

WISE Parasol EX

Suspended, demand-controlled comfort modules for Swegon's WISE System



QUICK FACTS

- Suspended comfort module for demand-controlled indoor climate, integrated in Swegon's control platform WISE.
- All room accessories are easily connected with the help of a scanner and hand-held terminal.
- 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
- Waterborne cooling and heating
- Draught-free indoor climate, 4-way air distribution and Swegon's ADC provide maximum comfort and flexibility, both today and for future needs
- Simplified installation with selectable connection side.
- Can also be ordered in several colours.

Primary air flow l/s	Pressure range Pa	Total cooling capacity W	Heating capacity W
≤ 55	50 - 150	≤ 1930	≤ 2450

Size (mm)					
WISE Parasol EX 690			WISE Parasol EX 1290		
Length	Width	Height	Length	Width	Height
690	690	250	1290	690	250

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Technical description

WISE system

Demand-controlled ventilation with the new WISE system has never been easier. For a description of the WISE system, see the WISE System Guide at www.swegon.com

Communicates wirelessly

The WISE system's intelligent room products/nodes communicate wirelessly with the built-in radio transmitter.

Products that have a power supply work both as a transmitter and receiver and in some instances, can be used to boost/repeat the system's radio communications. Products powered by a battery act only as transmitters.

WISE supports different combinations of indoor climate systems

The option is now given to combine waterborne and airborne within the building, right down to floor level to zone and room level. WISE makes it possible to combine a number of system solutions at the same time.

Comfort module WISE Parasol EX

Comfort module WISE Parasol EX is a part of the WISE system and demand-controlled air flow and cooling and heating for the best energy efficiency and comfort.

WISE Parasol EX can be adapted and combined to meet comfort requirements in most projects, both now and in the future. WISE Parasol EX is a complete and fully flexible product with an adjustable air distribution pattern – the possibility of factory mounted accessories.

WISE Parasol EX is available as single and double module units:

Sizes:	690x690; 690x1290
Modules:	Supply air and cooling Supply air, cooling and heating (water)
Installation:	Suspended installation, pendant or surface mounted

Project design / Typical room

See the separate documentation "WISE System Guide", which is available for download via 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.

Environment

The Building Materials Declaration is available from www.swegon.com.



Range of application

The WISE Parasol EX is ideal for use as a standard application in such premises as:

- Conference rooms and landscape 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 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.

WISE Parasol EX is also suitable for rooms such as:

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



www.eurovent-certification.com
www.certiflash.com

Compact plug & play unit

WISE Parasol EX is supplied with control equipment including a radio unit for pairing with the WISE system. Only a 24 V supply needs to be routed to units, which are then easily paired to the main wireless system SuperWISE and allocated functions.

WISE Parasol EX can also be equipped with numerous different accessories that are fitted to the product at the factory.

WISE Parasol EX sends its values continuous to SuperWISE and you can see the current flow and pressure in real time. The integrated radio node in the product's control unit communicates with the room's setpoint selector switch or any temperature sensor and sensors in the room.

WISE Parasol EX works individually and can be easily allocated new functions and setpoint values to realize the demanded room functions or if new functions are required then these can be an easy introduced via our new software IC Design and our new well-designed web interface SuperWISE. This gives major advantages, for example, in the event of modifications and changes in floor layout such as switching from an open-plan office to individual offices.

Also see the WISE System Guide and WISE Function Guide on www.swegon.com

Factory fitted components

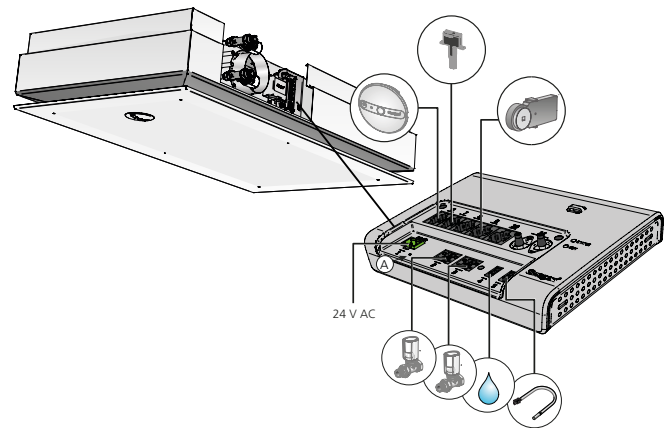


Figure 1. Components that are factory fitted on WISE Parasol EX
A: Commissioning button

WISE Parasol EX as standard is equipped with the following components:

- WISE CU with built-in pressure sensor and 2 inputs for WISE sensors which communicate over Modbus, it also features a general Modbus input/output for e.g. to accept pressure data from extra external pressure sensors. You can also connect sensors for the function, WISE dewpoint monitoring.
- Pressure sensor

Factory fitted components as an option:

- The air quality sensor WISE SMA measures temperature, RH and VOC is factory fitted.
- Presence sensor WISE SMB measures temperature and detects occupancy.
- Valves and actuators, (supplied connected but require installing on the pipes).

