

# PARASOL Z VAV

Energy saving comfort module for demand-controlled ventilation



## QUICK FACTS

- Comfort module for demand-controlled indoor climate.
- Equipped with control equipment for stand-alone or connectable to BMS via ModBUS
- Complete product with integrated damper for variable air flow control 0-100%.
- Energy-efficient operation since the room is ventilated, heated and cooled exactly as called for by the load, neither more or less.
- Highest possible comfort with provision for individual control on a product or room level.
- 4-way air distribution and Swegon's ADC (Anti Draught Control) provide maximum comfort and flexibility, both today and for future needs
- Large working range in one and the same product for easier design.

Variant		Supply air			Performance	
Size	Air connection:	Pa*	l/s	m <sup>3</sup> /h	Total cooling capacity (W)**	Sound level (dB(A))
600	125	75	20	72	493	26
600	125	75	25	90	564	28
600	125	75	30	108	631	30
600	160	75	25	90	566	27
600	160	75	35	126	697	30
600	160	75	45	162	809	33
1200	125	75	25	90	882	26
1200	125	75	35	126	1077	28
1200	125	75	45	162	1218	30
1200	160	75	30	108	900	23
1200	160	75	60	216	1375	28
1200	160	75	80	288	1591	34
1800	200	75	60	216	1590	30
1800	200	75	80	288	1890	33
1800	200	75	100	360	2135	35

\*Total pressure duct (Pa)

\*\*Air:  $\Delta T_p=7K$  / Water:  $\Delta T_{mk}=8.5K$ ,  $t_{water}=14/17^\circ C$

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## Technical description

### Comfort module PARASOL Zenith VAV

The product is based on a PARASOL Zenith b, but is also equipped with functions for demand-control of the indoor climate.

Comfort module PARASOL Zenith VAV with its mounted control equipment, demand-controlled air flow and cooling and heating for the best energy efficiency and comfort.

PARASOL Zenith VAV can be adapted and combined to meet comfort requirements in most projects. PARASOL Zenith VAV is a complete and fully flexible product with an adjustable air distribution pattern with the help of ADC and the possibility of factory mounted accessories.

PARASOL Zenith VAV is available as a single, double or triple module unit.

Sizes:	600x600; 600x1200; 600x1800
Modules:	Supply air and cooling Supply air, cooling and heating (water)
Installation:	Flush mounting for suspended ceilings

### Function

The basic principle of the comfort modules is closely related to that of chilled beams. The difference is mainly that comfort modules distribute air in four directions instead of two.

This maximises the area for the mixture of supply air with the room air, which enables you to take out a high capacity, but without occupying more ceiling space than necessary. The comfort modules are also optimized to quickly mix the supply air with the room air, which provides better comfort in the room. In heating applications, this technique can be utilised advantageously to convey heat along the ceiling in a better way.

### Demand-controlled indoor climate

Demand-controlled ventilation involves ventilating and conditioning the air in a room precisely to meet our needs – no more and no less. The potential for savings is substantial, especially in premises where there is considerable variation between low and high load conditions in rooms and during times when there are few or no occupants - which is the case in many premises. Offices, for example, often have a degree of occupancy below 50 %!

PARASOL Zenith VAV combines the best of both worlds – demand-controlled ventilation with all its potential for savings combined with the power and performance of the comfort module for air conditioning the room. All this packaged in a compact unit that is easy to install.



### Installation/Project design

See the separate documentation "PARASOL Zenith VAV Technical manual", which is available for download via [www.swegon.com](http://www.swegon.com).

### Maintenance

The product does not require any maintenance/service, except for any cleaning when necessary. See the separate Instructions for Use, available on [www.swegon.com](http://www.swegon.com).

### Environment

The Building Materials Declaration is available from [www.swegon.com](http://www.swegon.com).



[www.eurovent-certification.com](http://www.eurovent-certification.com)

[www.certiflash.com](http://www.certiflash.com)

## Compact and intelligent unit

PARASOL Zenith VAV comes as a compact and intelligent unit where the damper and control equipment are integrated in the product.

The only additional connections are the power and a possible connection to a main control system.

The sensor module, which is a vital part of the product, is a combined occupancy detector and temperature sensor. As standard placement is in the face plate, but it can also be placed on the wall.

The package together with an intelligent control system that permits many adjustments, contributes to making the product flexible and future-proof.

For example, all units can be a master or slave, easily adjustable by editing a parameter together with moving/replacing a RJ12 cable.

This means when, e.g. an open-plan office is divided up into a cellular office layout any extra work is minimised to adapt the product to the new operating mode.

### PARASOL Zenith VAV as standard is equipped with the following components

- Controller with 2 inputs for sensors which communicate over Modbus, it also features a general Modbus input/output.
- Motor for control 0-10 V for control of the internal damper.

### Factory fitted components as an option

- Condensation sensor CG-IV or WCD2
- Temperature sensor
- Set point selector switch that includes occupancy detector and temperature sensor (mounted in the face plate or supplied separately for wall mounting)
- CO<sub>2</sub> sensor. Detect Qa
- VOC Sensor
- Valves and actuator
- Hygiene design hinged coil

### Loose accessory kit

There is also several accessory kits available for retrofitting if you wish to expand the functionality:

- CG-IV kit
- WCD-2 kit
- PZ VAV SA kit - motor and control cable

## Factory fitted components

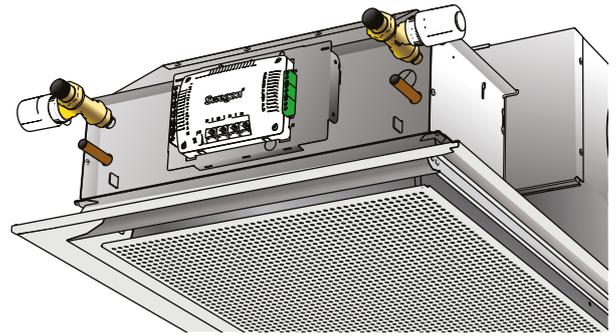


Figure 1. PARASOL Zenith VAV with factory mounted components such as controller, valves and actuators.

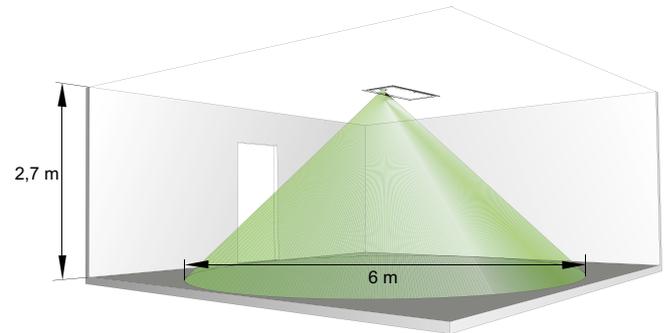


Figure 2. Detection range



Figure 3. View short side connection, where you see the water connections and controller as well as valves and actuators.

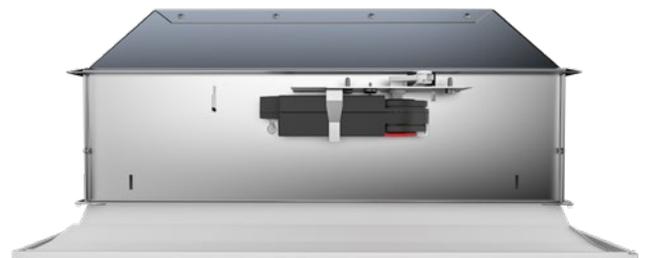


Figure 4. Motor, seen from the end (water connections on the opposite end)

## Unique control functions

PARASOL Zenith VAV includes an integrated damper that regulates the product's slot openings and thus the air flow. With our unique control sequence we always ensure that the comfort module provides the room with the right flow in each operating situation. We also get a good coanda effect by maintaining a high speed across the slot opening and with that good comfort.

## Easy to install

The product's small compact units fit most common modular dimensions making it easy to install. The slimline design results in simpler handling, especially when handling the products on the site, which gives less handling damage and a better working environment.

## Market-based module dimensions

The order range includes module dimensions to fit the standardised ceiling measurement c-c 600, 625 and 675 mm. In addition, there is a mounting frame for drywall ceilings and ceiling solutions of the clip-in-type.

## Range of application

PARASOL Zenith VAV is especially suitable for use in the following premises:

- Conference rooms with a need of demand controlled regulation and normal to high cooling load. There are demands on occupancy control to save energy when the room is vacant. The users must be able to influence and regulate the room temperature for the best comfort.
- Offices with a need of demand controlled regulation and normal to high cooling load. There are demands on occupancy control to save energy when the user is not in the room during the day and after office hours. The user must be able to influence and regulate the room temperature for the best comfort.

PARASOL Zenith VAV is also well suited for use in other premises such as:

- Classrooms
- Hotels
- Restaurants
- Hospitals
- Shops
- Shopping centres

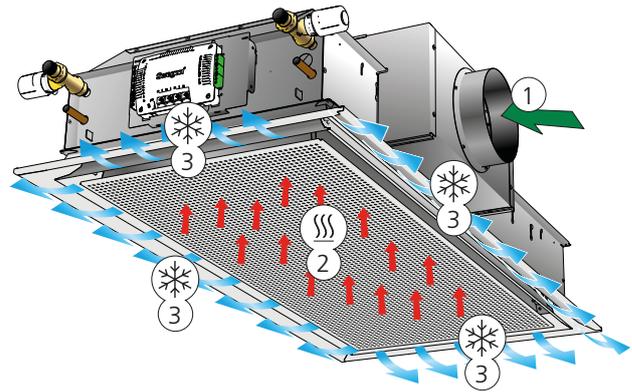


Figure 5. Variant A: Cooling and supply air function

1 = Primary air

2 = Induced room air

3 = Primary air mixed with chilled room air

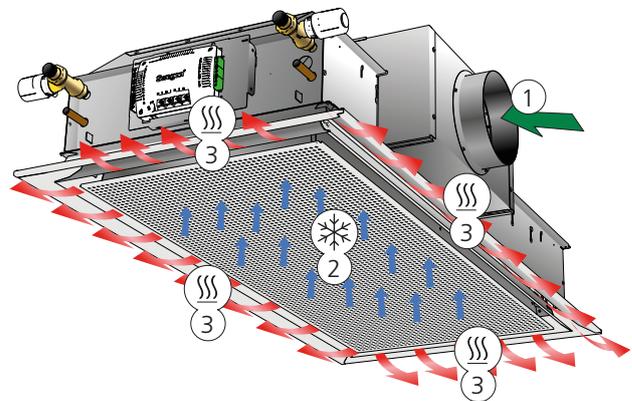


Figure 6. Variant B: Heating and supply air function (also including cooling function)

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 PARASOL Zenith VAV with supply air via a supply air duct and builds up positive pressure in the unit's plenary.

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

The proportion of recirculated room air drawn through the heat exchanger is typically about 3-5 times the proportion of primary air, i.e. if 20 l/s supply air comes from the air handling unit, then approximately 60-100 l/s room air will pass through the exchanger and be tempered.

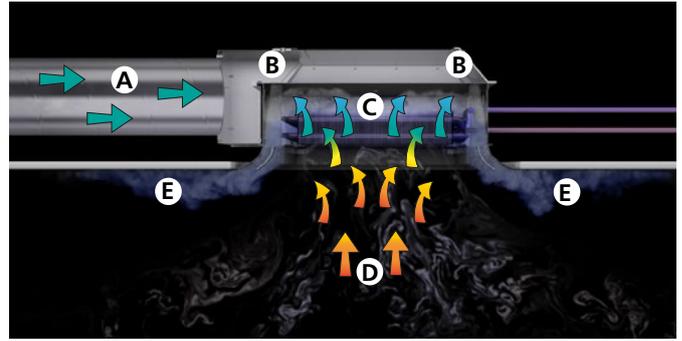


Figure 7. Induction principle in Parasol Zenith VAV

## Condensation-free cooling

PARASOL Zenith VAV has been developed to work condensation-free and therefore requires no drainage system or filter. Normally inlet temperatures between 14-16 °C 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 draughts and noise. Different requirements are made on air flow, 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 customised 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. As this will minimise future costs for rebuilding. Regardless of the scenario, new PARASOL Zenith VAV gives - through its simplicity in terms of air flow range, operation and commissioning - all the possibilities to find this flexible and optimal solution.

## Large working range

The work area related to the smallest to the largest air flow in one and the same product is very large for PARASOL Zenith VAV. In practice this means that one and the same product can handle a variety of room types, by being adjusted as required. The large work area is made possible by PARASOL Zenith VAV being equipped with slots for versatile and easy air flow adjustment. This also gives the following advantages:

- Fewer variants through larger k-factor areas
- Simple commissioning
- Available pre-programmed from the factory or configured on site with the help of the SWICCT software.

In order to clarify the large work area of PARASOL Zenith VAV we can compare the curves for cooling capacity/air flow with the cooling requirements for eight 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 at the façade, while the conference room is assumed to be placed on the floor's inner zone.

