure 2. Variant A: Cooling and supply air function*
*1 = Primary air*
*2 = Induced room air*
*3 = Primary air mixed with chilled room air*

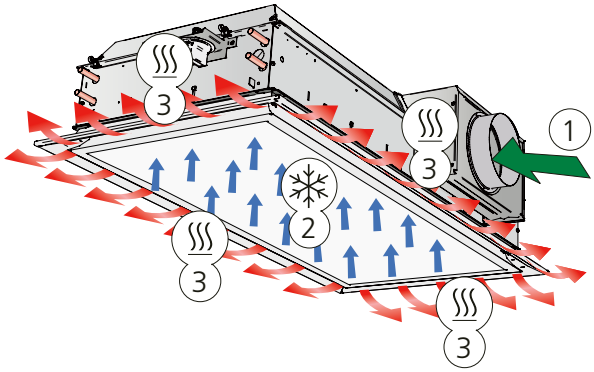



*Figure 3. Variant B: Heating and supply air function*
*1 = Primary air*
*2 = Induced room air*
*3 = Primary air mixed with heated room air*

## Induction principle

Primary air (A) from the air handling unit provides Zenith PARASOL with supply air via a supply air duct and builds up positive pressure in the unit's plenum.

The supply air is forced out at high speed through small slots (B). The high speed means that the surrounding air is drawn in and mixed with the supply air, which generates negative pressure above the unit’s integrated heat exchanger (C). Room air (D) is continuously drawn up from the room through the water-based heat exchanger where, if necessary, it is cooled or heated before it mixes with the supply air.

The mixed air is then distributed to the room via aero-dynamically designed outlets. The outlets are designed to ensure that the distributed air follows the suspended ceiling by utilizing the so-called Coanda effect (E). The supplied air is then mixed with additional room air, which further lowers the air velocity and lessens the temperature difference before it reaches the occupied zone.

The volume of recirculated room air drawn through the heat exchanger is typically about 3-5 times the volume of primary air, i.e. if 42 CFM l/s supply air comes from the air handling unit, then approximately 127 - 212 CFM room air will pass through the exchanger and be tempered.

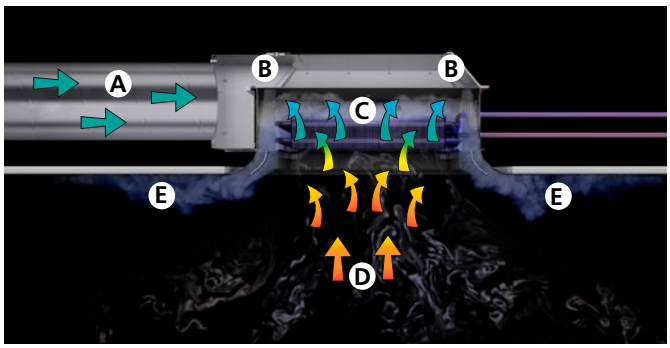



*Figure 4. Induction principle in Parasol Zenith*

## Condensation-free cooling

Parasol Zenith has been developed to work condensation-free and therefore requires no drainage system or filter. Normally inlet temperatures between 57.2 - 60.8 are used for the cooling water.

## High comfort – today and tomorrow.

A good indoor climate is characterized by good air quality and the correct room temperature without draft and noise. Different requirements are made on airflow, cooling capacity, and heating capacity depending on the type of building in question and how this will be used.

As greater demands are made on being able to offer customized office solutions and to easily change the floor layout for new or existing tenants if changed needs arise, it is important to take this into consideration as early as the design phase. This will minimize future costs for rebuilding. Regardless of the scenario, the new Parasol Zenith gives - through its simplicity in terms of airflow range, operation, and commissioning - all the possibilities to find this flexible and optimal solution.

## Large working range

The operating range for each size of PARASOL Zenith is very wide. In practice, this means that the same product can handle a variety of room types, by being adjusted as required. The large operating range is made possible by Parasol Zenith being equipped with slots for versatile and easy airflow adjustment. This also gives the following advantages:

- Fewer variants through a larger airflow range/ k-factor area
- Products with easy k-factor setting on-site for quick start of the build
- Simple commissioning

**To clarify the large operating range of Parasol Zenith, Diagram 1 compares the curves for cooling capacity/ airflow with the cooling requirements for seven different types of rooms:**

| | |
|---|---|
| A+B | Individual office room (1 person) |
| C+D | Office for customer visits (3 people) |
| E, F, G, H | Conference room (4, 6, 8, 12 people) |

The individual office and the office for customer visits are assumed to be placed on the façade, while the conference room is assumed to be placed on the floor's inner zone.

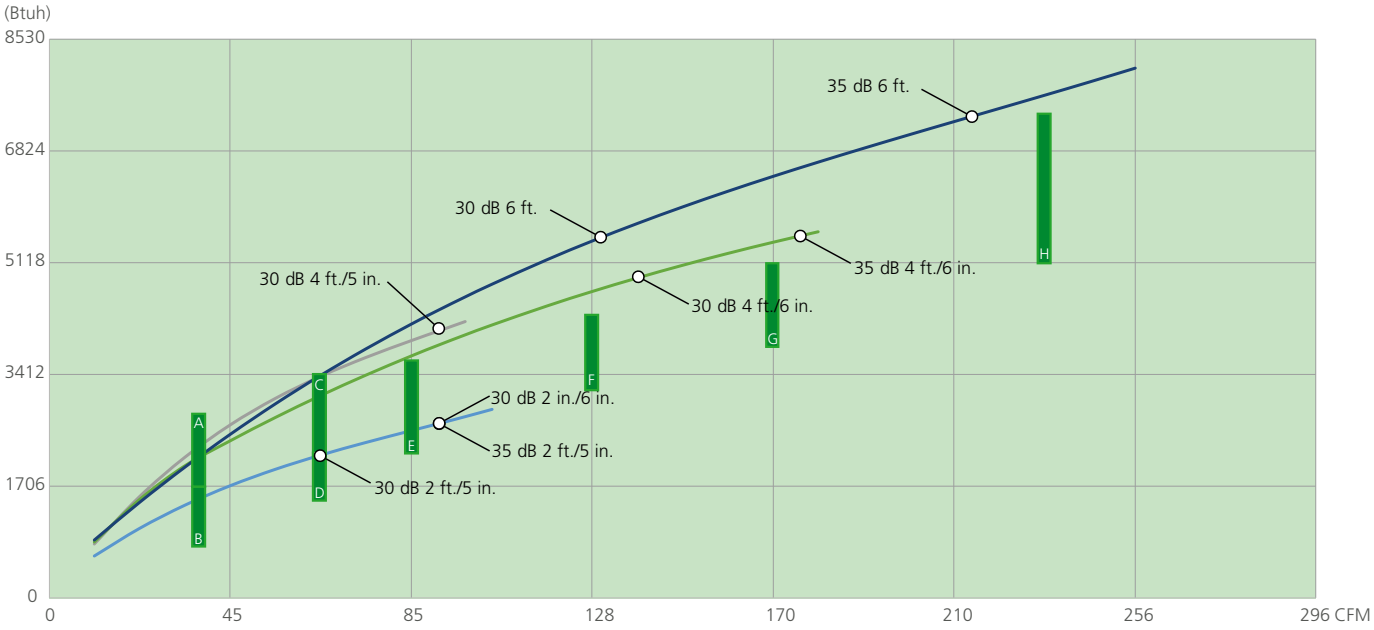
In the diagram, we can see that the product variants can handle all types of rooms. All that is required is to adjust the slot openings as required.