Simple to adjust

WISE Parasol EX provides optimal comfort through the built-in nozzle adjustment and with numerous setting options it can be easily be adapted if the size of the premises or business changes. The comfort module can be set so that different amounts of air can be distributed on each side and for both high and low air flow.

Easy to install

The small compact WISE Parasol EX units result in simpler handling, especially in when handling the products on the site, which gives less handling damage and a better working environment.

High capacity

WISE Parasol EX with its high capacity, occupies 40-50% less roof space to handle the cooling requirement in a normal office, compared with a traditional climate beam.

Design

WISE Parasol EX is developed and designed to work in installations without a suspended ceiling. It can be installed on hangers or surface mounted. For WISE Parasol EX there is also a connection casing to cover ventilation ducts and water pipes and control equipment. See the Installation section.

Design cover, face plate and connection casing can be supplied in several different colours. Either to blend in with the surroundings, or to stand out and create a modern contrast.

Optional colours on the design module, face plate and connection casing

Colour no.	Colour
RAL 9003	Standard colour, white, gloss ratio 30 ± 6%
RAL 7037	Grey (Grey Dusty shade), gloss ratio 30-40%)
RAL 9010	White (White), gloss ratio 30-40%)
RAL 9005	Black (Black Jet), gloss ratio 30-40%)
RAL 9006	White (White Aluminium), gloss ratio 70-80%)
RAL 9007	Grey (Grey Aluminium), gloss ratio 70-80%).

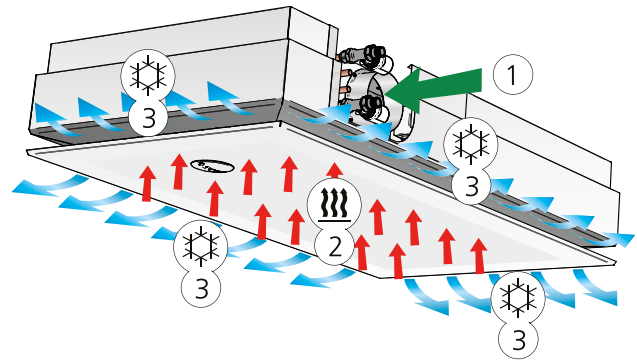


Figure 2. Variant A: Cooling and supply air function
 1 = Primary air
 2 = Induced room air
 3 = Primary air mixed with chilled room air

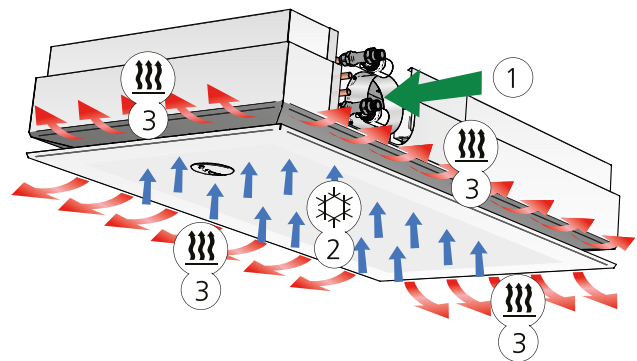


Figure 3. Variant B: Heating and supply air function (also including cooling function)
 1 = Primary air
 2 = Induced room air
 3 = Primary air mixed with heated room air

Commissioning

Nozzle setting

The unique built-in nozzle control in the WISE Parasol EX means that each of the four sides can be set individually. Depending on the unit's location and the room's primary air requirement, the primary air can be guided in all desired directions. The direction of the air flow can be easily optimized using the Swegon IC Design sizing program available at www.swegon.com.

The required nozzle setting is made at the factory, but can if necessary be easily changed on site.

Specific nozzle settings

To specify optimised nozzle settings, always begin from the side with the water connection. From there, specify side after side in anticlockwise order, see figure 4-5. If you like, you can order the units preset from the factory (does not apply to units held in stock).