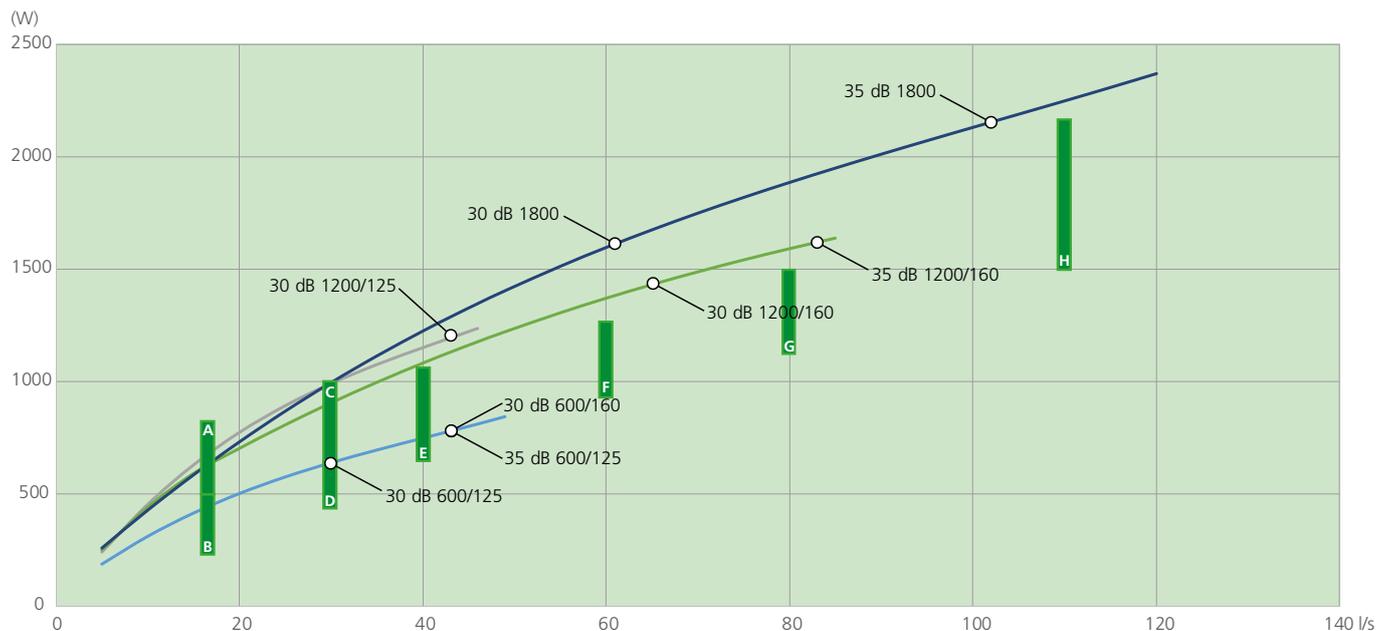
In diagram 1, we can clearly see that the same product can handle most types of rooms. All that is required is to adjust the size of the slot openings as required.

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 driving 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



<b>A: Individual offices, south facing</b> 12 m <sup>2</sup> 15 l/s 500-800 W cooling load	<b>D: Individual office for customer visits, solar protection</b> 12 m <sup>2</sup> 30 l/s 450-750 W cooling load	<b>G: Conference room</b> 12 m <sup>2</sup> 80 l/s 1150-1500 W cooling load
<b>B: Individual office, solar protection</b> 12 m <sup>2</sup> 15 l/s 250-500 W cooling load	<b>E: Conference room</b> 8 m <sup>2</sup> 40 l/s 700-1100 W cooling load	<b>H: Conference room</b> 18 m <sup>2</sup> 110 l/s 1500-2200 W cooling load
<b>C: Individual offices for customer visits</b> 12 m <sup>2</sup> 30 l/s 700-1000 W cooling load	<b>F: Conference room</b> 10 m <sup>2</sup> 60 l/s 900-1300 W cooling load	<b>Prerequisites:</b> Supply air: $\Delta P_i = 75 \text{ Pa}$ ; $\Delta T_i = 7\text{K}$ Cooling water: $t_{in} = 14^\circ\text{C}$ ; $t_{out} = 17^\circ\text{C}$ Room: $t_{room} = 24^\circ\text{C}$

## Operating modes

Depending on the status of connected sensors, the controller adjusts the outputs from any of several possible operating modes.

Operating modes are described below, these are based on occupancy in the room, status of the current sensor or the signal from the main control system.

### Operating modes

There are several operating modes in PARASOL Zenith VAV:

- Occupancy mode.
- No occupancy mode.
- Holiday.
- Standby mode.
- Emergency mode.
- Commissioning.
- Summer night cooling.

### Occupancy mode

When PARASOL Zenith VAV receives a signal via the presence sensor that someone is present in the room, the valve actuator regulates for cooling or heating water according to the chosen switching temperatures for cooling or heating linked to this operating mode. The air flow is controlled to the selected occupancy flow, but is naturally influenced by sensors such as condensation sensor, temperature sensor, window contact, possible air quality sensor, etc.

### No occupancy mode

When No occupancy mode is enabled the system automatically switches to energy save mode. The system returns to the Occupancy mode when occupancy is registered again. In Energy-save mode/No occupancy mode, the valve actuator is controlled for cooling or heating water according to the status on other sensors in the room, but normally with a greater permissible difference between switching temperature cooling and heating than in Occupancy mode at the same time as the air is regulated to Min. flow.

### Holiday

When Holiday mode is enabled the system automatically switches to energy save mode exactly as in No occupancy mode, but with the possibility to permit an even greater temperature difference. Controlled from the main control system.

### Standby mode

When the control system registers that a window is open the controller switches to Standby mode. When the window is closed the controller switches to Occupancy mode. When the controller is in Standby mode the room temperature is kept above 10 °C (frost protection).

### Emergency mode

In the event of a fire alarm, the air damper in the extract air duct is opened or closed, depending on how the control system has been set. In Emergency mode cooling and heating are switched off. Supply air is normally switched off.

Operating mode EMERG can only be handled in control systems that are connected to the main control system via Modbus RTU.

### Commissioning mode

The "First open" function means that the water valves are open during installation, which simplifies filling, pressure testing and venting the water system.

The function is disabled automatically after being energized for about 6 minutes.

A clicking noise can be heard when the valves and dampers change over to NC mode (normally closed) and the normal control function is enabled.

More details about commissioning mode can be read in the sensor module description on page 10.

### Summer night cooling

The function means that cold outdoor air is used to cool the room during the night to the predefined level.

The function can only be handled in control systems that are connected to the main control system via Modbus RTU.

## Functions

### Change over

The function involves the use of only one valve actuator which should be wired to the cooling output terminal. This actuator then controls both the heating water and the cooling water, which is transported in the same pipe. An external temperature sensor should be used and this should measure on the main pipe where the water always circulates.

In winter, when heating is required, the valve opens if the water in the pipe is warmer than the temperature set point. If the water is colder, the valve does not open.

In summer, when cooling is required, the valve opens if the water in the pipe is colder than the temperature set point.

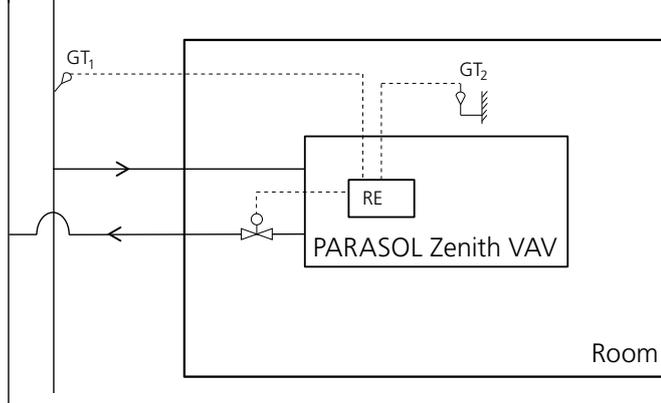


Figure 8.

- 2-pipe system with cooling water in the summer and heating water in the winter
- $GT_1$  is placed where heating or cooling water always circulates
- Summer: If the room temperature  $T_2$  is higher than the water temperature  $T_1$ , the valve opens when cooling is required.
- Winter: If the room temperature  $T_2$  is lower than the water temperature  $T_1$ , the valve opens when heating is required.
- $GT_1$  is connected to the regulator as an external temperature sensor
- In SWICCT or SuperWISE you tell the regulator that the sensor is to be used for the Change-Over function.
- $GT_2$  is the temperature sensor which is located in the Sensor module
- The valve actuator must be connected to the regulator's cooling output.

### SWICCT:

External temperature sensor use

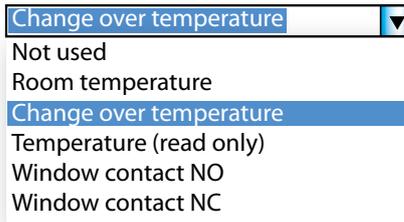


Figure 9.

### Activating valves

The function requires regular automatic activation of the water valves to avoid them beginning to stiffen or stick. During activation, all valves connected to the regulator are opened for a maximum of 6 minutes, and then closed. The valves for the cooling system are activated first, followed by those for the heating system.

### Frost protection

The function means that heating operations start at 10 °C to counteract the risk of damage that can otherwise occur due to freezing.

### Sensor module

The sensor module consists of an presence sensor and a temperature sensor in the same unit.

As standard this is mounted in the face plate on PARASOL Zenith VAV, but can also be ordered as an accessory for installation on the wall, and then recess mounted in a standard junction box or surface mounted.

The push buttons on the sensor module allow you to adjust the temperature in the room, put the PARASOL Zenith VAV in commissioning mode and read the alarm list.

In normal mode 6 LEDs indicate the selected temperature level. In the event of a fault, the relevant alarm is indicated in the form of flashing LEDs that is translated with the help of an alarm list.

The sensor module is connected to the controller with the help of an RJ12 cable.

The floor surface that the presence sensor covers is approximately 24 m<sup>2</sup> when installed at a height of 2.7 m above the floor and parallel to it.

#### Temperature adjustment

Reduce the temperature by pressing the left-hand button



Increase the temperature by pressing the right-hand button

Each LED corresponds to an increase or decrease of the set point by one degree. Base setting of temperatures is made in SWICCT or SuperWISE

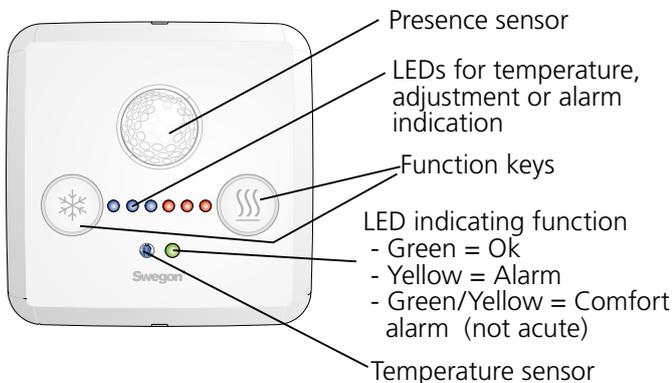


Figure 10. Sensor module seen from the front

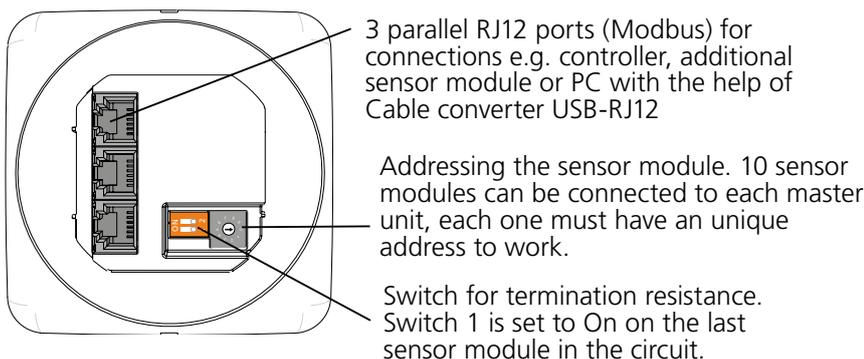


Figure 11. Sensor module seen from the back

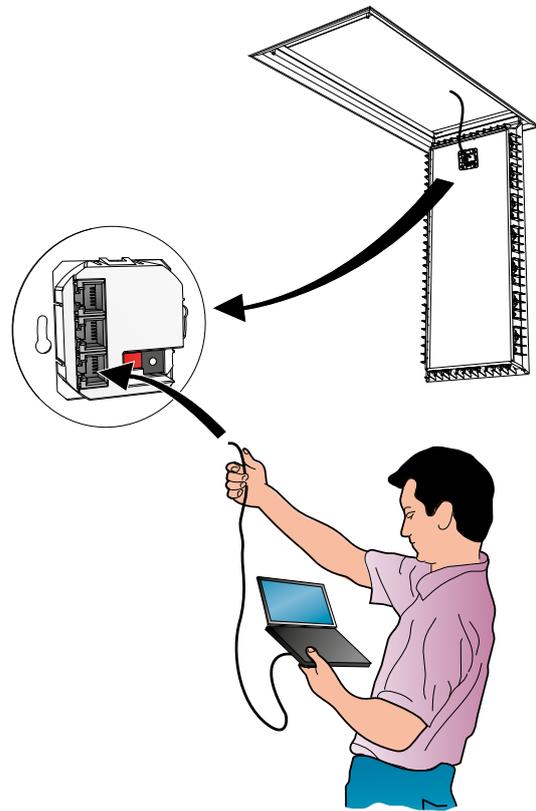


Figure 12. With the help of CABLE CONVERTER USB-RJ12 (RS485) you can easily connect a PC to make e.g. software settings. The connection can either be made on the rear of the Sensor module as illustrated, or directly on the controller. How to do this is described in the SWICCT manual.