You can also see that the products can give a higher cooling capacity than the demand. This allows several options:

- Use the full capacity to quickly correct the deviations in room temperature
- Lower the pressure in the supply air duct and save fan energy
- Increase the supply flow temperature of the cooling water and save energy (chiller)

## Total cooling capacity, air and water

### Diagram 1: Capacity range




**A: Individual offices, south-facing**
130 ft² 32 CFM
1700-2700 BTUH cooling load

**D: Individual office for customer visits, solar protection**
130 ft² 64 CFM
1540-2560 BTUH cooling load

**G: Conference room**
130 ft² 170 CFM
3920-5100 BTUH cooling requirement

**B: Individual office, solar protection**
130 ft² 32 CFM
850-1700 BTUH cooling load

**E: Conference room**
86 ft² 85 CFM
2400-3750 BTUH cooling requirement

**H: Conference room**
194 ft² 232 CFM
5100-7500 BTUH cooling requirement

**C: Individual offices for customer visits**
130 ft² 64 CFM
2400-3400 BTUH cooling load

**F: Conference room**
108 ft² 128 CFM
3070-4440 BTUH cooling requirement

**Prerequisites:**
Supply air: $\Delta P_l$ = 0.3 in wg; $\Delta T_l$ =12.6°F
Cooling water: $t_{in}$ = 57.2°F; $t_{out}$ = 62.00°F
Room: $t_{room}$ = 75.2°F

## Comfort Guarantee

As previously described, Parasol Zenith has a 4-way air distribution, which results in lower air velocities in the occupied zone. Distributing the cooled air over a large ceiling area creates low air velocity. The comfort module's closed design with a circulation opening for return air in the face plate of the module also contributes to its advantageous mixing performance.

With its aerodynamically designed dual outlets in combination with the integrated damper and the placement of the slot openings, PARASOL Zenith distributes the air with very good adhesion to the suspended ceiling (Coanda effect) even at low inlet pressure and you do not need to place a commissioning damper in front of the product.

If you still, for example in large conference rooms with up to four products, want to install a VAV damper in front, the duct pressure, dependent on the airflow rate, can be lowered down to 0.080 in wg.

*Figure 5. Double outlets.*

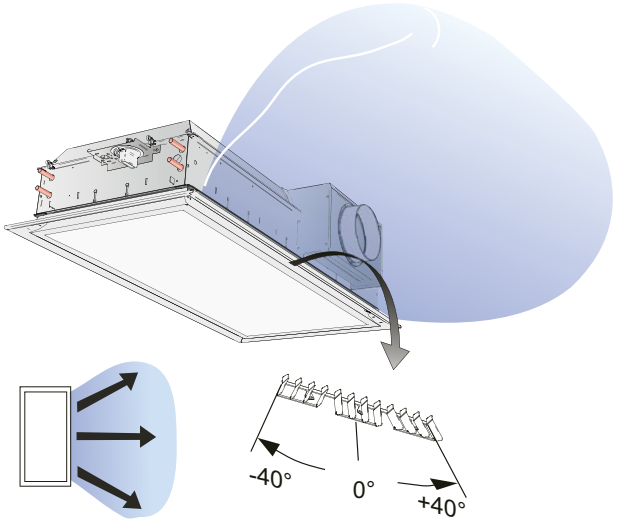



*Figure 6. Possible settings for the ADC, Fan-shape*

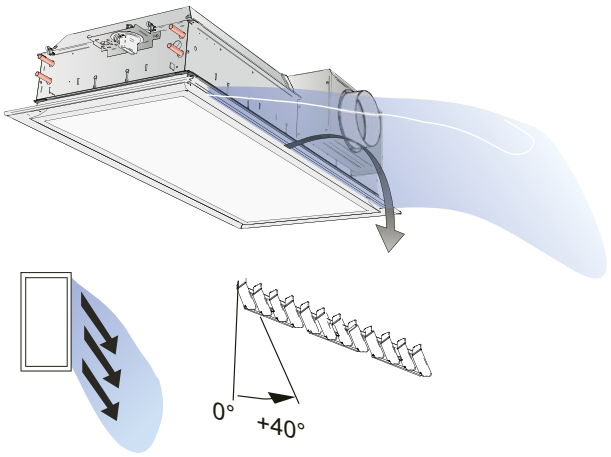



*Figure 7. Possible settings for the ADC, X-shape*

All comfort modules contain ADC as standard. ADC stands for Anti Draught Control, which enables you to set the diffusion pattern of the air being distributed to avoid the risk of drought.

ADC can also be used to reduce the throw length. By setting ADC to L-shape, the distance between two units can be reduced to a minimum and still ensure good comfort.

A number of ADC sections with nine air deflectors per section are arranged on each side of the unit. Each section is adjustable from a straight setting to 40 ° air deflection to the right or left in increments of 10 ° This provides great flexibility and can be adjusted without having to affect the system as a whole.

The direction of the air can be easily adjusted and gives future-proofing, offering a simple measure of location for any change to the furnishings and layout. The ADC does not affect the sound level or static pressure at all.

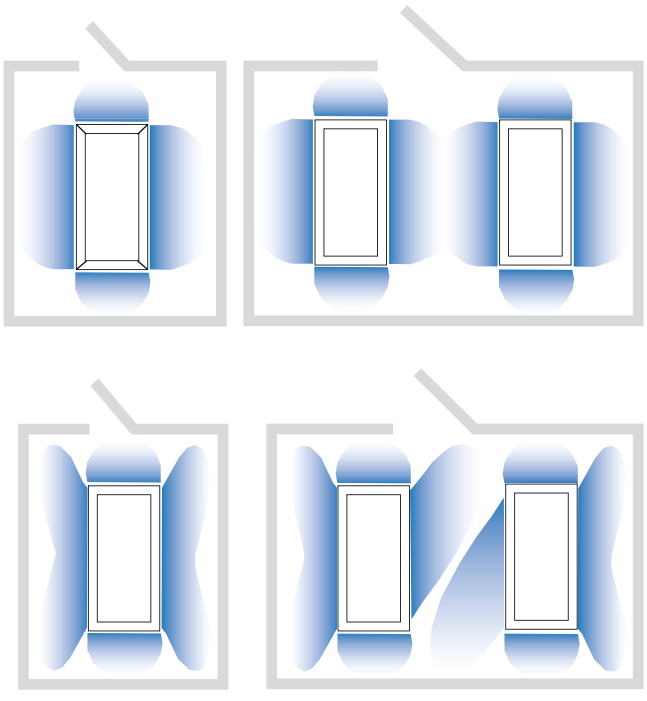


*Figure 8. Parasol Zenith with examples of different ADC settings*

## Easy installation

PARASOL Zenith is built on a platform with very compact dimensions. In many cases the design permits installation in the existing T-bar system without the need for dismantling, provided that there is at least 11.9 inches of space between the suspended ceiling and the joists.

The slim design and lightweight result in simpler handling, especially when handling the products on the job site, which gives less handling damage and a better working environment.
Parasol Zenith's compact units fit the most common modular dimensions and most suspended ceiling systems on the market. As standard the units include four mounting brackets. These are adjustable +/- 0.8 inch in both directions and in doing so create the adjustment range normally required during installation.

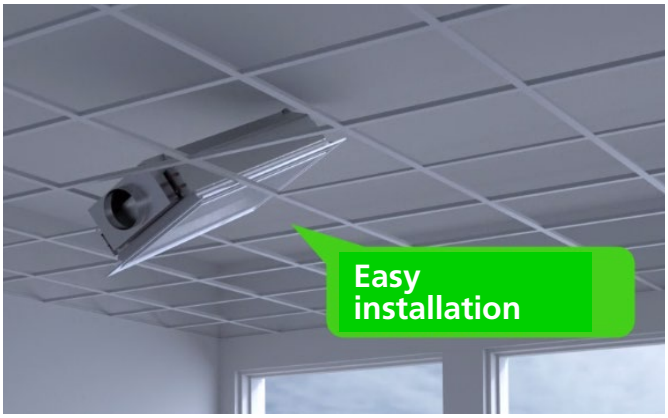



*Figure 9. Installation in existing T-bar system*

## Hygienic design

PARASOL Zenith is available as a variant with a hinged coil for easy access to the complete heat exchanger.