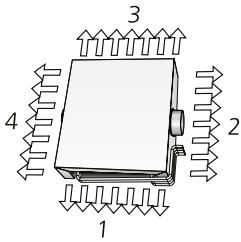


Figure 4. Top view, page 1-4 WISE Parasol EX 690

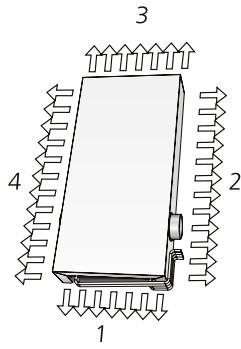


Figure 5. Top view, page 1-4 WISE Parasol EX 1290

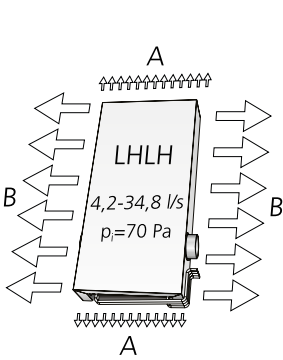


Figure 6. Example 1. A = 2.1 l/s, B = 15.3 l/s

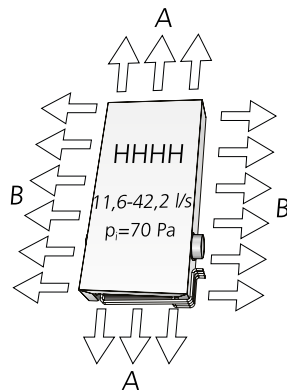


Figure 7. Example 2. A = 5.8 l/s, B = 15.3 l/s

k-factor

Each nozzle setting has a specific K-factor. A total K-factor for the unit can be determined by adding together the K-factors for the nozzle settings on each side. The relevant K-factor for optimized nozzle setting can also be obtained in IC Design.

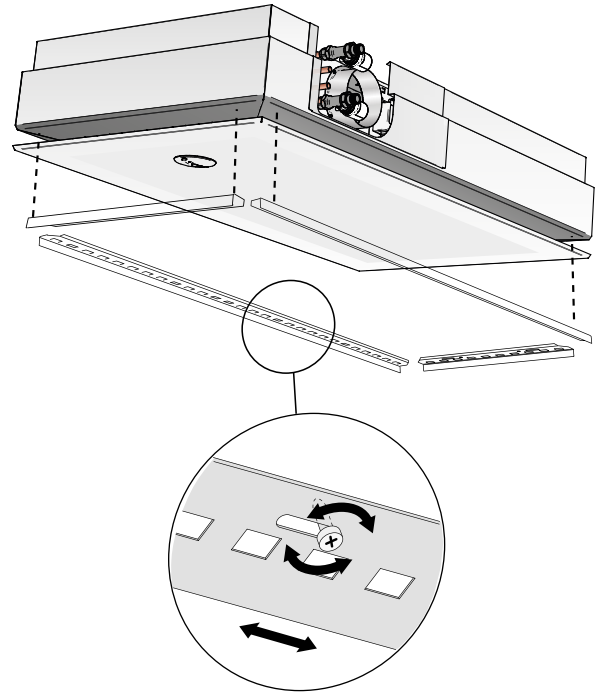


Figure 8. Nozzle setting

Example 1:

Nozzle setting LHLH gives the lowest possible absence flow (side 1 + 3 open). This provides a minimum flow/absence flow of approx. 4 l/s and a maximum flow of approx. 35 l/s at p_i= 70 Pa

Example 2:

If it instead is more important to get the highest possible maximum flow/output, the nozzles are set to position HHHH, i.e. fully open all around. A higher maximum flow is then obtained, but with the consequence of a slightly higher absence flow.

These adjustments are only different settings on the same physical product, which means a very flexible and adaptable unit, in particular, together with the integrated software.

In IC-Design you can easily reference K-factors for each side and quickly test different variants.

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 ADC is adjusted to "fan-shape".