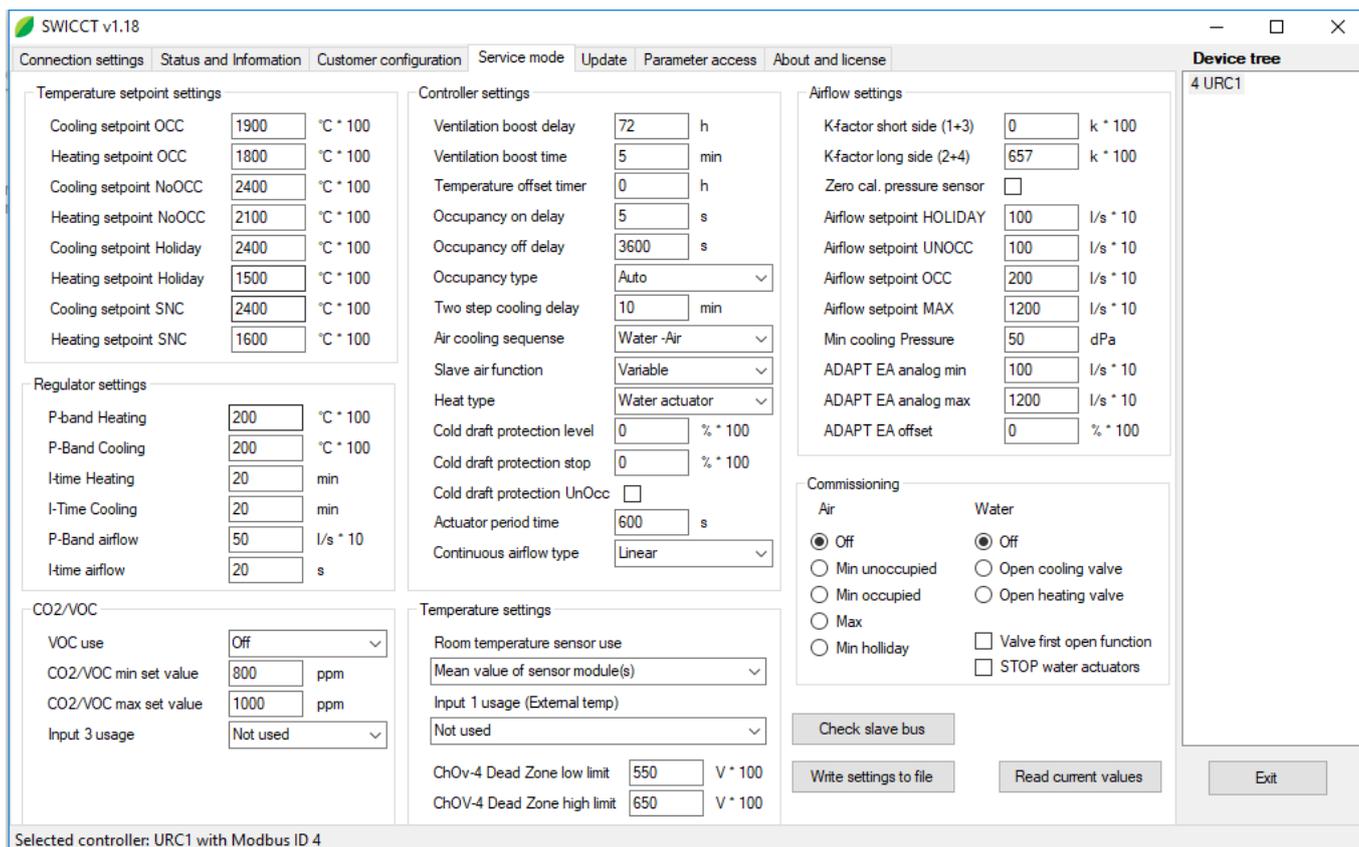
# SWICCT

SWICCT (SWegon Indoor Climate Configuration Tool) is the software that makes it easy to make settings in the controller.

(To make settings requires the cable "CABLE CONV. USB RJ-12", and the installation of this, see the SWICCT manual)

Here it is possible to make all essential settings for the Product, for example;

- Base settings for temperature
- Use of external sensors, e.g. for air quality
- Air flows
- Commissioning



SWICCT is available for download from [www.swegon.se](http://www.swegon.se), both the software and a separate manual.

## Installation examples

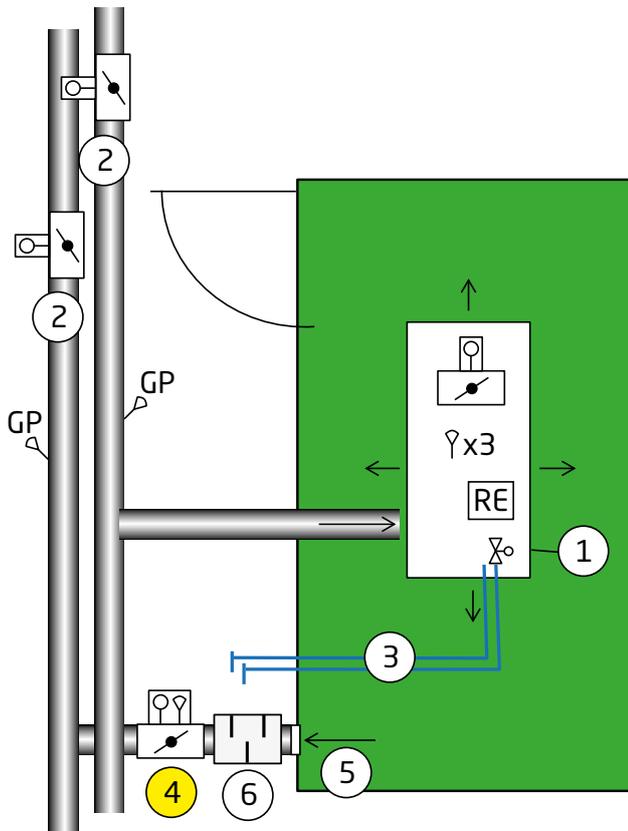


Figure 13. Type room 2 shows PARASOL Zenith VAV in an office Supply and extract air in balance.

1. Comfort module PARASOL Zenith VAV with supply air and cooling incl.

- pressure sensor
- presence sensor
- temperature sensor
- communication unit/controller
- damper with motor.

2. Zone damper CONTROL Zone

3. Cooling water

4. Extract air via REACT Damper slave controlled from PARASOL Zenith VAV

5. Grille or fully open extract air diffuser type EXC

6. Sound attenuator CLA / SORDO

## ADC

All the comfort modules are supplied with the ADC air deflector.

ADC stands for Anti Draught Control, which enables you to set the diffusion pattern of the air being distributed to avoid risk of draught. A number of ADC sections with four 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 easily adjusted without having to affect the system as a whole.

The ADC does not affect the noise level or static pressure at all. The water capacity is reduced by 5 - 10 % if the ADCII is adjusted to "fan-shape".

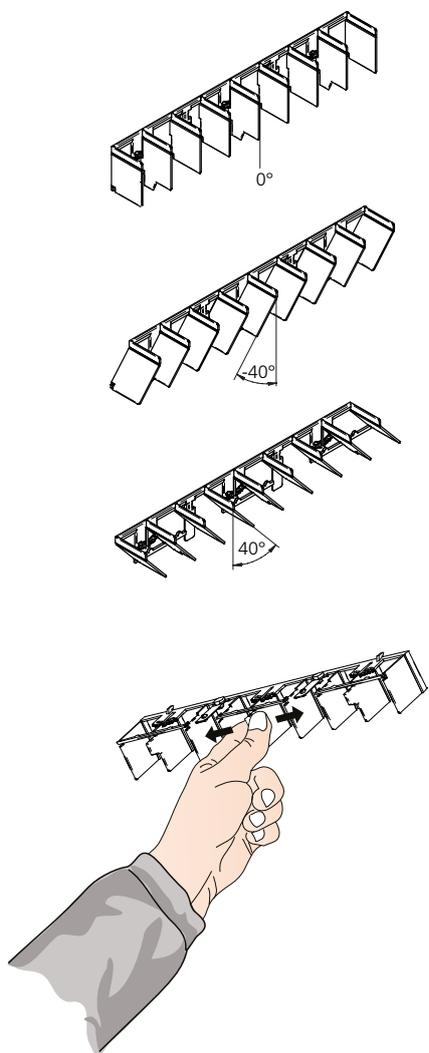


Figure 14. ADC, setting range from -40° to +40° in increments of 10°.

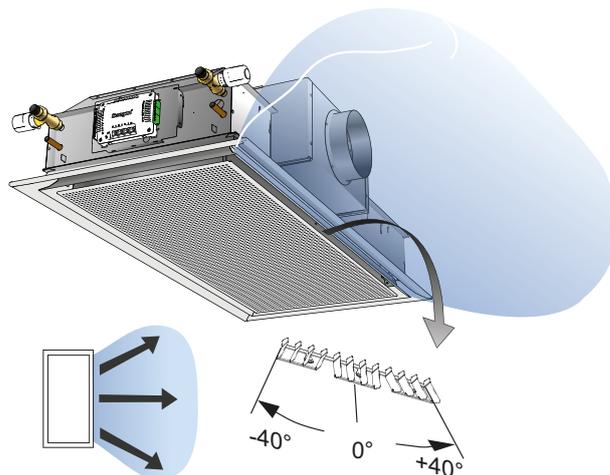


Figure 15. Possible settings for the ADC, Fan-shape

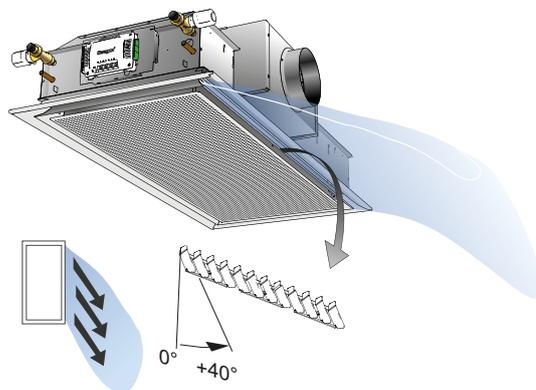


Figure 16. Possible settings for the ADC, X-shape

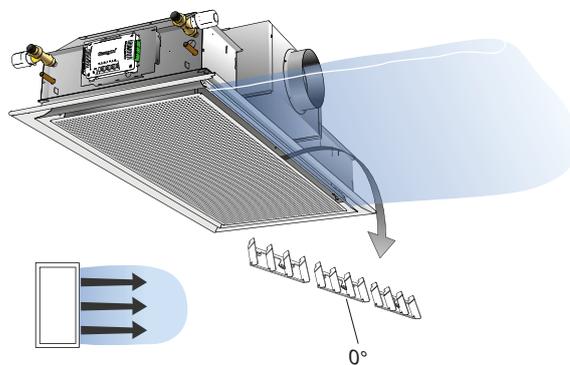


Figure 17. Setting options ADC, Straight setting

### Easy installation

PARASOL Zenith VAV 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 of dismantling, provided that there is at least 300 mm 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 site, which gives less handling damage and a better working environment. PARASOL Zenith VAV's compact units fit most common modular dimensions and fit most suspended ceiling system on the market. As standard the units include four mounting brackets. These are adjustable +/- 20 mm in both directions and in doing so create the adjustment range normally required during installation.

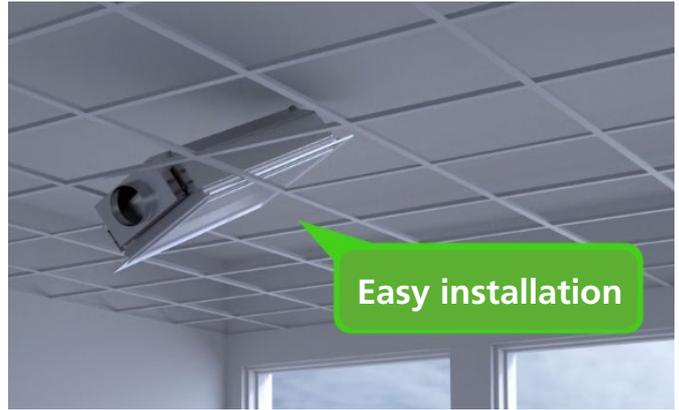


Figure 18. Installation in existing T-bar system

### Hygienic design

PARASOL Zenith VAV is available as a variant with a fold-out 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 VAV'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 VAV has, as an option, the possibility of fold-out 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.



Figure 19. Removing the face plate to access the coil

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 19.
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 20.



Figure 20. 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

To simplify the duct installation and reduce 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. Therefore, PARASOL Zenith VAV is equipped with alternative air connections (Figure 24). You can choose between the air connection on either of the long sides or one of the short sides. Installations frequently appear as in figure 21. Straight ducts are of course always preferable.

600/1200/1800

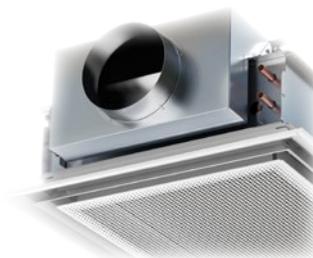


Figure 22. Air connection on the product's short side

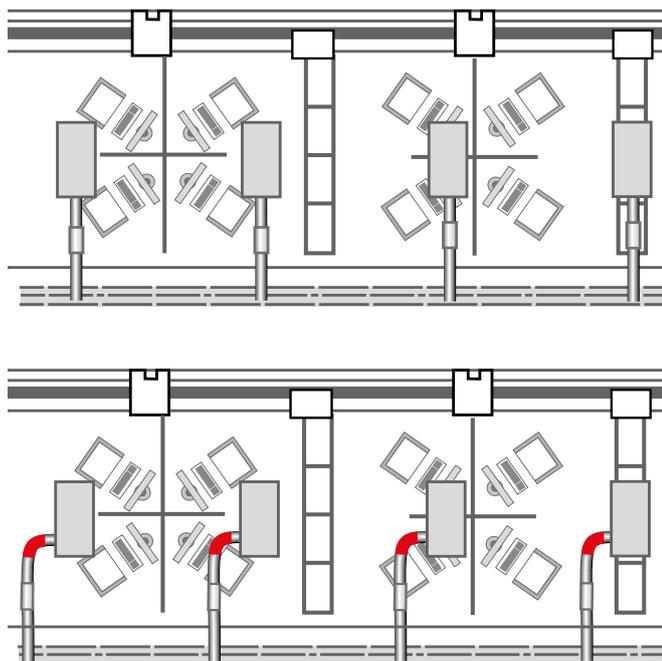


Figure 21. Installation example.  
Straight air connection, alternative with 90° bend.