A dust-free environment is especially important in rooms with elevated hygiene demands. Over time large amounts of room air pass through Parasol Zenith's coil (heat exchanger). Dust particles, which fasten on the coil, not only result in less capacity but also fail to comply with the hygiene requirements that apply to the room. Parasol Zenith has, as an option, the possibility of hinged coils to meet these requirements.

In addition to normal cleaning, by wiping off dust from the white painted surfaces exactly as you clean other surfaces in the room, the option of more thorough cleaning is now possible.

1. It is recommended to vacuum clean the coil several times a year. More frequently in a room with a lot of textiles and a high rate of air change. The face plate is opened or dismantled to gain access to the coil, see Figure 10.
2. In environments with elevated hygiene demands additional cleaning of the comfort module may be a requirement. The use of flexible connection hoses and the possibility to fold out the coil permits cleaning of the top of the coil in these instances, see Figure 11.

*Figure 10. Removing the face plate to access the coil*

*Figure 11. Removing the face plate and folding out the coil for accurate cleaning in the event of high hygiene requirements. Note! requires the product to be ordered with the accessory fold-out coil, and that flexible connection hoses are used on the water side.*

## Alternative air connections

Simplifying the duct installation and reducing the number of duct bends gives several advantages. Installation time is shorter and the cost of materials decreases while the pressure drop and noise generation are also reduced.

Installations frequently appear as in Figure 12. Straight ducts are of course always preferable.

Depending on the size, you can order PARASOL Zenith with air connections on any long or short side, see table and Figure 15.

It's also possible to change the air connection side at a later date, see page 12 for more information.

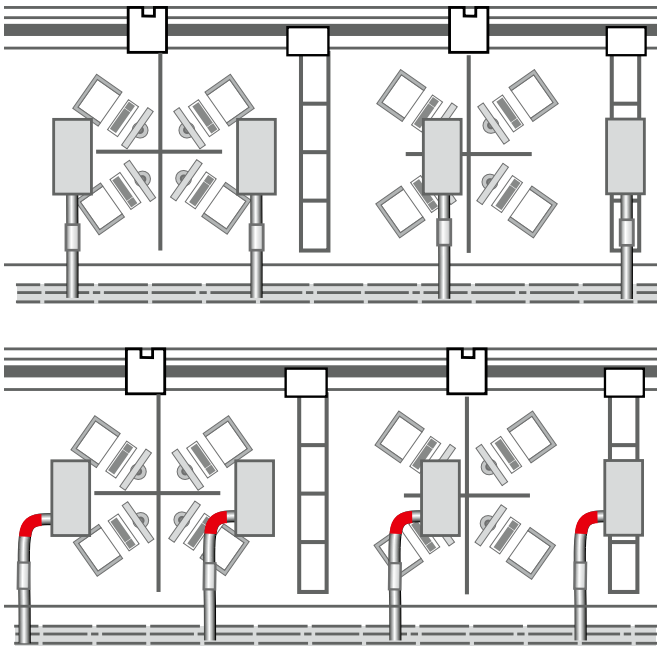


*Figure 12. Installation example.*
*Straight air connection, alternative with 90° bend.*

### Selectable air connection sides

When ordering, depending on the length, it is possible to choose connection side 1, 2, 3, or 4 as set out in the table below, also see Figure 15.

| Length | Air connection side | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 2 ft. | Yes | No | Yes | No |
| 4, 6 ft. | Yes | Yes | Yes | Yes |

## Easily accessible water connections

The water pipes are very easily accessible, which facilitates connection, particularly if e.g. press couplings and associated tools are used.

This saves installation time and simplifies a safe water connection.

The pipes are placed in a standardized fashion, which means irrespective of product the cooling and possibly heating pipes are always positioned in the same way, which facilitates installation

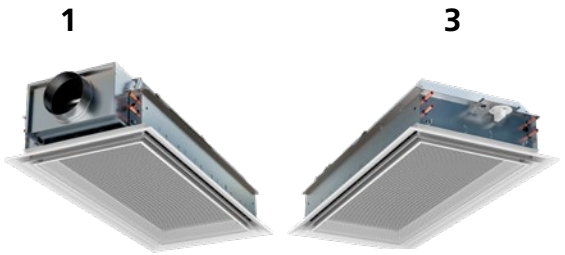



*Figure 13. Air connection on the product's short side, 1 or 3.*

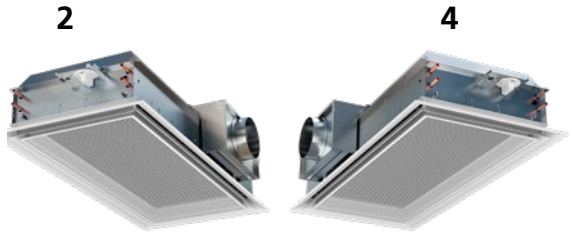



*Figure 14. Air connection on the product's long side, 2 or 4.*

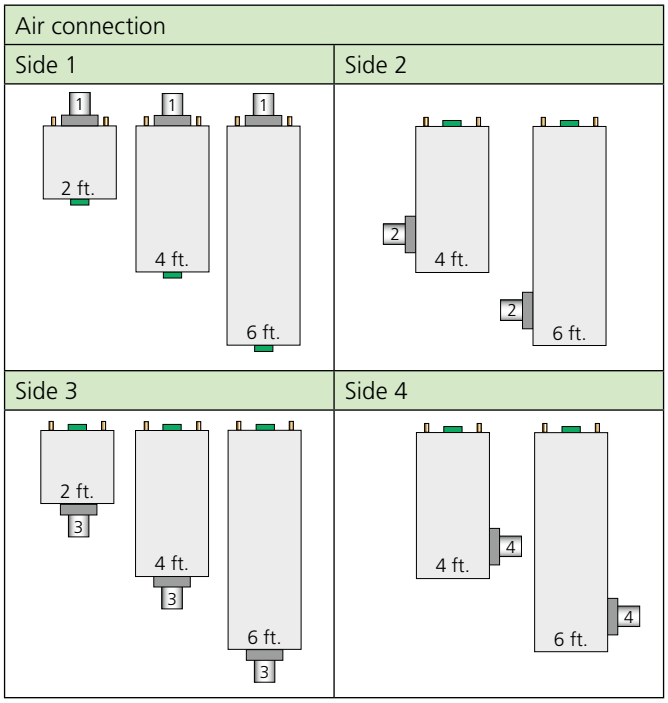



*Figure 15. Selectable air connections, (view from above)*

### Symbol key

Water pipes

Knob

Air connection

# Installation - Details

## Suspension

PARASOL Zenith has four mounting brackets for suspension and is installed using one threaded drop rod in each mounting bracket (Figure 17). A double-threaded rod with a thread lock should be used if there is a substantial distance between the overhead slab and the unit. A 7.9-inch threaded drop rod is used for surface mounting. Threaded drop rods and assembly fitting SYST MS M8 (Figure 16) are ordered separately.

For installation in an existing T-bar system, the product is stabilized by the T-bar system and in this case, it is sufficient to suspend the product from two brackets (diagonal).

### Quick bracket

For an even more efficient and time-saving installation, we have developed a kit for easier installation. PARASOL Z QUICK SUSPENSION KIT, consisting of 2 fixed brackets.

The fixed brackets are fastened to the ceiling. The product can then be pushed into place without the use of tools. The brackets also feature an integrated fine adjustment of approx. 2 inches in height. (Figure 18).