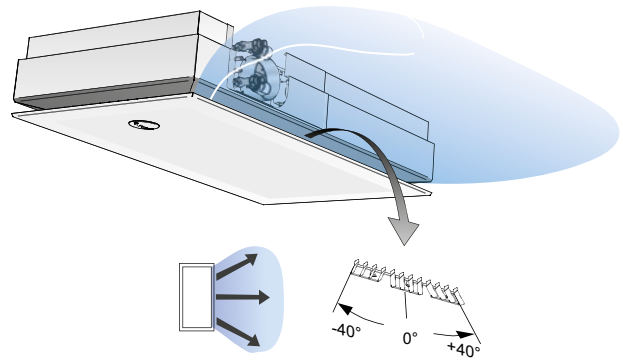


Figure 10. Possible settings for the ADC, Fan-shape

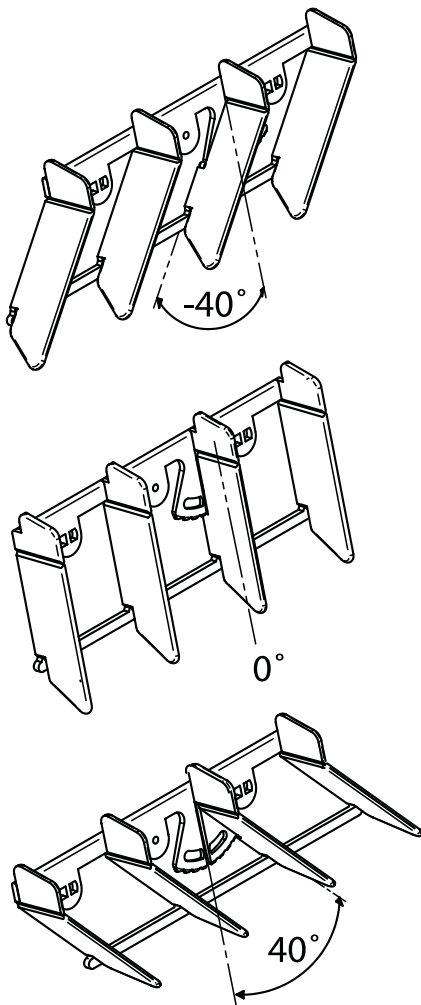


Figure 9. ADC, setting range from -40° to +40° in increments of 10°.

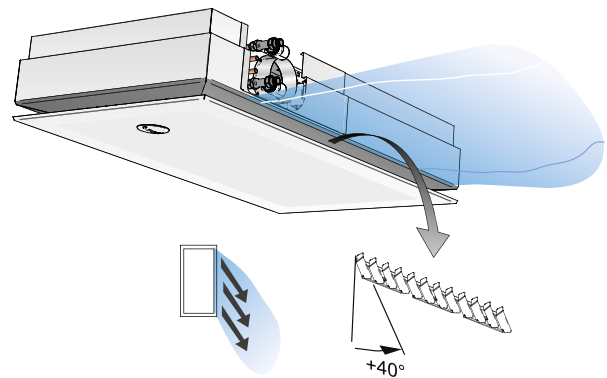


Figure 11. Possible settings for the ADC, X-shape

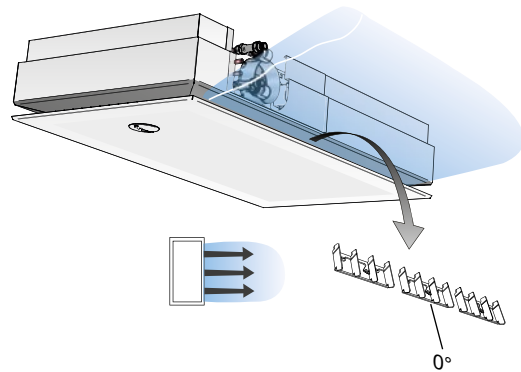


Figure 12. Setting options ADC, Straight setting

Installation

Recommended ceiling types

WISE Parasol EX is designed for suspended installation, either as pendant or surface mounted

Suspension

WISE Parasol EX consists partly of a base module and partly of a design module with face plate. The base module has four brackets for suspension.

No extra assembly parts are required for surface mounting except for products with a Ø125 connection, and then the enclosed spacers are used when mounting.

A threaded rod in each mounting bracket is used for suspended installation (Figure 13). Threaded drop rods and assembly fitting SYST MS M8 (Figure 14) are ordered separately.