### Alternative air connections

The air connection on the short side (1)  
Air connections on the long side (2 and 4)

### 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 standardised fashion, which means irrespective of product the cooling and possibly heating pipes are always positioned in the same way, which facilitates installation

1200 1800

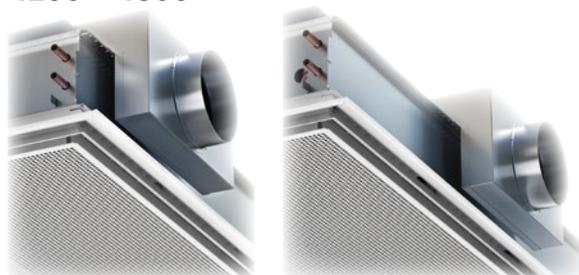


Figure 23. Air connection on the product's long side.

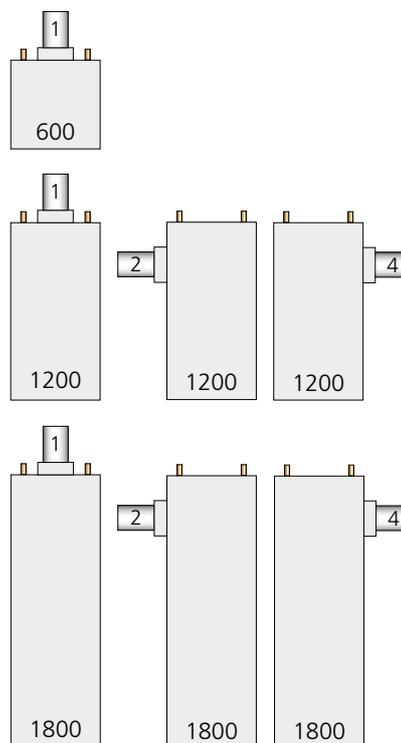


Figure 24. Alternative air connections (view from above).  
Position 1 = Short side connection  
Position 2 and 4 = Long side connection

# Installation

## Recommended ceiling types

The PARASOL Zenith VAV is designed for use in most T-bar and clip-in ceiling systems both in terms of length and width. In order to guarantee a good fit in T-bar systems, we recommend T sections with a width of 24 mm.

## Suspension

PARASOL Zenith VAV has four mounting brackets for suspension and are installed using one threaded drop rod in each mounting bracket (Figure 25). A double threaded rod with a thread lock should be used if there is substantial distance between the overhead slab and the unit.

Threaded drop rods and assembly fitting SYST MS M8 (Figure 26) are ordered separately.

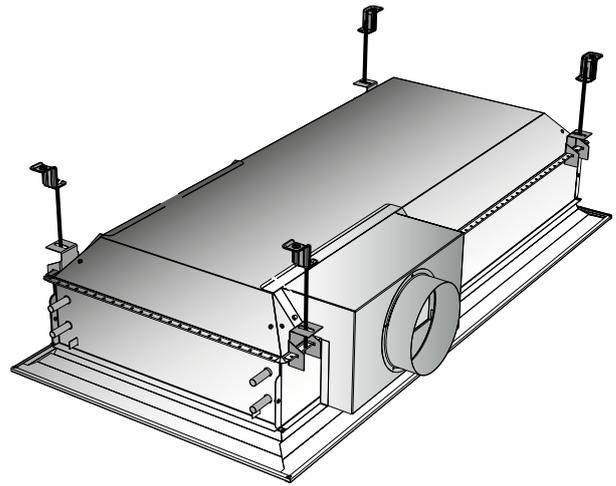


Figure 25. Suspension double-module units

## Quick bracket

There is also an accessory kit available to facilitate suspension consisting of 2 fixed brackets to suspend PARASOL Zenith VAV.

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. 50 mm in height.

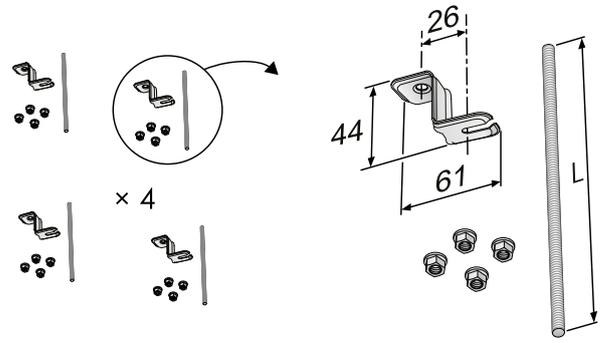


Figure 26. Assembly piece SYST MS M8-1, ceiling mount and threaded rod

## Centring kit

The centring kit can ideally be used on the ceiling system such as FOCUS E, FOCUS D and similar ceilings with concealed T-bar system or shadow line.

The kit consists of 6 centring rails that are used to centre the product in specific suspended ceiling systems. (Figure 28).

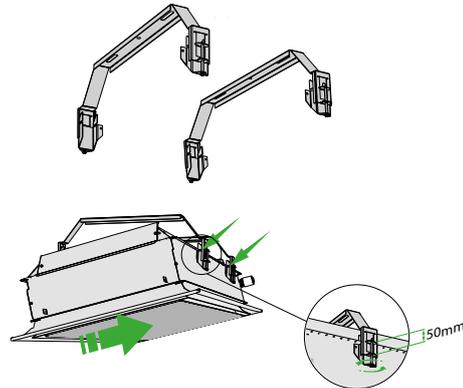


Figure 27. Installation with quick bracket PARASOL Z QUICK SUSPENSION KIT

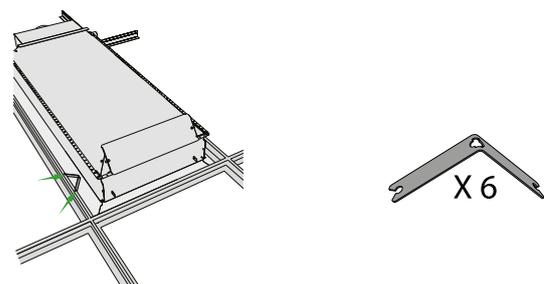


Figure 28. Centring kit, SYST CENTRING KIT PARASOL

## Connection sizes

### Water

#### With factory fitted valves:

Unit (mm)	Cooling Return	Heating Return
600, 1200	DN15 male thread	DN15 male thread
1800	DN20 male thread	DN15 male thread

#### Without factory fitted valves:

Unit (mm)	Cooling Supply and return	Heating Supply and return
600, 1200	plain pipe ends	plain pipe ends
	(Cu) Ø 12 x 1.0 mm	(Cu) Ø 12 x 1.0 mm
1800	plain pipe ends	plain pipe ends
	(Cu) Ø 15 x 1.0 mm	(Cu) Ø 12 x 1.0 mm

### Air

Unit (mm)	Air connection, diameter Ø		
	Ø 125	Ø 160	Ø 200
600, 1200	✓	✓	✗
1800	✗	✗	✓

#### Selectable air connection sides

Unit (mm)	Selectable connection side		
	side 1	side 2	side 4
600	✓	✗	✗
1200	✓	✓	✓
1800	✓	✓	✓

### Connecting water

The water pipes are always placed on the short side of the product, irrespective of which air connection side the product has.

Connect the water pipes using push-on couplings or compression ring couplings when the product is ordered without valves. 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 brazed joints.

Flexible connecting hoses for water are available for flat-end pipes and valves, and can be ordered separately.

### To connect the air

PARASOL Zenith VAV comes with open air connections on the selected side 1, 2 or 4.

The air connection piece is mounted on delivery so that it later can be connected to the primary air duct (see Figure 31).

If the product is ordered with long side connection, there is a factory mounted cover on the opposite long side. It's possible to change sides if required.

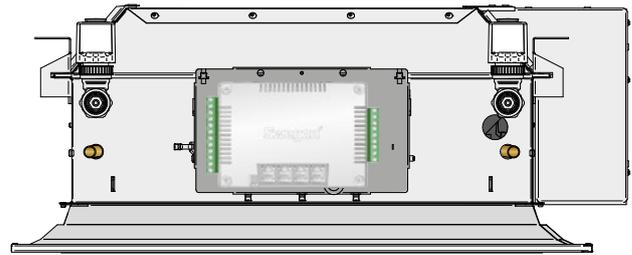


Figure 29. The control unit is mounted on a plate close to the water pipes. For long side connection, it is placed on the same short side as the water pipes.

For short side connection, the control unit is placed on the long side close to the water connection.

If necessary the plate with the control unit can easily be moved or dismantled.

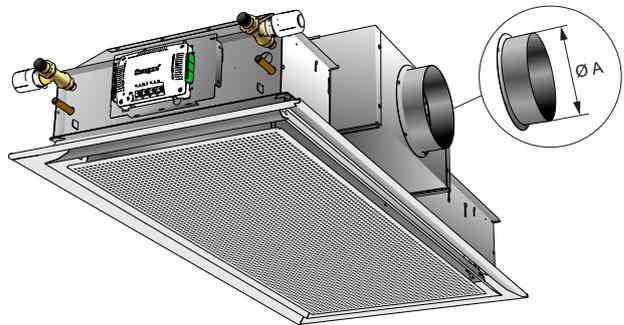


Figure 30. Air connection:

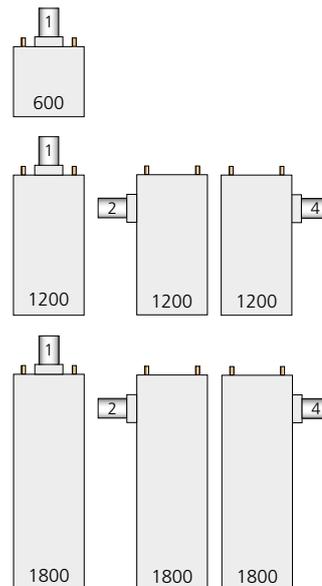


Figure 31. Selectable air connection side

## Technical data

Total cooling capacity, max.	2055 W
Heating capacity, water, max.	2700 W
Air flow	
Single module unit	7-49 l/s
Double module unit	7-85 l/s
Triple module unit	7-110 l/s
Length	
Single-module unit	584; 592; 598; 617; 623; 642; 667 mm
Double module unit	1184; 1192; 1198; 1242; 1248; 1292; 1342 mm
Three-module unit	1784; 1792; 1798; 1842 1848; 1892; 1942 mm
Width	584; 592; 598; 617; 623; 642; 667 mm
Height	
Unit 600 ø125	220 mm
Unit 600 ø160	250 mm
Unit 1200 ø125	220 mm
Unit 1200 ø160	250 mm
Unit 1800 ø200	290 mm

Dimensions of the units have a tolerance of (±2) mm.

## Power consumption

Power consumption for transformer sizing:	VA / unit
Actuator	6
Damper motor (315C)	2*
Module Controller	1*
Sensor module	1*

\* Always included in the product

### Example A:

PARASOL Zenith VAV 1192-B-HF; 6+2+1+1 = 10 VA  
6 VA for cooling - OR heating actuator when they are normally regulated in sequence.

### Example B:

PARASOL Zenith VAV 1192-B-HF; 6+6+2+1+1 = 16 VA  
For operating modes such as Radiator Heat and Cold draught protection power consumption will then be 6+6 VA for actuators when they are not regulated in sequence.

## Recommended limit values

### Pressure levels

Coil working pressure, max.	1600 kPa *
Coil test pressure, max.	2400 kPa *

\* Applicable without control equipment mounted

### Nozzle pressure

Recommended lowest nozzle pressure, cooling	Air flow (l/s)	Nozzle pressure (pa)
	<10	50
	10-30	25
	>30	20

Recommended lowest nozzle pressure if coil heat is used. 70 Pa

### Water flow

Ensures evacuation of any air pockets in the system.

Cooling water, min. 0.030 l/s

Heating water (1200), min. 0.013 l/s

### Temperature differentials

Cooling water, temperature increase 2-5 K

Heating water, drop in temperature 4-10 K

Temperature differences are always expressed in Kelvin (K).

### Supply flow temperature

Cooling water \*\*

Heating water, max. 60 °C

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

# Cooling

## Standard

Cooling capacities are measured in conformity with EN 15116.

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

Unit	Cooling capacity (W) for temperature difference, room - water $\Delta T_{mk}$ (K)						
(mm)	6	7	8	9	10	11	12
600	28	33	39	44	55	56	62
1200	69	83	97	111	125	141	155
1800	89	106	123	143	160	179	199

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

Unit (mm)	Function, $k_{pk}$ cooling	
	A2	B2
600*	0.0218	0.0246
1200*	0.0161	0.0180
1800**	0.0320	0.0341

A2 = Cooling and supply air, serial connected double row coil

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

\* $K_{pk}$ -values for the water flow 0.05 l/s.

\*\* $K_{pk}$ -values for the water flow 0.10 l/s.