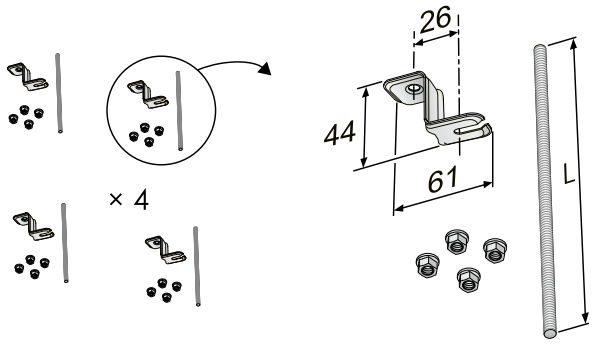



*Figure 16. Assembly piece SYST MS M8-1, ceiling mount, and threaded rod*

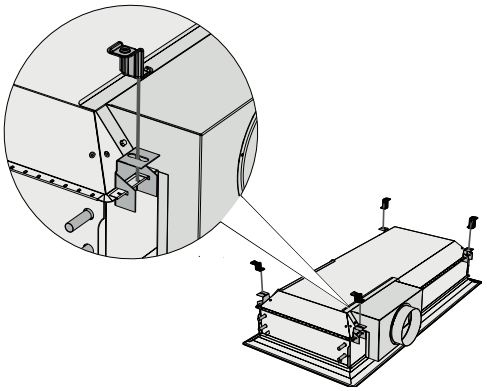


*Figure 17. Suspension in four brackets with SYST MS M8*

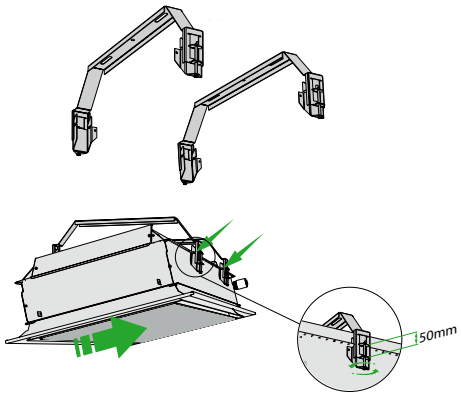



*Figure 18. Installation with quick bracket PARASOL Z QUICK SUSPENSION KIT*

# Connections

## Connection sizes

## Water

| Unit | Cooling | Heating |
|---|---|---|
| (ft.) | Supply and return | Supply and return |
| 2, 4 | plain pipe ends | plain pipe ends |
| | (Cu) Ø 12 x 1.0 mm | (Cu) Ø 12 x 1.0 mm |
| 6 | plain pipe ends | plain pipe ends |
| | (Cu) Ø 15 x 1.0 mm | (Cu) Ø 12 x 1.0 mm |

### Adapters and connectors (accessories)

| Unit | Adapter/connector | Cooling | Heating |
|---|---|---|---|
| (ft.) | (type) | Supply/return | Supply/return |
| 2, 4 | Flexible hose | Ø 12mm to "1/2" NPT | Ø 12mm to "1/2" NPT |
| | Nominal pipe thread connection | Ø 12mm to "1/2" NPT | Ø 12mm to "1/2" NPT |
| 6 | Flexible hose | Ø 15mm to "1/2" NPT | Ø 12mm to "1/2" NPT |
| | Nominal pipe thread connection | Ø 15mm to "1/2" NPT | Ø 12mm to "1/2" NPT |
| *Adapters/connectors are sold as accessories.* | | | |

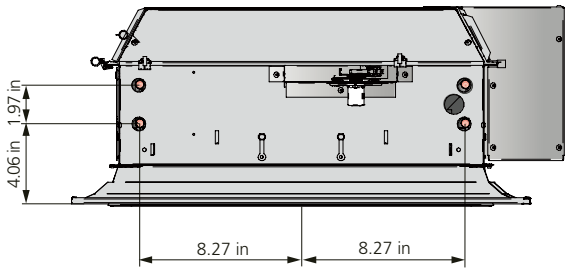



*Figure 19. Dimensions, water connection length 2, 4, 6 ft.*

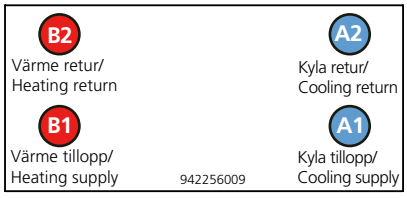



*Figure 20. Water connection - Length 2, 4, 8 ft**
*A1 = Supply cooling water ø12x1.0 mm (Cu)*
*A1 = Supply cooling water ø15x1.0 mm (Cu) *(Size 6 ft.)*
*A2 = Return cooling water ø12x1.0 mm (Cu)*
*A2 = Return cooling water ø15x1.0 mm (Cu) *(Size 6 ft.)*
*B1 = Supply heating water ø12x1.0 mm (Cu)*
*B2 = Return heating water ø12x1.0 mm (Cu)*

## Connecting water

The water pipes are always placed on the product's short side, regardless of the air connection side of the product.

Connect the water pipes using push-on couplings or compression ring couplings. Note that compression ring couplings require support sleeves inside the pipes.

Do not use solder couplings to connect the water pipes. High temperatures can damage the unit's existing soldered joints.

Flexible connecting hoses for water can be ordered separately.

## Air

| Unit | Air connection, diameter Ø in. | | |
|---|---|---|---|
| (ft.) | Ø 5 | Ø 6 | Ø8 |
| 2, 4 | Yes | Yes | No |
| 6 | No | No | Yes |

## To connect the air

PARASOL Zenith comes with an open-air connection on the selected sides 1, 2, 3, or 4.

On delivery, the sleeve faces inwards. During installation, the sleeve is turned outwards and is secured with the enclosed screws to then be connected to the primary air duct.

If you subsequently want to change the air connection side than that ordered, you can change the positions of the cover and connection sleeve as set out below.

### Possibility to change the connection side

- From side 1 to side 2 or 4. (Does not apply to length 2 ft.)
- From side 2 to side 3 or 4.
- From side 3 to side 2 or 4. (Does not apply to length 2 ft.)
- From side 4 to side 2 or 3.

### PARASOL Zenith with bend

PARASOL Zenith can be upgraded with VAV or DCV functionality, for these functions we recommend 3xØ straight connection before the product to maintain a very high airflow accuracy.

Incorporating this requirement into your project planning not only guarantees optimal performance but also simplifies installation and future system upgrades.

PARASOL Zenith has the option to place the air spigot connection on all four sides, to simplify installation and reduce installation costs.

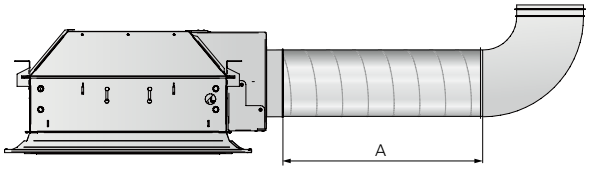



*Figure 21. Dimensional drawing, long side connection with bend*

### Recommendation for accurate flow measurment

| Air connection size (in.) | A (mm) |
|---|---|
| 5 | 14.76 |
| 6 | 18.90 |
| 8 | 23.62 |

# K-factor setting

You can easily set the required k-factor with the help of the knob located on the short side.

**Example: To achieve the required flow of 50 CFM at 0.4 in wg, requires k-factor 2.4**

**A**: Find the product's length and air connection diameter from the left-hand side of the k-factor table.

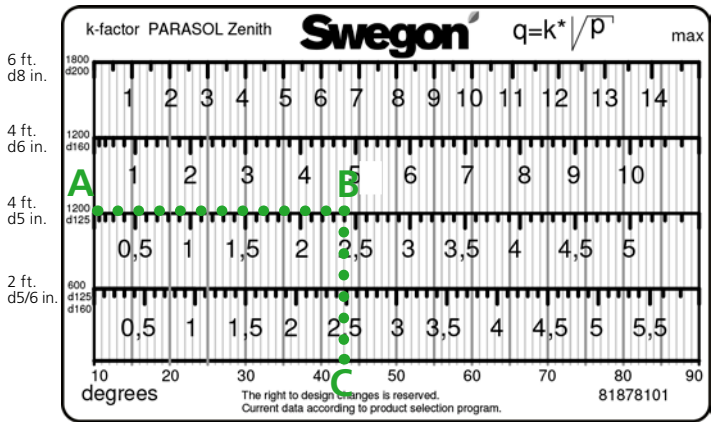
**B**: Read the required k-factor on the row in question.