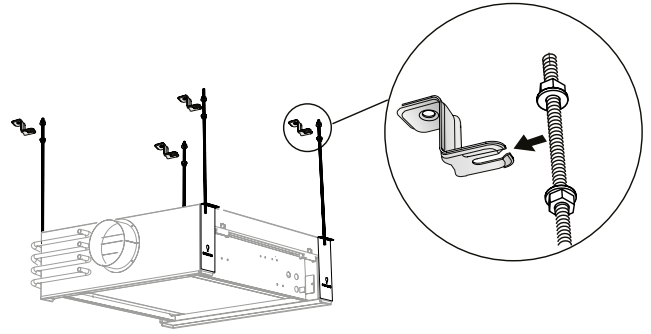


Figure 13. Suspension. No extra assembly parts are required for surface mounting. For suspended installation use SYST MS M8 which are ordered separately.

Connection sizes

Water

Without valves:

Cooling, plain pipe ends (Cu) Ø 12 x 1.0 mm
 Heating, plain pipe ends (Cu) Ø 12 x 1.0 mm

Supplied and connected valves and actuator:

Cooling Male thread DN15 (1/2")
 Heating Male thread DN15 (1/2")

Air

Connecting sleeve Ø125 mm (HF) or Ø160 mm (PF).

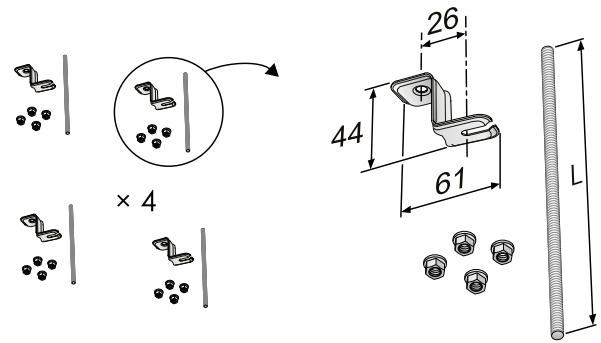


Figure 14. Assembly piece SYST MS M8-1, ceiling mount and threaded rod

To connect the air

WISE Parasol EX is supplied with the connecting piece on the same side as the water connections.

There is a cover on the opposite side, which can only be used as a cleaning cover. The pipe kit and enclosures will not fit if you use the cleaning cover as an air connection.

Connecting water

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 soldered joints.

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

Condensation-free cooling

Since the comfort modules have to be dimensioned to operate without condensation, no drainage system is required.

Connections control equipment

See WISE Parasol EX Instructions for Use

Installation, control equipment

On the side of base module is a control plate with all control equipment assembled. On the same side are water and air connections too, which facilitates installation work and servicing.

If the product is ordered with valve kits, these are supplied connected to the control unit and are temporarily attached next to the control unit with the help of cable ties. The cable ties are cut off and the valve kit is mounted on the pipes for cooling return and heating return according to the enclosed instructions for use.

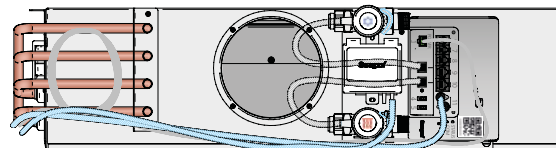


Figure 15. The valve kit is placed on the base module on delivery.

Installation, design module and connection casing

When the valve kit is connected in, the design module and face plate are mounted.

If the product is supplied with WISE SMB in the face plate, this is mounted before the face plate is mounted on the product. Cables to WISE SMB are then prerouted in the product and connected on the control unit. All that remains is to connect the plug in WISE SMB.

Connection casing can be ordered as an accessory and then conceals the control equipment, water and air connections.