**Table 3 – Data – Cooling. Sizing Guide for PARASOL Zenith VAV at 75 Pa**

Unit	Air flow		Sound level	Cooling capacity of primary air at $\Delta T_1$ (K)				Cooling capacity, water at $\Delta T_{mk}$ (K)					Pressure drop constant, air	
	mm	l/s		m <sup>3</sup> /h	dB(A)	6	8	10	12	6	7	8		9
600 A Ø125	10	36	36	21	72	96	120	144	167	194	222	250	278	1.16
	20	72	72	26	144	192	240	288	227	265	303	341	379	2.34
	30	108	108	30	216	288	360	432	266	311	355	399	444	3.56
	40	144	144	33	288	384	480	576	290	339	387	435	484	4.86
	46	166	166	36	331	442	552	662	295	344	393	442	491	5.7
600 A Ø160	10	36	36	20	72	96	120	144	167	194	222	250	278	1.16
	20	72	72	25	144	192	240	288	229	267	305	343	381	2.32
	30	108	108	29	216	288	360	432	269	313	358	403	448	3.49
	40	144	144	32	288	384	480	576	296	345	394	443	493	4.69
	49	176	176	34	353	470	588	706	305	355	406	457	508	5.8
600 B Ø125	10	36	36	21	72	96	120	144	152	178	203	228	254	1.16
	20	72	72	26	144	192	240	288	202	235	269	303	336	2.34
	30	108	108	30	216	288	360	432	236	276	315	354	394	3.56
	40	144	144	33	288	384	480	576	254	296	338	380	423	4.86
	46	166	166	36	331	442	552	662	260	304	347	390	434	5.7
600 B Ø160	10	36	36	20	72	96	120	144	152	178	203	228	254	1.16
	20	72	72	25	144	192	240	288	203	236	270	304	338	2.32
	30	108	108	29	216	288	360	432	238	277	317	357	396	3.49
	40	144	144	32	288	384	480	576	259	302	345	388	431	4.69
	49	176	176	34	353	470	588	706	271	316	361	406	451	5.8
1200 A Ø125	10	36	36	<20	72	96	120	144	273	319	364	410	455	1.16
	20	72	72	25	144	192	240	288	415	484	553	622	691	2.34
	30	108	108	27	216	288	360	432	510	595	680	765	850	3.57
	40	144	144	29	288	384	480	576	571	666	761	856	951	4.89
	45	162	162	30	324	432	540	648	590	688	786	884	983	5.59
1200 A Ø160	10	36	36	<20	72	96	120	144	275	321	367	413	459	1.16
	25	90	90	23	180	240	300	360	419	489	559	629	699	2.90
	40	144	144	25	288	384	480	576	518	605	691	777	864	4.69
	60	216	216	28	432	576	720	864	616	718	821	924	1026	7.19
	86	310	310	36	619	826	1032	1238	654	763	872	981	1090	10.76
1200 B Ø125	10	36	36	<20	72	96	120	144	260	303	346	389	433	1.16
	20	72	72	25	144	192	240	288	380	444	507	570	634	2.34
	30	108	108	27	216	288	360	432	456	532	608	684	760	3.57
	40	144	144	29	288	384	480	576	509	594	679	764	849	4.89
	45	162	162	30	324	432	540	648	531	620	708	797	885	5.59
1200 B Ø160	10	36	36	<20	72	96	120	144	239	278	318	358	398	1.16
	25	90	90	23	180	240	300	360	389	453	518	583	648	2.90
	40	144	144	25	288	384	480	576	480	560	640	720	800	4.69
	60	216	216	28	432	576	720	864	566	661	755	849	944	7.19
	86	310	310	36	619	826	1032	1238	611	713	815	917	1019	10.76
1800 B Ø200	10	36	36	21	72	96	120	144	235	274	313	352	391	1.16
	40	144	144	29	288	384	480	576	609	711	812	914	1015	4.65
	60	216	216	30	432	576	720	864	761	888	1015	1142	1269	7.03
	80	288	288	33	576	768	960	1152	854	996	1138	1280	1423	9.48
	100	360	360	35	720	960	1200	1440	907	1058	1209	1360	1511	12.03
1800 B Ø200	10	36	36	21	72	96	120	144	229	267	305	343	381	1.16
	40	144	144	29	288	384	480	576	581	678	775	872	969	4.65
	60	216	216	30	432	576	720	864	710	828	946	1064	1183	7.03
	80	288	288	33	576	768	960	1152	790	921	1053	1185	1316	9.48
	100	360	360	35	720	960	1200	1440	844	984	1125	1266	1406	12.03

Locked  $\Delta T$  3K on the water side, temperature inlet flow +14 °C, return flow +17 °C.  
 The specified sound level applies to straight connection without damper or with fully open damper. Room attenuation = 4 dB

# Heating

## Heating function

As the comfort module is able to quickly mix the primary air with room the air, PARASOL Zenith VAV is ideal to manage 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 in between 20–24°C, and the optimal comfort requirements are normally met when the room temperature is 22°C. This means that for a room with a cold perimeter wall, the air temperature must be higher than 22°C to compensate for the chilling effect of the wall. In new buildings with normal insulated perimeter walls and normal 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 40°C, the stratification is non-existent, while at 60°C 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.

When heating with PARASOL Zenith VAV, use of an external temperature sensor or additional sensor module in the room is recommended.

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

Unit (mm)	Function, $K_{pv}$ heating*	
	A2	B2
600	-	0.0389
1200	-	0.0287
1800	-	0.0243

*B2 = Cooling, heating and supply air, serial connected double row coil*

*\* $K_{pv}$ -values for the water flow 0.03l/s.*

**Table 5 – data – heating. Sizing Guide for PARASOL Zenith VAV at 75 Pa**

Unit	Air flow		Sound level	Heating capacity, water at $\Delta T_{mv}$ (K)						Pressure drop constant, air
mm	l/s	m <sup>3</sup> /h	dB(A)	10*	15	20	25	30	35	$k_{pl}$
600 B Ø125	10	36	21	145*	242*	345*	454*	567*	685*	1.16
	20	72	26	184*	304*	435*	518	649	786	2.34
	30	108	30	203*	339*	486*	582	732	888	3.56
	40	144	33	213*	357*	513*	616	775	942	4.86
	46	166	36	215*	361*	519*	624	787	956	5.7
600 B Ø160	10	36	20	145*	240*	345*	573*	568*	686*	1.16
	20	72	25	184*	305*	435*	520	650	787	2.32
	30	108	29	205*	340*	489*	584	735	890	3.49
	40	144	32	217*	362*	519*	622	783	950	4.69
	49	176	34	220*	369*	530*	636	802	974	5.8
1200 B Ø125	10	36	<20	346*	429*	637*	856*	1056*	1260*	1.16
	20	72	25	350*	498	755	1034	1342	1648	2.34
	30	108	27	408*	587	891	1220	1587	1905	3.57
	40	144	29	438*	629	947	1292	1665	1996	4.89
	45	162	30	453*	654	987	1379	1728	2074	5.59
1200 B Ø160	10	36	<20	165*	289*	422*	550*	683*	819*	1.16
	25	90	23	364*	520	780	1059	1389	1668	2.90
	40	144	25	440*	628	934	1265	1619	1941	4.69
	60	216	28	500*	716	1060	1457	1805	2162	7.19
	86	310	36	516*	743	1104	1512	1876	2251	10.76
1800 B Ø200	10	36	29	140*	235*	334*	374*	545*	655*	1.16
	40	144	30	560*	950	1372	1815	2135	2770	4.65
	60	216	31	654*	1105	1590	2100	2420	3200	7.03
	80	288	33	707*	1200	1730	2295	2610	3500	9.48
	100	360	35	773*	1297	1860	2460	2760	3730	12.03

Locked  $\Delta T$  10K on the water side, temperature room +20 °C

\*)  $\Delta T$  5K on the water side

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

# Acoustics

**Table 6. Cross-talk**

Typical  $R_w$  values between offices with PARASOL Zenith VAV where the partition wall finishes against the suspended ceiling (with good sealing properties). Assumes that the partition wall has at least the same  $R_w$  value as in the table.

Design	False ceiling	With PARASOL Zenith VAV
	$R_w$ (dB)	$R_w$ (dB)
Light acoustic suspended ceiling. Mineral wool or perforated steel/ aluminium cassettes or screen.	28	28
Light acoustic suspended ceiling. Mineral wool or perforated steel/ aluminium cassettes or screen. The suspended ceiling is covered with 50 mm mineral wool*.	36	36
Light acoustic suspended ceiling. Mineral wool or perforated steel/ aluminium cassettes or screen. Upright 100 mm mineral wool slab used as acoustic insulation between the offices*.	36	36
Perforated plaster panels in T-bar system Acoustic insulation on the top side (25 mm).	36	36
Sealed plaster suspended ceiling with insulation on top side.	45	44
*Overview: Rockwool 70 kg/m, Gullfiber 50 kg/m.		

## Natural attenuation and end reflection

Natural attenuation  $\Delta L$  (dB) including end reflection.

**Table 7. Natural attenuation  $\Delta L$  (dB)  
PARASOL Zenith VAV 600 Ø125**

K-factor (COP)	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
0	20	19	16	16	13	15	20	26
1	19	16	8	6	7	8	12	19
3	19	15	7	6	6	7	10	16
4	19	14	7	6	6	6	9	15
5.8	17	14	7	5	6	5	9	14

**Table 8. Natural attenuation  $\Delta L$  (dB)  
PARASOL Zenith VAV 600 Ø160**

K-factor (COP)	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
0	21	21	20	16	13	16	23	24
1	21	18	9	8	8	9	15	20
3	18	16	9	5	6	6	11	15
4	19	14	9	6	5	5	10	13
5.8	15	11	6	4	5	5	10	13

**Table 9. Natural attenuation  $\Delta L$  (dB)  
PARASOL Zenith VAV 1200 Ø125**

K-factor (COP)	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
0	22	18	11	11	11	13	18	24
2	20	16	7	7	7	7	11	18
4	19	14	7	6	6	6	9	16
5.6	20	15	6	6	6	6	9	15

**Table 10. Natural attenuation  $\Delta L$  (dB)  
PARASOL Zenith VAV 1200 Ø160**

K-factor (COP)	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
0	18	16	13	11	12	13	20	22
2	17	13	8	6	7	7	12	18
4	16	13	7	5	6	6	10	16
6	18	13	7	5	5	5	9	15
8	17	13	7	4	5	4	9	14
11	15	13	7	4	5	4	9	13

**Table 11. Natural attenuation  $\Delta L$  (dB)  
PARASOL Zenith VAV 1800 Ø200**

K-factor (COP)	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
0	19	15	11	7	7	9	15	19
3	18	14	10	6	6	6	13	17
7	18	14	10	5	5	5	1	16
11	18	14	10	5	5	5	9	15
14.6	18	14	9	5	4	4	9	13

# Accessories, factory-fitted

## Valve, cooling & heating

Factory fitted valves for cooling and heating.

The valve is mounted on the product and preset fully open.

Unit	Function	Type	Dim.	K <sub>v</sub> (m <sup>3</sup> /h)
600, 1200	Cooling/heating	VDN215	DN15 (1/2")	0.07-0.89
1800	Heating			
1800	Cooling	VDN220	DN20 (3/4")	0.22-1.41

For more information about the valve, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).



## Actuator, cooling & heating, 24V NC

Factory fitted valve actuators for cooling and heating.

24V AC/DC, NC (Normally Closed).

For more information about the actuator, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).



## Transformer, Power Adapt 20 VA

Transformer for the voltage supply of products.

Protective transformer with plug type F.

Input voltage 230 V 50-60 Hz

Output voltage 24 V AC

Power 20 VA

Double insulation

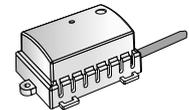
Enclosure IP33



## Condensation sensor WCD2

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.

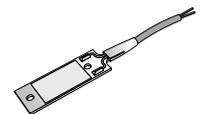


## Condensation sensor, CG IV

The condensation sensor is supplied fitted and connected from the factory. The actual sensor element consists of a circuit board with gold plated conductive paths that react when condensation occurs between these. When condensation arises, the cooling valve closes the incoming water flow to the product. When the condensation on the conductive paths has been wiped off, the cooling valve is permitted to open again.

The sensor is positioned on the coil fins by the cooling supply.

For more information about the condensation sensor, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).



## Sensor module

Rectangular sensor module with temperature and presence sensors.

Selected for mounting in either the face plate or for wall mounting.

Sensor module for wall mounting supplied loose. Mounting frame is then supplied for the most common junction boxes and a spacer frame for surface mounting.



**Co<sub>2</sub> sensor. Detect Qa**

Analogue carbon dioxide sensor that is mounted concealed, above the face plate.

See separate product datasheet at [www.swegon.com](http://www.swegon.com).



**VOC sensor Detect VOC**

Modbus connected air quality sensor that is mounted concealed above the face plate.



**Optional perforation patterns, PARASOLc T-PP**

The face plate of the unit is available with three different perforation patterns that make it easily adaptable to suit different types of ceiling components, e.g. light fittings and extract air diffusers that share the surface of a suspended ceiling. A ceiling containing different types of perforation patterns can be experienced as disturbing to the eye.

Other patterns are of course available on special order. For further details, get in touch with your nearest Swegon representative.

A. Face plate standard PB

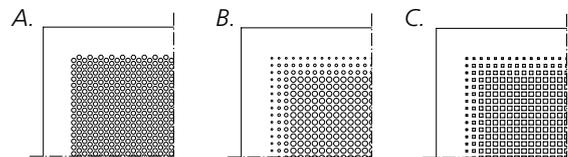
Circular holes arranged in a triangular pattern.

B. Face plate PD

Circular holes arranged in a square pattern with a graduated border.

C. Face plate PE

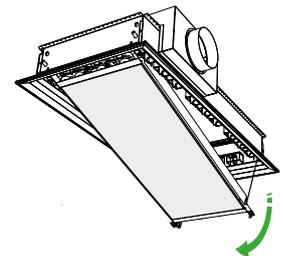
Square holes arranged in a square pattern with a graduated border.



**Fold-out coil**

PARASOL Zenith VAV can be ordered as a variant with fold-out coil for easy access and cleaning of the complete coil.