**C**: Follow the vertical row and read the number of degrees at the bottom.

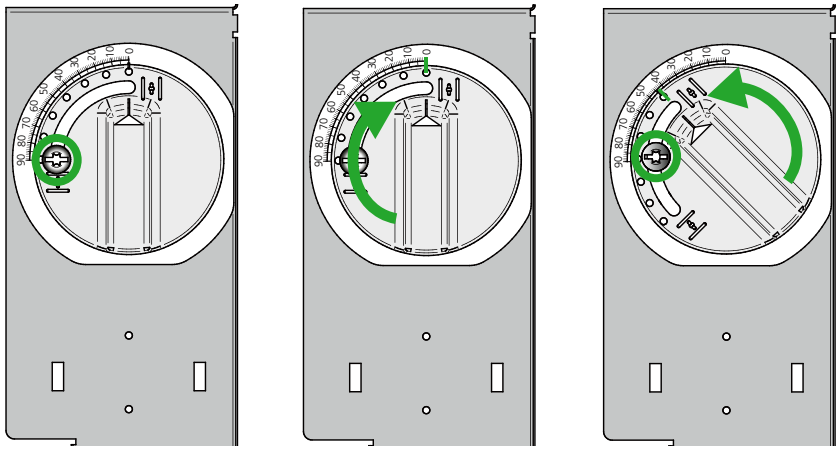
n the example from the table for a PARASOL Zenith with length 1200mm (4 ft.), ø125mm (5 in.), k-factor 2.4, turn the knob to 43°.

*Figure 22. Position of the knob (for air connection 1 the knob is positioned on the opposite short side.*

## K-factor table




## To set the k-factor



**1.**
Loosen the screw located in the knob's groove

**2.**
Then turn the knob to the fully closed position 0°.

**3.**
Turn the knob back to the angle for the desired k-factor, (in our example to 43°) and tighten the screw.

# Technical data

## Recommended limit values

### Pressure levels

| | |
|---|---|
| Coil working pressure, max. | 535 ft wg |
| Coil test pressure, max. | 802 ft wg |

** Applicable without control equipment mounted*

**Nozzle pressure** 0,080 - 0,80 in wg

| Recommended lowest nozzle pressure, cooling | Airflow (CFM) | Nozzle pressure (in wg) |
|---|---|---|
| | <21 | 0,2 |
| | 32 - 65,5 | 0,1 |
| | >65,5 | 0,08 |
| Recommended lowest nozzle pressure if coil heat is used. | | 0,28 |

### Water flow

Ensures evacuation of any air pockets in the system.

| | |
|---|---|
| Cooling water, min. | 0,064 CFM |
| Heating water (48”), min. | 0,028 CFM |

### Temperature differentials

| | |
|---|---|
| Cooling water, temperature increase | 3,6 - 9,0 F° |
| Heating water, drop in temperature | 7,2 - 18,0 F° |

Temperature differences are always expressed in Kelvin (K).

### Supply flow temperature

| | |
|---|---|
| Cooling water | ** |
| Heating water, max. | 140 F° |

*** Cooling water must always be kept at a level that ensures that no condensation is formed.*

**Table 1. Cooling capacity for natural convection**

| Unit | Cooling capacity (BTUH) for temperature difference, room - water ΔTmk (°F) | | | | | | |
|---|---|---|---|---|---|---|---|
| (ft.) | 10.8 | 12.6 | 14.4 | 16.2 | 18 | 19.8 | 21.6 |
| 2 | 96 | 113 | 133 | 150 | 188 | 191 | 212 |
| 4 | 235 | 283 | 331 | 379 | 427 | 481 | 529 |
| 6 | 304 | 362 | 420 | 488 | 546 | 611 | 679 |

**Table 2. Pressure drop constant - water, $K_{pk}$**

| Unit | Function, $k_{pk}$ cooling | |
|---|---|---|
| (ft.) | A2 | B2 |
| 2 | 767 | 904 |
| 4 | 1891 | 2274 |
| 6 | 2439 | 2905 |

A2 = Cooling and supply air, serially connected double-row coil

B2 = Cooling, heating, and supply air, serially connected double-row coil

*$K_{pk}$ values for the water flow 0,106 CFM.