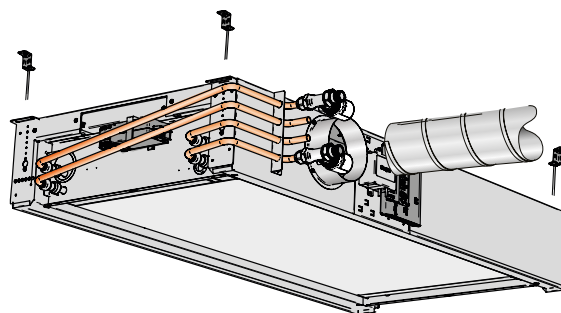


Figure 16. Base module with mounted valve kit

For further information, see the relevant documentation at www.swegon.com

WISE Parasol EX Instructions for Use

WISE Project Planning Guide - Heating, Cooling & Ventilation

WISE Project Planning Guide - Electricity & Control

WISE System Guide

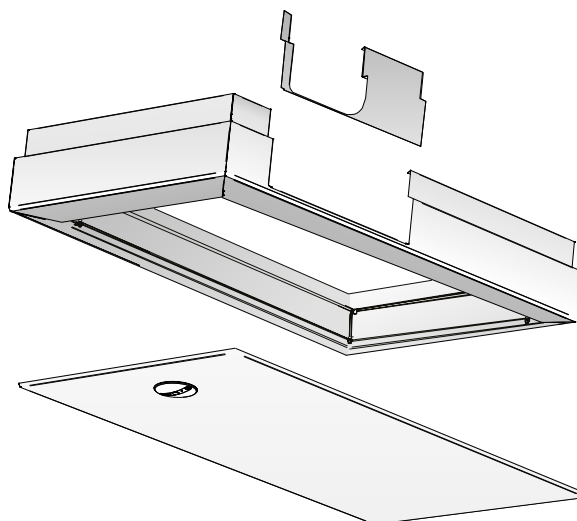


Figure 17. Design module with associated cover plate and face plate with WISE SMB.

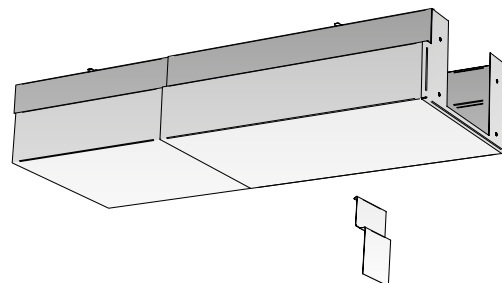


Figure 18. Accessory - connection casing incl. associated face plate to cover the entire opening.

Technical data

Total cooling capacity, max.	1930 W
Heating capacity, total, max.	2450 W
Air flow	
Single-module unit	7-34 l/s
Double module unit	9-55 l/s
Length	
Single-module unit	690 mm
Double module unit	1290 mm
Width	690 mm
Height	250 mm
Dimensions of the units have a tolerance of	(±2) mm.

Weight 690

Size	Type	Dry weight (kg)	Water volume (l)	
			cooling	heating
690	690-A	22.8	1.1	
690	690-B	24.0	1.1	0.2
690 PF	690-A	24.2	1.1	
690 PF	690-B	25.4	1.1	0.2
1290	1290-A	35.5	1.4	
1290	1290-B	40.3	1.4	0.9
1290 PF	1290-A	37.8	1.4	
1290 PF	1290-B	42.6	1.4	0.9

Weight incl. design module but excl. sensor module WISE SMB (0.1 kg).

Electrical data

Power supply:	24V AC ±15% 50 - 60Hz
Connections pipe dim.	
Power:	Screw terminal max. 2.5mm ²
Valve actuator:	Push-in spring force connections, max. 1.5 mm ²
Max. power consumption:	See table below

WISE Parasol EX in standard version:	VA / unit	Standard VA total
WISE CU	2.3	5.1
WISE DPS Modbus	0.8	
Damper motor (315C)	2	

Option:	VA / unit		
	x 1	x 2	x 3
Valve actuator, ACTUATORc	6	12	18*
WISE SMA	0.8		
WISE SMB	0.6		

*Valid for products with CU ver. 2, delivered from 01/10/2019

Example:
 WISE Parasol EX in standard version with the following options:
 Actuator for cooling and heating as well as WISE SMA, gives a total power consumption of 5.1 + 6 + 0.8 = 11.9 VA

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 min. nozzle pressure if coil heating is used, p _i	50-150 Pa
Recommended minimum nozzle pressure with face plate in the high output mode, p _i	70 Pa

Water flow

Ensures evacuation of any air pockets in the system.	
Cooling water, min.	0.030 l/s
Heating water, 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.

Designations

P	Capacity (W)
t _i	Temperature of primary air (°C)
t _r	Temperature of room air (°C)
t _m	Mean water temperature (°C)
ΔT _m	Temperature difference t _r - t _m (K)
ΔT _i	Temperature difference t _i - t _r (K)
ΔT _k	Temperature difference of cooling water flow and return (K)
ΔT _v	Temperature difference of heating water flow and return (K)
v	Water velocity (m/s)
q	Flow (l/s)
p	Pressure (Pa)
Δp	Pressure drop (Pa)

Supplementary index: k = cooling, v = heating, l = air, i = commissioning, corr = correction

Nozzle pressure (commissioning pressure)

$$p_i = (q_i / k_{pi})^2$$

p _i	Nozzle pressure (pa)
q _i	Flow of primary air (l/s)
k _{pi}	Pressure drop constant for nozzle setting, see Tables 1-9

Cooling

Standard

The cooling capacities have been measured in conformance with EN 15116 Standard and have been recalculated for a constant water flow according to Diagram 2/3.