PARASOL Zenith VAV with fold-out 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

### Transformer, Power ADAPT 20 VA (ARV)

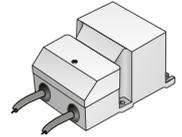
Input voltage 230 V, 50-60 Hz, Output voltage 24 V AC  
Power 20 VA, Enclosure IP33



### Transformer, SYST TS-1

Double-insulated protective transformer 230 V, AC/24 V AC  
Input voltage 230 V, 50-60 Hz, Output voltage 24 V AC,  
Power 20 VA, Enclosure IP33

For more information, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).



### Temperature sensor, PT1000

External temperature sensor. Used for example if the room temperature must be measured elsewhere than at the sensor module, or to measure the temperature of the main pipe in change-over systems.



### Valve, SYST VDN215 / SYST VDN220

Straight valve for cooling and heating.

VDN215 is preset fully open on  $K_v$  0.89.

VDN220 is preset fully open on  $K_v$  1.41.

For more information about the valve, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).

Unit	Function	Type	Dim.	$K_v$ (m <sup>3</sup> /h)
600, 1200	Cooling/ heating	VDN215	DN15 (½")	0.07-0.89
1800	Heating			
1800	Cooling	VDN220	DN20 (¾")	0.22-1.41



### Valve actuator, cooling & heating, ACTUATORb 24V NC

Valve actuators for cooling and heating.

24V AC/DC, NC (Normally Closed).

For more information about the actuator, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).



### Card switch, SYST SENSO II

Key card holder for hotel rooms.



### Centring kit, SYST CENTRING KIT PARASOL

The kit consists of 6 centring rails that can be used to centre the product in specific suspended ceiling systems.



### Sensor module, external

Rectangular sensor module with temperature and presence sensors for wall mounting when an extra sensor module is needed in the room (1 always supplied with PARASOL Zenith VAV)

Always supplied with both a mounting frame for the most common junction boxes and a spacer frame for surface mounting.



### Cable, SYST KABEL RJ12 6-LED.

Cable for the connection of an external sensor module to the controller or between sensor modules. Available in different standard lengths.



**Cable, CABLE CONVERTER USB-RJ12 (RS485)**

Cable with integrated modem to connect a PC to the controller.  
 Needed to run e.g. SWICCT or ModbusPoll.



**LINK Wise**

Network cable for Modbus communication in the WISE system.  
 The cable conforms to EIA 485 standard. Shielded four conductor AWG 24, external diameter Ø 9.6 mm, Grey PVC. The cable is only supplied in reels of 500 m.



**Co<sub>2</sub> sensor. Detect Qa**

Analogue carbon dioxide sensor that is mounted concealed, above the face plate.  
 See separate product datasheet at [www.swegon.com](http://www.swegon.com).



**VOC sensor Detect VOC**

Modbus connected air quality sensor that is mounted concealed above the face plate.



**Assembly fitting, SYST MS M8**

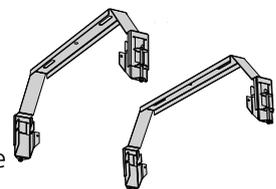
For installation use the assembly fitting containing threaded rods, ceiling brackets and nuts to all four mounting brackets.



**Assembly fitting, PARASOL Z QUICK SUSPENSION KIT**

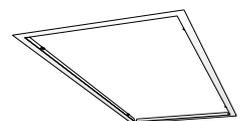
The kit consisting of 2 fixed brackets to suspend PARASOL Zenith VAV.

The fixed brackets are fastened to the ceiling, either surface mounted against the ceiling or with SYST MS M8. For products 1200 and 1800, four fixing points are always recommended due to the weight. The product can after mounting then be pushed into place without the use of tools. The brackets also feature an integrated fine adjustment of approx. 50 mm in height. Available in two sizes.



**Drywall ceiling frame Parasol c T-FPB**

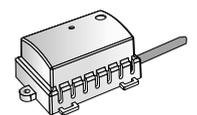
Frame to create a neat transition between PARASOL Zenith VAV and holes in drywall ceilings.



**Condensation sensor WCD2**

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.

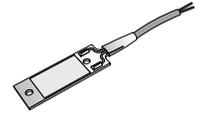


**Condensation sensor, CG IV**

The condensation sensor's sensor element consists of a circuit board with gold plated conductive paths that react when condensation occurs between these. When condensation arises, the cooling valve closes the incoming water flow to the product. When the condensation on the conductive paths has been wiped off, the cooling valve is permitted to open again.

The sensor is positioned on the coil fins by the cooling supply.

For more information about the condensation sensor, see the separate product data sheet on [www.swegon.com](http://www.swegon.com).



**Flexible connection hoses, SYST FH**

Flexible hoses are available with quick-fit, push-on couplings as well as clamping ring couplings for quick and simply connection. The hoses are also available in various lengths. Note that compression ring couplings require support sleeves inside the pipes.

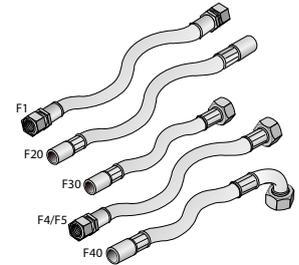
F1 = Clamping ring couplings at both ends.

F20 = Push-on couplings at both ends.

F30 = Push-on coupling at one end and union nut G20ID at the other end.

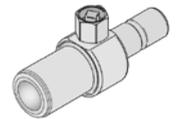
F4/F5 = Clamping ring coupling at one end and union nut with flat seal at the other end.

F40 = Push-on coupling at one end, union nut 90° at the other end.



**Venting nipple, SYST AR-12**

A venting nipple is available as a complement to the flexible hoses with push-on couplings. The venting nipple fits directly in the push-on hose coupling and can be fitted in an instant.



**Connection piece, air – insertion joint, SYST AD1**

SYST AD1 is used as an joint between the PARASOL Zenith VAV and the duct system.

Available in two sizes: Ø125 and Ø160 mm.



**Connection piece, air, SYST CA**

90° duct bend

Available in two sizes: Ø125 and Ø160 mm.



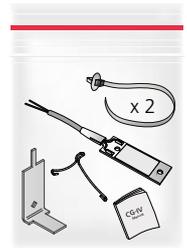
## Accessory kits

### CG-IV-KIT

Condensation sensor CG-IV and assembly parts for retrofitting.

Condensation sensor's sensor element consists of a circuit board with gold plated conductive paths that react when condensation occurs between these. When condensation arises, the cooling valve closes the incoming water flow to the product. When the condensation on the conductive paths has been wiped off, the cooling valve opens again. The sensor is positioned on the coil fins by the cooling supply.

*For more information about the condensation sensor, see the separate product data sheet and installation instructions on [www.swegon.com](http://www.swegon.com).*



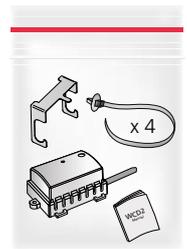
### WCD2-KIT

Condensation sensor WCD2 and assembly parts for retrofitting.

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

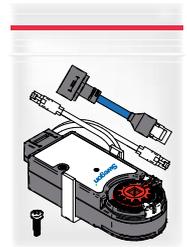
The dew-point is calculated from a temperature compensated RH element and an extremely accurate sensor element that is bound to the metal plate on the detector.

*For more information about the condensation sensor, see the separate product data sheet and installation instructions on [www.swegon.com](http://www.swegon.com).*



### PZ VAV SA-KIT

Kit with motor and control cable



# Dimensions and weight

**Table 12. Length and width**

Single-module unit		Double module unit		Three-module unit	
Length L (mm)	Width W (mm)	Length L (mm)	Width W (mm)	Length L (mm)	Width W (mm)
584	584	1184	584	1784	584
592	592	1192	592	1792	592
598	598	1198	598	1798	598
603	603	1213	603	1823	603
617	617	1242	617	1867	617
623	623	1248	623	1873	623
642	642	1292	642	1942	642
667	667	1342	667	2017	667

These are examples of the most common sizes. For the other variants, refer to ProSelect or IC Design at [www.swegon.com](http://www.swegon.com).

**Table 13. Weight**

## 600

Length mm	Type	Dim.	Dry weight (kg)	Water volume (l)	
		∅		cooling	heating
600	A	125	12.9	1.08	-
600	B	125	13.2	0.84	0.34
600	A	160	14.1	1.08	-
600	B	160	14.4	0.84	0.34

## 1200

Length mm	Type	Dim.	Dry weight (kg)	Water volume (l)	
		∅		cooling	heating
1200	A	125	22.6	2.4	-
1200	B	125	22.9	1.8	0.7
1200	A	160	24.6	2.4	-
1200	B	160	24.9	1.8	0.7

## 1800

Length mm	Type	Side	Dim. ∅	Dry weight (kg)	Water volume (l)	
		1, 2, 4			cooling	heating
1800	A	2, 4	200	30.5	3.8	-
1800	B	2, 4	200	31.9	2.7	1.1
1800	A	1	200	30.7	3.8	-
1800	B	1	200	32.1	2.7	1.1

Weights above are excl.:

Sensor module VAV (0.1kg).

Control plate (0.4kg).

Control equipment VAV (0.24 kg).

PARASOL Zenith VAV 600, short side connection (or 1)

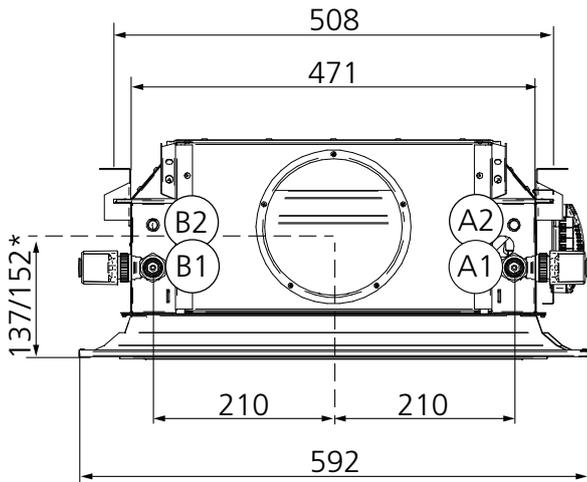


Figure 32. Dimensional drawing, end-view with water connections. Air connection on the short side - pos 1.

A1 = Supply cooling water  $\phi 12 \times 1.0$  mm (Cu)

A2 = Return cooling water  $\phi 12 \times 1.0$  mm (Cu)

B1 = Supply heating water  $\phi 12 \times 1.0$  mm (Cu)

B2 = Return heating water  $\phi 12 \times 1.0$  mm (Cu)

\* =  $\phi 160$

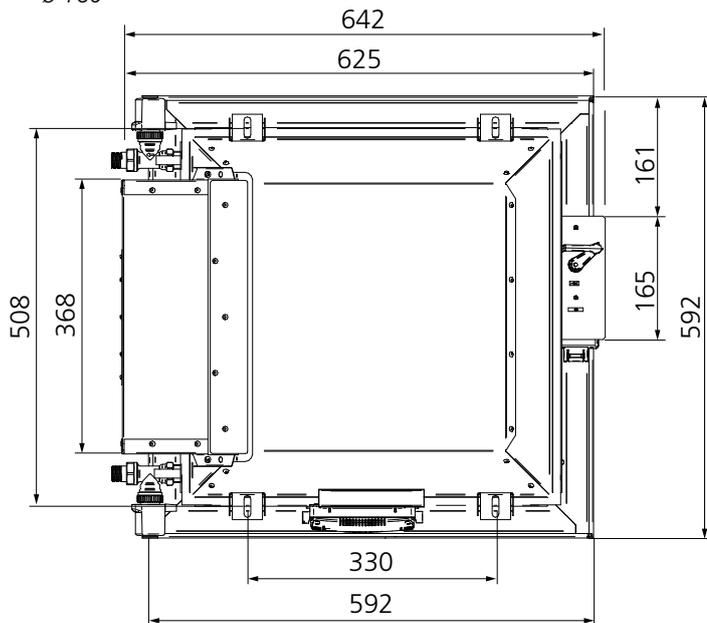


Figure 33. Dimensional drawing, view from above. Air connection on the short side.

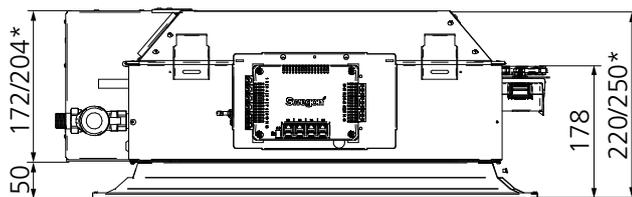


Figure 34. Dimensional drawing, side view. Air connection on the short side.

\* =  $\phi 160$

When the sensor module VAV is installed in the face plate the height measurement increases by 12 mm.

PARASOL Zenith VAV 1200, short side connection (or 1)

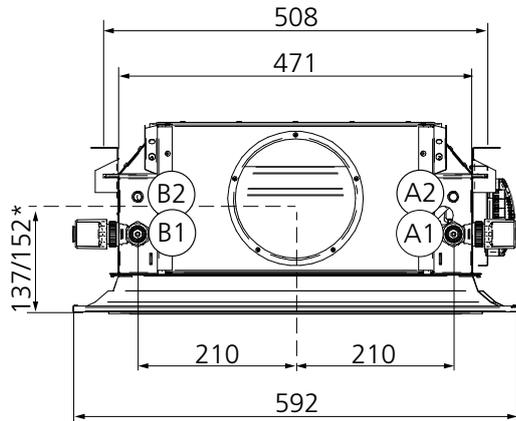


Figure 35. Dimensional drawing, end-view with water connections. Air connection on the short side - pos 1.