**$K_{pk}$ values for the water flow 0,212 CFM

# Cooling

## Table 3 – Data – Cooling. Sizing Guide for Parasol Zenith at 0.30 in wg

| Unit | Air connection | Airflow | Sound level | Cooling capacity (BTUH) of primary air at $\Delta T_1$ (°F) | | | | Cooling capacity (BTUH) water at $\Delta T_{mk}$ (°F) | | | | | Pressure drop constant, air $k_{pl}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ft. | in. | CFM | dB(A) | 11 | 14 | 18 | 22 | 11 | 13 | 14 | 16 | 18 | |
| 2 A | Ø5 | 21 | 21 | 246 | 328 | 410 | 491 | 570 | 662 | 758 | 853 | 949 | 39 |
| | | 42 | 26 | 491 | 655 | 819 | 983 | 775 | 904 | 1034 | 1164 | 1294 | 78 |
| | | 64 | 30 | 737 | 983 | 1229 | 1474 | 908 | 1061 | 1212 | 1362 | 1515 | 119 |
| | | 85 | 33 | 983 | 1311 | 1638 | 1966 | 990 | 1157 | 1321 | 1485 | 1652 | 163 |
| | | 97 | 36 | 1130 | 1509 | 1884 | 2259 | 1007 | 1174 | 1341 | 1509 | 1676 | 191 |
| 2 A | Ø6 | 21 | 20 | 246 | 328 | 410 | 491 | 570 | 662 | 758 | 853 | 949 | 39 |
| | | 42 | 25 | 491 | 655 | 819 | 983 | 782 | 911 | 1041 | 1171 | 1300 | 78 |
| | | 64 | 29 | 737 | 983 | 1229 | 1474 | 918 | 1068 | 1222 | 1375 | 1529 | 117 |
| | | 85 | 32 | 983 | 1311 | 1638 | 1966 | 1010 | 1177 | 1345 | 1512 | 1683 | 157 |
| | | 104 | 34 | 1205 | 1604 | 2007 | 2410 | 1041 | 1212 | 1386 | 1560 | 1734 | 194 |
| 2 B | Ø5 | 21 | <20 | 246 | 328 | 410 | 491 | 519 | 608 | 693 | 778 | 867 | 39 |
| | | 42 | 25 | 491 | 655 | 819 | 983 | 689 | 802 | 918 | 1034 | 1147 | 78 |
| | | 64 | 27 | 737 | 983 | 1229 | 1474 | 805 | 942 | 1075 | 1208 | 1345 | 119 |
| | | 85 | 29 | 983 | 1311 | 1638 | 1966 | 867 | 1010 | 1154 | 1297 | 1444 | 163 |
| | | 97 | 30 | 1130 | 1509 | 1884 | 2259 | 887 | 1038 | 1184 | 1331 | 1481 | 191 |
| 2 B | Ø6 | 21 | <20 | 246 | 328 | 410 | 491 | 519 | 608 | 693 | 778 | 867 | 39 |
| | | 42 | 23 | 491 | 655 | 819 | 983 | 693 | 805 | 922 | 1038 | 1154 | 78 |
| | | 64 | 25 | 737 | 983 | 1229 | 1474 | 812 | 945 | 1082 | 1218 | 1352 | 117 |
| | | 85 | 28 | 983 | 1311 | 1638 | 1966 | 884 | 1031 | 1177 | 1324 | 1471 | 157 |
| | | 104 | 36 | 1205 | 1604 | 2007 | 2410 | 925 | 1079 | 1232 | 1386 | 1539 | 194 |
| 4 A | Ø5 | 21 | 29 | 246 | 328 | 410 | 491 | 932 | 1089 | 1242 | 1399 | 1553 | 39 |
| | | 42 | 30 | 491 | 655 | 819 | 983 | 1416 | 1652 | 1887 | 2123 | 2358 | 78 |
| | | 64 | 31 | 737 | 983 | 1229 | 1474 | 1741 | 2031 | 2321 | 2611 | 2901 | 119 |
| | | 85 | 33 | 983 | 1311 | 1638 | 1966 | 1949 | 2273 | 2597 | 2922 | 3246 | 164 |
| | | 95 | 35 | 1106 | 1474 | 1843 | 2212 | 2014 | 2348 | 2683 | 3017 | 3355 | 187 |
| 4 A | Ø6 | 21 | 21 | 246 | 328 | 410 | 491 | 939 | 1096 | 1253 | 1410 | 1567 | 39 |
| | | 53 | 26 | 614 | 819 | 1024 | 1229 | 1430 | 1669 | 1908 | 2147 | 2386 | 97 |
| | | 85 | 30 | 983 | 1311 | 1638 | 1966 | 1768 | 2065 | 2358 | 2652 | 2949 | 157 |
| | | 127 | 33 | 1474 | 1966 | 2457 | 2949 | 2102 | 2451 | 2802 | 3154 | 3502 | 240 |
| | | 182 | 36 | 2113 | 2819 | 3522 | 4225 | 2232 | 2604 | 2976 | 3348 | 3720 | 360 |
| 4 B | Ø5 | 21 | 20 | 246 | 328 | 410 | 491 | 887 | 1034 | 1181 | 1328 | 1478 | 39 |
| | | 42 | 25 | 491 | 655 | 819 | 983 | 1297 | 1515 | 1730 | 1945 | 2164 | 78 |
| | | 64 | 29 | 737 | 983 | 1229 | 1474 | 1556 | 1816 | 2075 | 2334 | 2594 | 119 |
| | | 85 | 32 | 983 | 1311 | 1638 | 1966 | 1737 | 2027 | 2317 | 2608 | 2898 | 164 |
| | | 95 | 34 | 1106 | 1474 | 1843 | 2212 | 1812 | 2116 | 2416 | 2720 | 3021 | 187 |
| 4 B | Ø6 | 21 | <20 | 246 | 328 | 410 | 491 | 816 | 949 | 1085 | 1222 | 1358 | 39 |
| | | 53 | 25 | 614 | 819 | 1024 | 1229 | 1328 | 1546 | 1768 | 1990 | 2212 | 97 |
| | | 85 | 27 | 983 | 1311 | 1638 | 1966 | 1638 | 1911 | 2184 | 2457 | 2730 | 157 |
| | | 127 | 29 | 1474 | 1966 | 2457 | 2949 | 1932 | 2256 | 2577 | 2898 | 3222 | 240 |
| | | 182 | 30 | 2113 | 2819 | 3522 | 4225 | 2085 | 2433 | 2782 | 3130 | 3478 | 360 |
| 6 B | Ø8 | 21 | <20 | 246 | 328 | 410 | 491 | 802 | 935 | 1068 | 1201 | 1334 | 39 |
| | | 85 | 23 | 983 | 1311 | 1638 | 1966 | 2079 | 2427 | 2771 | 3119 | 3464 | 156 |
| | | 127 | 25 | 1474 | 1966 | 2457 | 2949 | 2597 | 3031 | 3464 | 3898 | 4331 | 235 |
| | | 170 | 28 | 1966 | 2621 | 3276 | 3932 | 2915 | 3399 | 3884 | 4369 | 4857 | 317 |
| | | 212 | 36 | 2457 | 3276 | 161 | 4915 | 3096 | 3611 | 4126 | 4642 | 5157 | 402 |
| 6 B | Ø8 | 21 | 29 | 246 | 328 | 410 | 491 | 782 | 911 | 1041 | 1171 | 1300 | 39 |
| | | 85 | 30 | 983 | 1311 | 1638 | 1966 | 1983 | 2314 | 2645 | 2976 | 3307 | 156 |
| | | 127 | 31 | 1474 | 1966 | 2457 | 2949 | 2423 | 2826 | 3229 | 3631 | 4038 | 235 |
| | | 170 | 33 | 1966 | 2621 | 3276 | 3932 | 2696 | 3143 | 3594 | 4044 | 4492 | 317 |
| | | 212 | 35 | 2457 | 3276 | 161 | 4915 | 2881 | 3358 | 3840 | 4321 | 4799 | 402 |

*Locked ΔT 5,4°F on the water side, temperature inlet flow +57,2°F, return flow +62,6°F,*
*The specified sound level applies to a straight connection without a damper or with a fully open damper, Room attenuation = 4 dB*

# Heating

### Heating function

As the comfort module quickly can mix the primary air with room the air, PARASOL Zenith is ideal for managing both cooling and heating. Heating spaces with air heated above room temperature discharged from the ceiling is a good alternative to conventional radiator heating solutions. The benefits achieved include lower installation costs, simpler installation, and perimeter walls free from piping and radiators.

Regardless of the type of heating system installed it is important to consider the operative temperature in a room. Most people are comfortable when the operative temperature in winter is between 68–75 °F and the optimal comfort requirements are normally met when the room temperature is 72 °F. This means that for a room with a cold perimeter wall, the air temperature must be higher than 72 °F to compensate for the chilling effect of the wall. In new buildings with normal insulated perimeter walls and normally standards of window glazing, the difference between the room air temperature and the operative temperature is small. But for older buildings with worse windows, it may be necessary to raise the air temperature to compensate for the chilling effect. Different operating scenarios can be simulated easily using the Swegon ESBO software to calculate the heat balance where both the room air temperature and operative temperature are specified.

Supplying heated air from the ceiling results in some stratification of the air. With a maximum supply flow temperature of 104 °F, the stratification is non-existent, while at 140 °F it can be around 4 K in the occupied zone. This only applies during the warming-up phase, when the room is unused and there is no internal load. When the room is being used and lighting and people are present, the stratification is reduced or disappears depending on the heating load.

Laboratory studies, computer simulations, and reference projects all show that a good indoor climate will be achieved using the PARASOL Zenith comfort module whatever the time of year.

**Table 4. Pressure drop constant - water, $K_{pv}$**

| Unit (ft.) | Function, $K_{pv}$ heating* | |
|---|---|---|
| | A2 | B2 |
| 2 | - | 1.07 |
| 4 | - | 0.79 |
| 6 | - | 0.67 |