Calculating Formulae - Cooling

Below are some formulae that enable the user to calculate which comfort module selection is best suited for the application. The values for the calculations can be taken from the tables.

Pressure drop in cooling coil

$$\Delta p_k = (q_k / k_{pk})^2$$

Δp_k Pressure drop in cooling coil (kPa)

q_k Flow of cooling water (l/s), see Diagram 1

k_{pk} Pressure drop constant for cooling coil, see Tables 1-4

Cooling capacity of the air

$$P_i = 1.2 \cdot q_i \cdot \Delta T_i$$

P_i Primary air's cooling capacity (W)

q_i Flow of primary air (l/s)

ΔT_i Temperature difference between primary air (t_i) and room air (t_r) (K)

Cooling capacity of the water

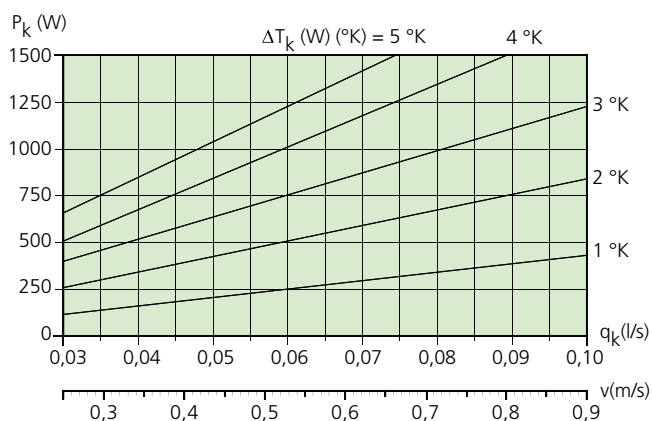
$$P_k = 4186 \cdot q_k \cdot \Delta T_k$$

P_k Cooling capacity of the water (W)

q_k Cooling water flow (l/s)

ΔT_k Temperature difference of cooling water flow and return (K)

Diagram 1. Water flow - cooling capacity



Corrected capacity – water flow

Different water flow rates to some extent have effects on the capacity output. By checking calculated water flow against Diagrams 2 or 3, the capacity indicated in Tables 1-4 may need to be slightly adjusted up or down.

$$P_{corr} = k \cdot P_k$$

P_{corr} Corrected capacity (W)