A1 = Supply cooling water  $\phi 12 \times 1.0$  mm (Cu)

A2 = Return cooling water  $\phi 12 \times 1.0$  mm (Cu)

B1 = Supply heating water  $\phi 12 \times 1.0$  mm (Cu)

B2 = Return heating water  $\phi 12 \times 1.0$  mm (Cu)

\* =  $\phi 160$

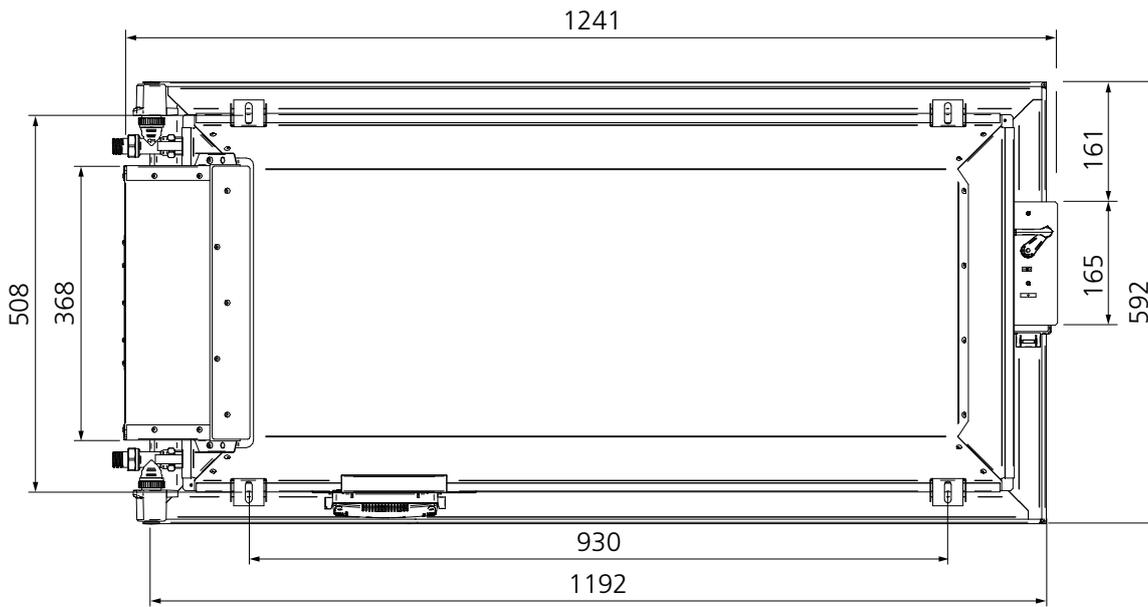


Figure 36. Dimensional drawing, view from above. Air connection on the short side.

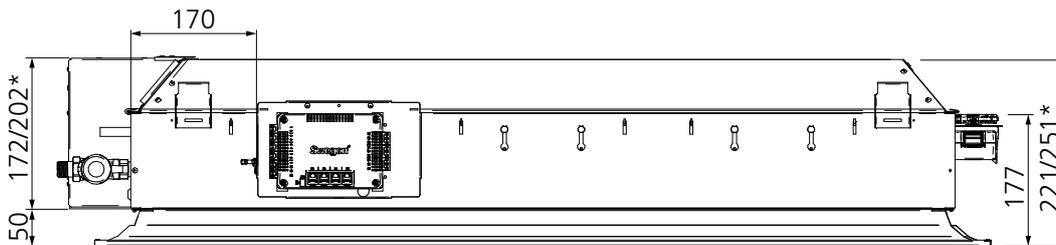


Figure 37. Dimensional drawing, side view. Air connection on the short side.

\* =  $\phi 160$

When the sensor module VAV is installed in the face plate the height measurement increases by 12 mm.

PARASOL Zenith VAV 1200, long-side connection (2 or 4)

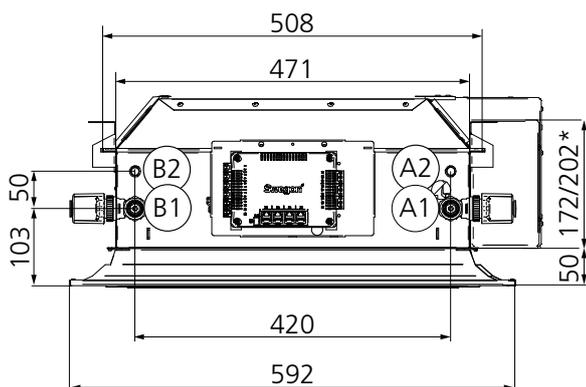


Figure 38. Dimensional drawing, end-view with water connections. Air connection on the long side - pos 2.

A1 = Supply cooling water  $\varnothing 12 \times 1.0$  mm (Cu)

A2 = Return cooling water  $\varnothing 12 \times 1.0$  mm (Cu)

B1 = Supply heating water  $\varnothing 12 \times 1.0$  mm (Cu)

B2 = Return heating water  $\varnothing 12 \times 1.0$  mm (Cu)

\* =  $\varnothing 160$

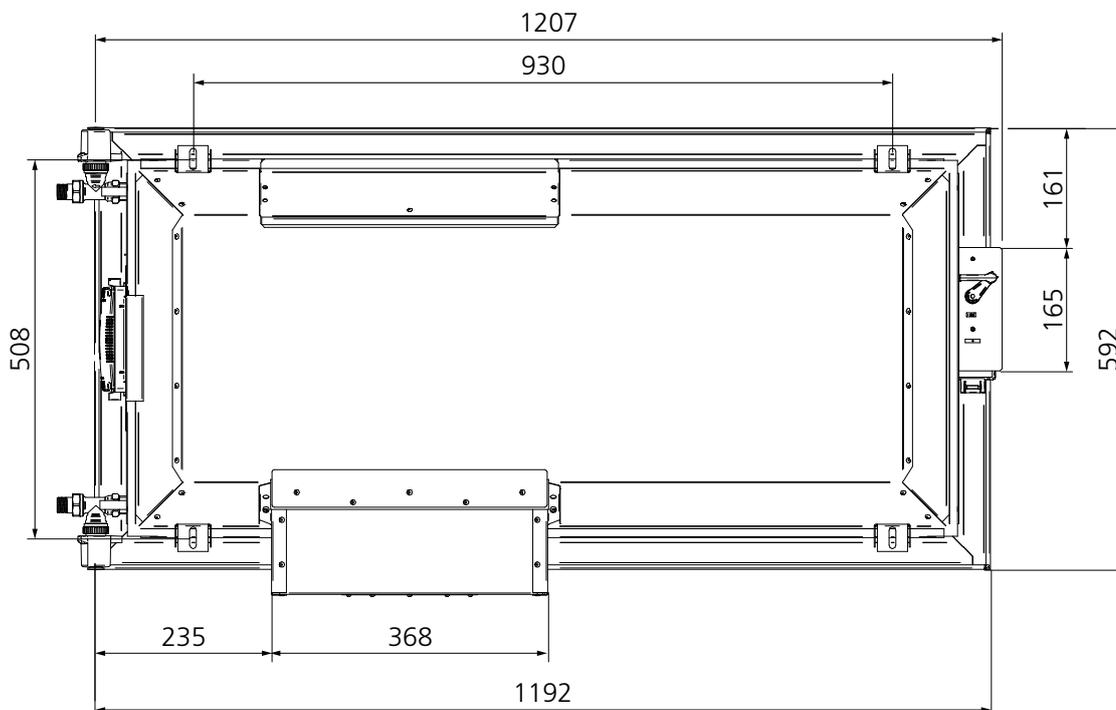


Figure 39. Dimensional drawing, view from above. Air connection on the long side - pos 2.

\* =  $\varnothing 160$

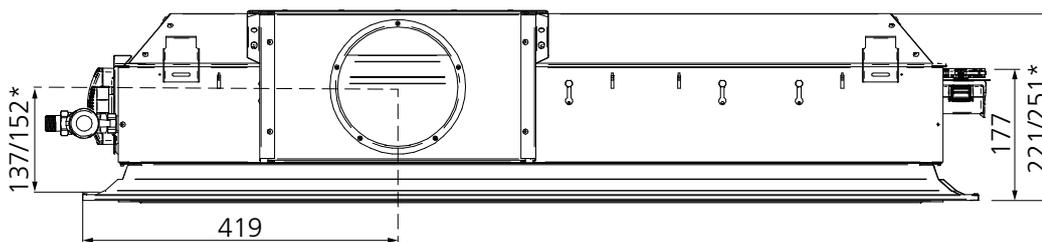


Figure 40. Dimensional drawing, side view. Air connection on the long side - pos 2.

\* =  $\varnothing 160$

When the sensor module VAV is installed in the face plate the height measurement increases by 12 mm.

PARASOL Zenith VAV 1800, short side connection (or 1)

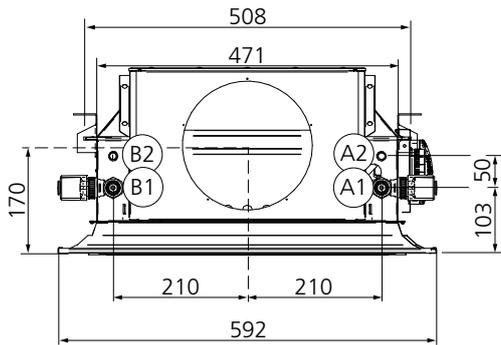


Figure 41. Dimensional drawing, end-view with water connections.

- A1 = Supply cooling water  $\varnothing 15 \times 1.0$  mm (Cu)
- A2 = Return cooling water  $\varnothing 15 \times 1.0$  mm (Cu)
- B1 = Supply heating water  $\varnothing 12 \times 1.0$  mm (Cu)
- B2 = Return heating water  $\varnothing 12 \times 1.0$  mm (Cu)

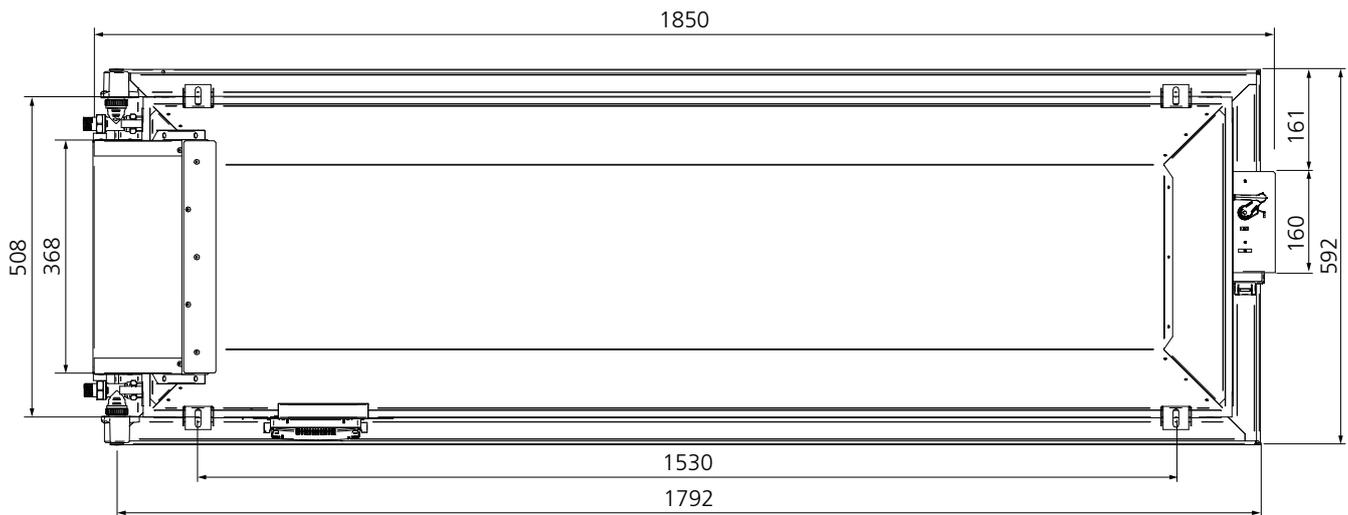


Figure 42. Dimensional drawing, view from above.

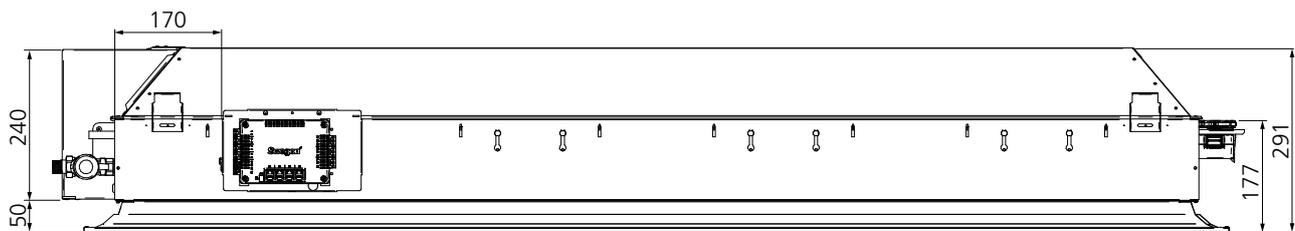


Figure 43. Dimensional drawing, side view. Air connection on the long side - pos 2.  
When the sensor module VAV is installed in the face plate the height measurement increases by 12 mm.

**PARASOL Zenith VAV 1800, long-side connection (2 or 4)**

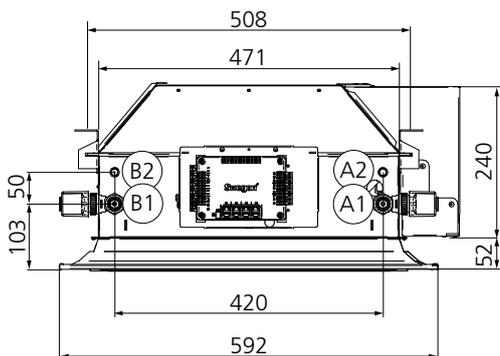


Figure 44. Dimensional drawing, end-view with water connections. Air connection on the long side - pos 2.