B2 = Cooling, heating, and supply air, serially connected double-row coil

*$K_{pv}$-values for the water flow 0,064 CFM

**Table 5 – data – heating. Sizing Guide for Parasol Zenith at 0,30 In wg**

| Unit | Air connection | Airflow | Sound level | Heating capacity, water at $\Delta T_{mv}$ (K) F | | | | | | Pressure drop constant, air |
|---|---|---|---|---|---|---|---|---|---|---|
| ft. | in. | CFM | dB(A) | 18* | 27 | 36 | 45 | 54 | 63 | kpl |
| 2 B | Ø5 | 21 | 21 | 495* | 826* | 1177* | 1550* | 1935* | 2338* | 39 |
| | | 42 | 26 | 628* | 1038* | 1485* | 1768 | 2215 | 2683 | 78 |
| | | 64 | 30 | 693* | 1157* | 1659* | 1986 | 2498 | 3031 | 119 |
| | | 85 | 33 | 727* | 1218* | 1751* | 2102 | 2645 | 3215 | 163 |
| | | 97 | 36 | 734* | 1232* | 1771* | 2130 | 2686 | 3263 | 191 |
| 2 B | Ø6 | 21 | 20 | 495* | 819* | 1177* | 1956 | 1939 | 2341 | 39 |
| | | 42 | 25 | 628* | 1041* | 1485* | 1775 | 2218 | 2686 | 78 |
| | | 64 | 29 | 700* | 1160* | 1669* | 1993 | 2509 | 3038 | 117 |
| | | 85 | 32 | 741* | 1236* | 1771* | 2123 | 2672 | 3242 | 157 |
| | | 104 | 34 | 751* | 1259* | 1809* | 2171 | 2737 | 3324 | 194 |
| 4 B | Ø5 | 21 | <20 | 1181* | 1464* | 2174* | 2922 | 3604 | 4300 | 39 |
| | | 42 | 25 | 1195* | 1700 | 2577 | 3529 | 4580 | 5625 | 78 |
| | | 64 | 27 | 1393* | 2003 | 3041 | 4164 | 5416 | 6502 | 119 |
| | | 85 | 29 | 1495* | 2147 | 3232 | 4410 | 5683 | 6812 | 164 |
| | | 95 | 30 | 1546* | 2232 | 3369 | 4707 | 5898 | 7079 | 187 |
| 4 B | Ø6 | 21 | <20 | 563* | 986* | 1440* | 1877* | 2331* | 2795* | 39 |
| | | 53 | 23 | 1242* | 1775 | 2662 | 3614 | 4741 | 5693 | 97 |
| | | 85 | 25 | 1502* | 2143 | 3188 | 4317 | 5526 | 6625 | 157 |
| | | 127 | 28 | 1707* | 2444 | 3618 | 4973 | 6160 | 7379 | 240 |
| | | 182 | 36 | 1761* | 2536 | 3768 | 5160 | 6403 | 7683 | 360 |
| 6 B | Ø8 | 21 | 29 | 478* | 802* | 1140* | 1276* | 1860* | 2236* | 39 |
| | | 85 | 30 | 1911* | 3242 | 4683 | 6195 | 7287 | 9454 | 156 |
| | | 127 | 31 | 2232* | 3771 | 5427 | 7167 | 8259 | 10921 | 235 |
| | | 170 | 33 | 2413* | 4096 | 5904 | 7833 | 8908 | 11945 | 317 |
| | | 212 | 35 | 2638* | 4427 | 6348 | 8396 | 9420 | 12730 | 402 |

*Locked ΔT 18°F on the waterside, temperature room +68°F.*

**) ΔT 9°F on the waterside*

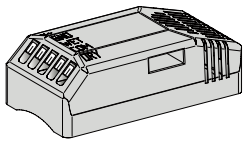
*The specified sound level applies to a straight connection without a damper or with a fully open damper. Room attenuation = 4 dB*

# Accessories

## Factory-fitted accessories

**The accessories below can be ordered fitted on the product.**

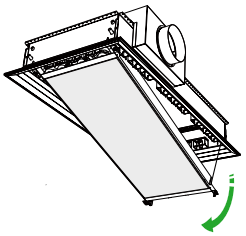
### Condensation sensor SYST PCS



The detector operates at the dew point temperature rather than a fixed relative humidity value.

The dew point is calculated from a temperature-compensated RH element and an extremely accurate sensor element that is bound to the metal plate on the detector. Compatible with most regulators

### Hinged coil

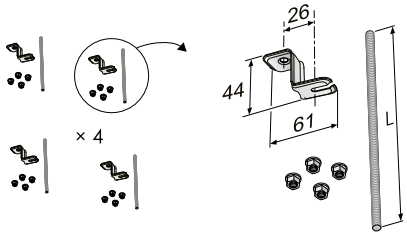


PARASOL Zenith can be ordered as a variant with hinged coil for easy access and cleaning of the complete coil. PARASOL Zenith with the hinged coil is well suited for use in rooms where stringent demands are made on hygiene. The accessory requires the use of flexible hose connections on the water side.

# Loose accessories

### Assembly fitting, SYST MS M8

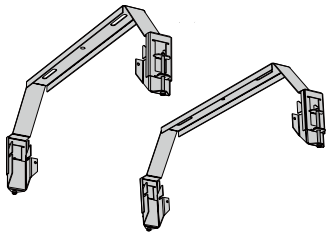
For installation use the assembly fitting containing threaded rods, ceiling brackets, and nuts to all four mounting brackets. Also available with threaded drop rods and thread locks.




### Assembly fitting, PARASOL Z QUICK SUSPENSION KIT

The kit consists of 2 fixed brackets to suspend Parasol Zenith.

The fixed brackets are fastened to the ceiling, after which the product can be pushed into place without the use of tools. The brackets also feature an integrated fine adjustment of approx. 2 inches in height.



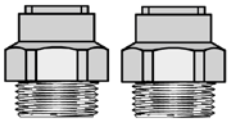
### Flexible connection hoses, SYST FH F50

Flexible hoses, Length: 6, 12, 18, 24 and 36 inch.
Quick fit coupling (push-on ø12 or 15 mm against pipe on one end and 1/2" NPT male coupling on the other end.
SYST FH-F50-6in.-12-1/2in. NPT, SYST FH-F50-12in.-12-1/2in. NPT
SYST FH-F50-12in.-15-1/2in. NPT, SYST FH-F50-18in.-12-1/2in. NPT
SYST FH-F50-18in.-15-1/2in. NPT, SYST FH-F50-24in.-12-1/2in. NPT
SYST FH-F50-24in.-15-1/2in. NPT, SYST FH-F50-36in.-12-1/2in. NPT


### NPT-connection, SYST CS

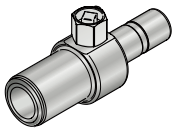
Nominal pipe thread connection, available in two sizes.

Ø 12mm and Ø 15mm to "1/2" NPT



### Bleed nipple SYST AR-12 and SYST AR-15

Nipple for venting the water circuit. Equipped with push-on connector adapted for installation with flexible connection hose F50.



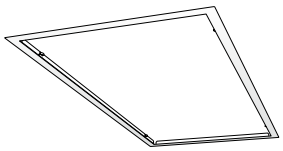
### Reduction, air connection – SYST AD2

SYST AD2 is used as a reduction between the PARASOL Zenith with air connection Ø160 mm down to 150 mm (Ø6.3 into 5.9 in.), to suit the duct system.

### Drywall ceiling frame Parasol c T-FPB

Mounting frame for neat installation of Parasol Zenith in drywall ceilings.

Available in three sizes:
603 x 603 mm, 2 ft.
1213 x 603 mm, 4 ft.
1823 x 603 mm, 6 ft.



# Dimensions and weights

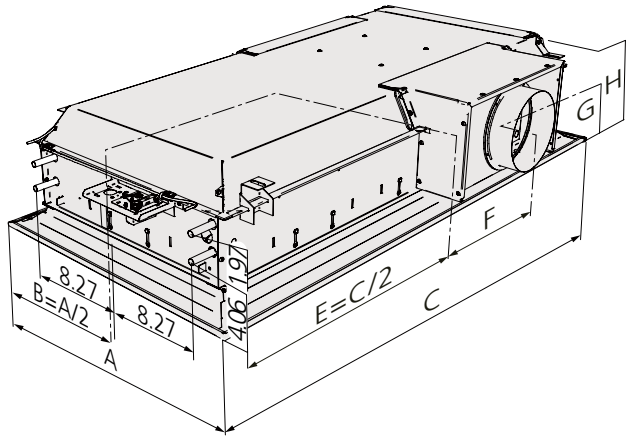



*Figure 23. Dimensional drawing - long side connection (the length 4 ft.) with air connection on side 2 is shown in the example).*

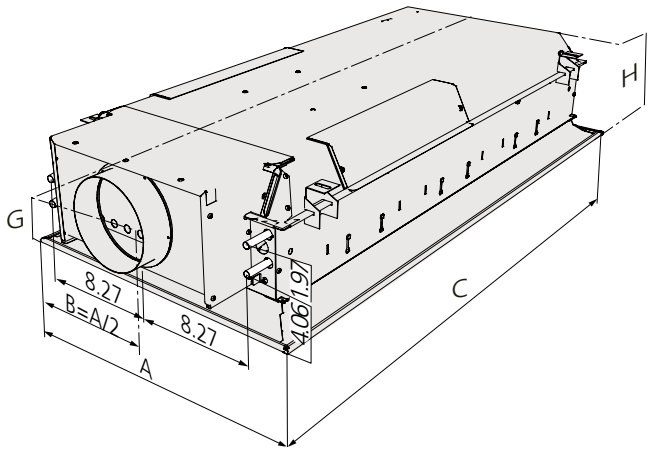



*Figure 24. Dimensional drawing - short side connection (the length 4 ft.) with air connection on side 1 is shown in the example).*

## Table 12. Dimensions

### Length, 2 ft.

| Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | ØD* | E | F | G* | H* |
| 23.7 | 11.9 | 23.7 | 5 in / 6 in | 11.9 | 7 | 5.39/6.02 | 8.66/9.84 |

** Dimensions refer to products with air connection ø5 or ø6*

### Length, 4 ft.

| Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | ØD* | E | F | G* | H* |
| 23.7 | 11.9 | 47.8 | 5 in / 6 in | 23.9 | 7 | 5.39/6.02 | 8.66/9.84 |

** Dimensions refer to products with air connection ø5 or ø6*

### Length, 6 ft.

| Dimensions (in.) | | | | | | | |
|---|---|---|---|---|---|---|---|
| A | B | C | ØD | E | F | G | H |
| 23.7 | 11.9 | 71.8 | 8 | 35.9 | 18.8 | 6.8 | 11.4 |

## Table 13. Weight

### Length, 2 ft.

| Length | Coil type | Inlet | Dry weight | Water volume, cooling | Water volume, heating |
|---|---|---|---|---|---|
| ft. | | Ø in. | lb | gal | gal |
| 2 | A | 5 | 28.4 | 4.1 | |
| 2 | B | 5 | 28.7 | 3.2 | 1.3 |
| 2 | A | 6 | 29.8 | 4.1 | |
| 2 | B | 6 | 30 | 3.2 | 1.3 |

### Length, 4 ft.

| Length | Coil type | Dim. | Dry weight | Water volume cooling | Water volume heating |
|---|---|---|---|---|---|
| ft. | | Ø in. | lb | gal | gal |
| 4 | A | 5 | 52 | 9.1 | |
| 4 | B | 5 | 52 | 6.8 | 2.6 |
| 4 | A | 6 | 53.8 | 9.1 | |
| 4 | B | 6 | 53.8 | 6.8 | 2.6 |

### Length 6 ft.

| Length | Coil type | Dim. | Dry weight | Water volume cooling | Water volume, heating |
|---|---|---|---|---|---|
| ft. | | Ø in. | lb | gal | gal |
| 6 | A | 8 | 78.7 | 14.4 | |
| 6 | B | 8 | 78.7 | 10.2 | 4.2 |

*Weights above are excl.:*
*Control plate (0.265 lb)*

# Specification

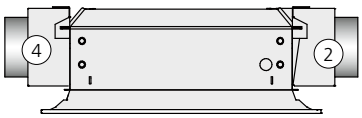
## Contractor demarcation

Swegon's delivery ends at the connection points for water and air and the connection of any factory-fitted actuators. (See figures 19-20 and 23-24.)

- The plumbing contractor connects the water to the plain pipe ends fills/flushes the system, bleeds it, and tests the pressure.
  The ventilation contractor connects the supply air duct to the product air connection sleeves.
- If factory-fitted actuators are chosen, the electrical contractor connects the actuators' pinned cable ends to the room controller 24 V AC/DC.

## Available to order

| | |
|---|---|
| Size | Single-module unit: 2 ft.<br>603 x 603 mm, (23.74x23.74 in.)<br><br>Double module unit: 4 ft.<br>1213 x 603 mm, (47.76x23.74 in.)<br><br>Three-module unit: 6 ft.<br>1823 x 603 mm, (71.77x23.7 in.)<br>The tolerance is ±0.08 in. |
| Function | The units can be ordered in various functional versions:<br>A = Cooling and supply air (size 2, 4, and 6 ft.)<br>B = Cooling, heating, and supply air (size 2, 4, and 6 ft.) |
| ADC | Factory-fitted ADC supplied as standard |
| Size of the connection sleeve | Ø125 mm/5 in. (size 2 and 4 ft.)<br>Ø160 mm/6 in. (size 2 and 4 ft.)<br>Ø200 mm/8 in. (size 6 ft.) |
| Positioning of connection sleeves | Connection on the short side<br>1 = Air and water on the same side<br>3 = Air and water on the opposite side<br>Connection on the long side<br>2 = Connection on the right-hand side*<br>4 = Connection on the left-hand side* |
| Color | The units are supplied finished in Swegon's standard shade of white, RAL 9003, gloss ratio 30 ± 6% |




** Seen from the short side with water connections*

# Ordering key - Product

## PARASOL Zenith 600 (2 ft.)

| Product | PARASOL Zenith | e | aaa- | b- | ccc- | 1 |
|---|---|---|---|---|---|---|
| Version: | | | | | | |
| Size:<br>603 = 603 x 603 mm, (23.74x23.74 in.) | | | | | | |
| Function:<br>A = Cooling, and supply air<br>(serially connected double-row coil)<br>B = Cooling, heating, and supply air<br>(serially connected double-row coil) | | | | | | |
| Dimensions connection sleeves:<br>125 = Ø4.92 in. connection, product height 8.66 in.<br>160 = Ø6.30 in. connection, product height 9.84 in. | | | | | | |
| Positioning of connection sleeves:<br>1 = Short side same side as the water connection<br>3 = Short side opposite the water connection | | | | | | |

## PARASOL Zenith 1800 (6 ft.)

| Product | PARASOL Zenith | e | aaaa- | b- | 200- | d |
|---|---|---|---|---|---|---|
| Version: | | | | | | |
| Size:<br>1823 = 1823 x 603 mm, (71.77x23.74 in.) | | | | | | |
| Function:<br>A = Cooling and supply air<br>(serially connected double-row coil)<br>B = Cooling, heating and supply air<br>(serially connected double-row coil) | | | | | | |
| Dimensions connection sleeves:<br>200 = Ø7.87 in. connection, product height 11.4 in. | | | | | | |
| Positioning of connection sleeves:<br>1 = Short side the same side as the water connection<br>2 = Long side, right side of the water connection<br>3 = Short side, opposite side as the water connection<br>4 = Long side, left side of the water connection | | | | | | |

## PARASOL Zenith 1200 (4 ft.)

| Product | PARASOL Zenith | e | aaaa- | b- | ccc- | d |
|---|---|---|---|---|---|---|
| Version: | | | | | | |
| Size:<br>1213 = 1213 x 603 mm, (47.76x23.74 in.) | | | | | | |
| Function:<br>A = Cooling and supply air,<br>(serially connected double-row coil)<br>B = Cooling, heating and supply air<br>(serially connected double-row coil) | | | | | | |
| Dimensions connection sleeves:<br>125 = Ø4.92 in. connection, product height 8.66 in.<br>160 = Ø6.30 in. connection, product height 9.84 in. | | | | | | |
| Positioning of connection sleeves:<br>1 = Short side the same side as the water connection<br>2 = Long side, right side of the water connection<br>3 = Short side, opposite side as the water connection<br>4 = Long side, left side of the water connection | | | | | | |