- A1 = Supply cooling water  $\varnothing 15 \times 1.0$  mm (Cu)
- A2 = Return cooling water  $\varnothing 15 \times 1.0$  mm (Cu)
- B1 = Supply heating water  $\varnothing 12 \times 1.0$  mm (Cu)
- B2 = Return heating water  $\varnothing 12 \times 1.0$  mm (Cu)

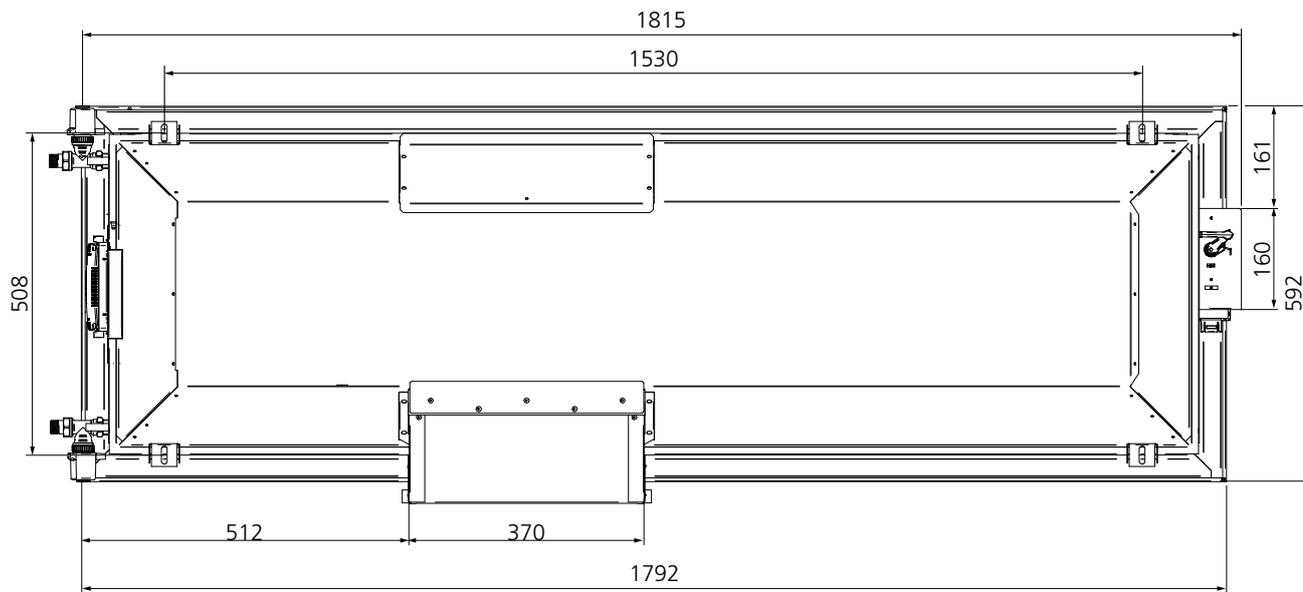


Figure 45. Dimensional drawing, view from above. Air connection on the long side - pos 2.

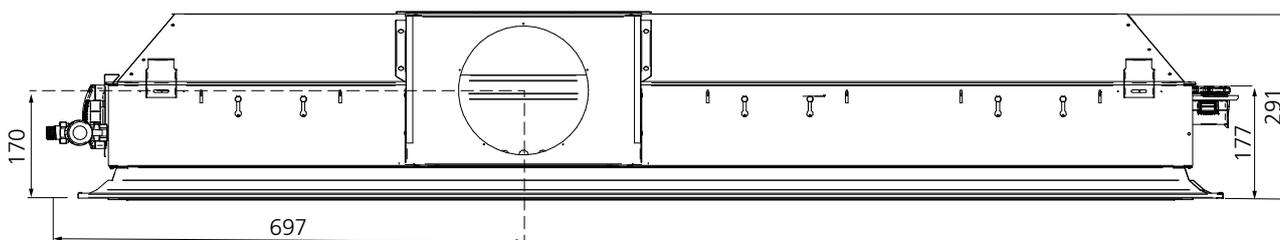


Figure 46. Dimensional drawing, side view. Air connection on the long side - pos 2.  
When the sensor module VAV is installed in the face plate the height measurement increases by 12 mm.

PARASOL Zenith VAV with elbow

Air connection dimensions	
Unit (mm)	Dimension Ø
600	Ø125 or Ø160
1200	Ø125 or Ø160
1800	Ø200

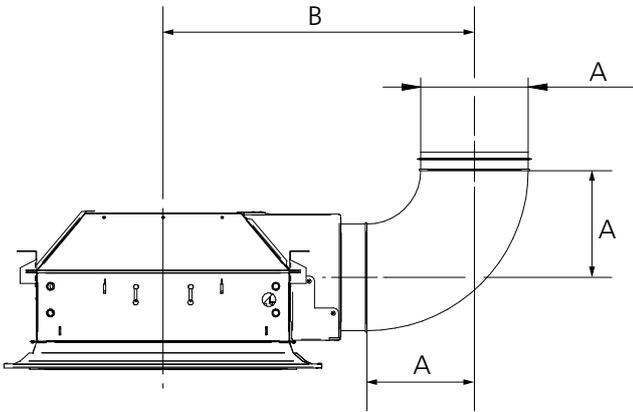


Figure 47. Dimensional drawing, long side connection with bend Ø125/160/200

Unit	A	B	A	B	A	B
600	125	501	160	540		
1200	125	501	160	540		
1800					200	580

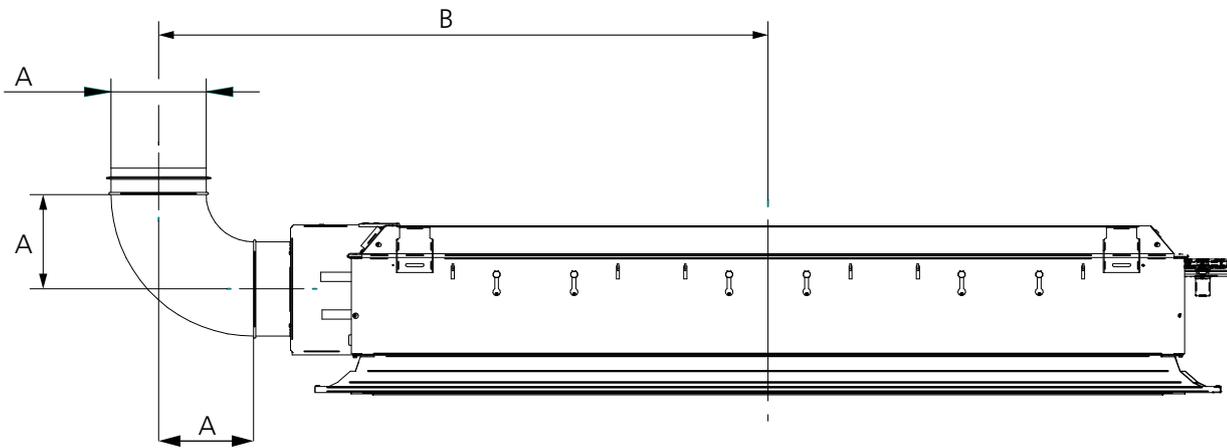


Figure 48. Dimensional drawing, short side connection with bend Ø125/160/200

Unit	A	B	A	B	A	B
600	125	503	160	540		
1200	125	802	160	840		
1800					200	1180

# Specification

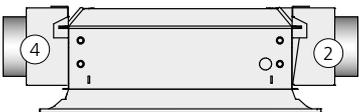
Power supply: 24V AC ±15% 50 - 60Hz  
 Total cooling capacity, max.: 2055 W  
 Heating capacity, water, max.: 2700 W  
 Air flow single module unit: 7-49 l/s  
 Air flow double module unit: 7-85 l/s  
 Air flow triple module unit: 7-110 l/s  
 Type: PARASOL Zenith VAV a xxx xx items

**Function** The units can be ordered in various functional versions:  
 A = Cooling and supply air  
 B = Cooling, heating and supply air

**ADC** Factory-fitted ADC supplied as standard

**Size of connection sleeve** Ø125 (size 600 and 1200)  
 Ø160 (size 600 and 1200)  
 Ø200 (size 1800)

**Positioning of connection sleeves** Connection on the short side:  
 1 = Air and water on the same side  
 Connection on the long side:  
 2=Connection on the right hand side\*  
 4=Connection on the left hand side\*



\* Seen from the short side with water connections

**Software configuration** The product can be delivered with some software settings preconfigured from the factory, for example, occupancy flow and temperature set point value. Can also be configured on site with the help of the SWICCT software.

**Colour** The units are supplied painted in Swegon's standard shade of white, RAL 9003, gloss ratio 30 ± 6 %

**Communication** Modbus RTU

# Contractor demarcation

Swegon's delivery ends at the connection points for water and air and the connection of the room control equipment, see figures 32-48.

For further information, see also the relevant documentation at [www.swegon.com](http://www.swegon.com)

PARASOL Zenith VAV Instructions for Use  
 PARASOL Zenith VAV Technical manual

- The pipe contractor connects the connections points for water to the plain pipe ends and fills the system, bleeds it and tests the pressure. When the room control equipment is installed at the factory, the cooling and heating water's return line is connected to the valve.

Unit	Function	Type	Dim.
600.1200	Cooling/heating	VDN215	DN15 (½")
1800	Heating	VDN215	DN15 (½")
1800	Cooling	VDN220	DN20 (¾")

- The ventilation contractor connects ducting to the air connecting piece.
- The electrical contractor connects the power (24V) and signal cables to the connection terminals with spring-loaded snap-in connections. Maximum cable cross section 2.5 mm<sup>2</sup>. For safe operation, we recommend cable ends with ferrules.

**Table 14. Dimensions, different ceiling types**

Ceiling type	Dimensions of the face plate (mm)	
	600 module	1200 module
T-bar system		
c-c 600	592x592	1192x592
c-c 600 SAS130/15	584x584	1184x584
c-c 625	617x617	1242x617
c-c 650	642x642	1292x642
c-c 675	667x667	1342x667
Clip in/metal cassette		
c-c 600	598x598	1198x598
c-c 625	623x623	1248x623

The tolerance is ±2 mm.

# Specification text

Example of a specification text according to VVS AMA.

**PTD.4** Duct connected room devices for heating and cooling  
 Make: Swegon  
 Type: PARASOL Zenith VAV

Swegon’s comfort module Parasol Zenith VAV for integrated installation in suspended ceilings, with the following functions:

- Waterborne cooling and heating
- Ventilation
- Integrated functionality for demand-controlled ventilation
- Variable pressure-independent air flow regulation
- ADC Comfort guarantee feature with adjustable function
- Integrated circulating air opening in face plate
- Enclosed version for circulating air
- Cleanable air duct for long side connection
- Fixed measurement tapping with hose
- Painted in standard shade of white RAL 9003
- Suitable for T-bar system with modular dimensions: 600; 625; and 675 mm; T-profile 24 mm (optional)
- Contractor demarcation at the connection points for water and air according to dimensional drawings
- The contractor demarcation for electric connection point according to dimension print
- At the connection points, the pipe contractor connects the piping to plain pipe ends:

Unit (mm)	Cooling, supply and return	Heating, supply and return
600, 1200	(Cu) Ø 12 x 1.0 mm	(Cu) Ø 12 x 1.0 mm
1800	(Cu) Ø 15 x 1.0 mm	(Cu) Ø 12 x 1.0 mm

As the unit is equipped with in-built room control equipment, the pipe contractor connects to:

Unit (mm)	Cooling, return	Heating, return
600, 1200	DN15 male thread	DN15 male thread
1800	DN20 male thread	DN15 male thread

- The pipe contractor fills, vents, tests the pressure and assumes responsibility for the design water flows reaching each branch of the system and the index unit
- The ventilation contractor conducts initial commissioning of the air flows
- The ventilation contractor connects to connection spigots Ø125/160/200 mm.

## Factory fitted room control and accessories

- Transformer  
Power ADAPT 20 VA
- Valves and actuators for cooling and heating  
SYST VDN215 straight valve with ACTUATOR b 24V NC  
SYST VDN215 straight valve  
ACTUATOR b 24V NC actuator
- Sensors  
CO2 sensor  
VOC sensor
- Sensor module  
Sensor module square

## Accessories

- Transformer, SYST TS-1, xx items
- Transformer POWER Adapt, xx items
- Temperature sensor TEMP SENSOR PT 1000, xx items
- Valve actuator ACTUATOR b 24V NC, xx items
- Valve SYST VDN215, xx items
- CO2 sensor DETECT Qa, xx items
- VOC sensor Detect VOC, xx items
- External sensor module SENSOR MODULE-aaaaaaaa, xx items
- Cable (2xRJ12) SYST CABLE RJ12 6-LED, xx items
- Cable (USB+RJ12) CABLE CONVERTER USB-RJ12, xx items
- Network cable, LINK Wise, xx items
- Card switch SYST SENSO, xx items
- Connection piece air, SYST AD1-aaa, xx items
- Connection piece (90°duct bend), SYST CA-aaa-90, xx items
- Assembly fitting, SYST MS M8 aaaa-b-cccc, xx items
- Flexible connection hose, SYST FH aaa- bbb-12, xx items
- Venting nipple SYST AR-12, xx items
- Alternative perforation pattern PARASOL c T-PP-a-bb, xx items

## Accessory kits

- CG-IV-KIT, condensation sensor for retrofitting
- WCD2-KIT, condensation sensor for retrofitting
- PZ VAV SA-KIT, motor and control cable

Further information is available for download from [www.swegon.com](http://www.swegon.com)

PARASOL Zenith VAV Technical manual  
 PARASOL Zenith VAV Instructions for Use