k Correction factor

P_k Cooling capacity of the water

Diagram 2. Corrected capacity – water flow, WISE Parasol EX 690

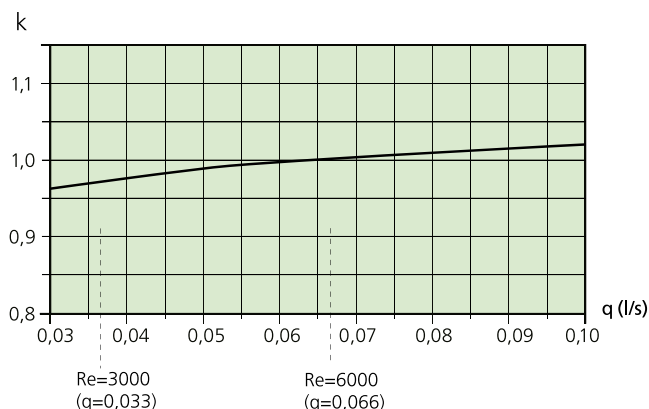


Diagram 3. Corrected capacity – water flow, WISE Parasol EX 1290

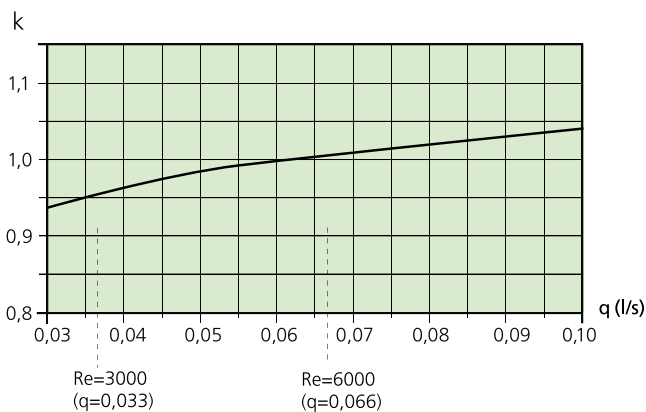


Diagram 4. Pressure drop – water flow, cooling

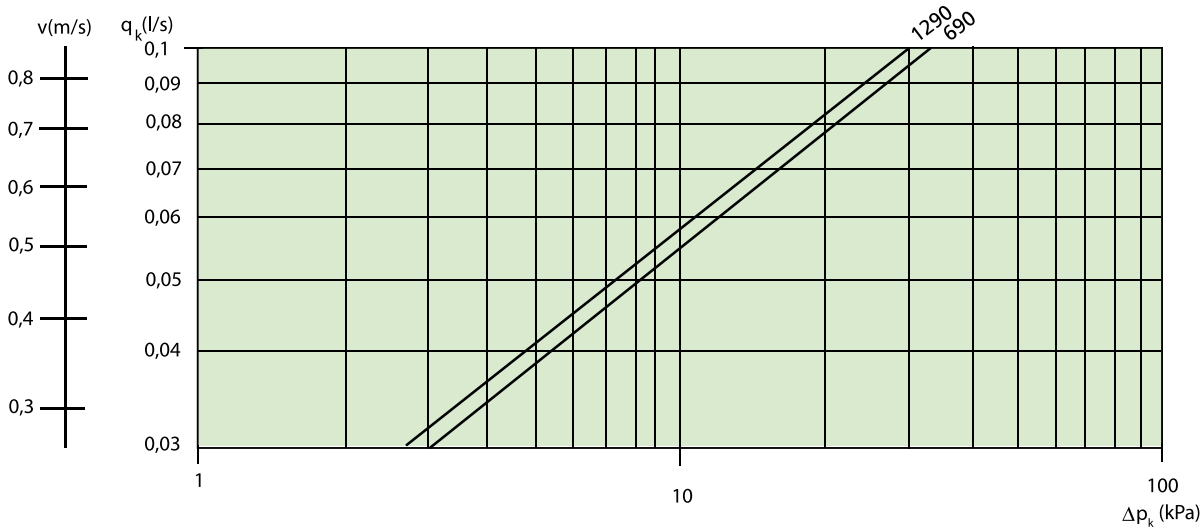


Table 1. Cooling capacity WISE Parasol EX 690

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Cooling capacity of primary air (W) for ΔT_i				Cooling capacity of the water (W) at ΔT_{mk} 3)						Pressure drop constant air/water	
				6	8	10	12	6	7	8	9	10	11	k_{pl}	k_{pk}
50 Pa	LLLL	7.2	<20	52	69	86	104	166	194	219	246	271	298	1.01	0.0173
	LHLH	13.4	<20	96	129	161	193	218	254	287	323	359	392	1.89	0.0173
	HHHH	19.6	20	141	188	235	282	236	275	315	354	390	429	2.77	0.0173
70 Pa	LLLL	8.5	<20	61	82	102	122	197	226	259	288	321	353	1.01	0.0173
	LHLH	15.8	24	114	152	190	228	257	299	337	378	420	461	1.89	0.0173
	HHHH	23.2	25	167	223	278	334	278	323	368	413	458	498	2.77	0.0173
90 Pa	LLLL	9.6	20	69	92	115	138	217	254	287	323	359	392	1.01	0.0173
	LHLH	17.9	27	129	172	215	258	283	329	375	420	466	507	1.89	0.0173
	HHHH	26.3	29	189	252	316	379	310	360	409	458	502	551	2.77	0.0173

Table 2. Cooling capacity WISE Parasol EX 690 PF

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Cooling capacity of primary air (W) for ΔT_i				Cooling capacity of the water (W) at ΔT_{mk} 3)					Pressure drop constant air/water	
				6	8	10	12	6	7	8	9	10	k_{pl}	k_{pk}
50 Pa	LLLL	22.1	23	159	212	265	318	215	250	286	322	358	3.13	0.023
	LHLH	27.9	27	201	268	335	402	233	272	311	350	389	3.95	0.023
	HHHH	33.7	27	243	324	404	485	263	306	350	394	438	4.76	0.023
70 Pa	LLLL	26.2	28	189	252	314	377	257	300	343	386	429	3.13	0.023
	LHLH	33	32	238	317	396	475	275	320	366	412	458	3.95	0.023
	HHHH	39.8	32	287	382	478	573	314	367	419	471	524	4.76	0.023
90 Pa	LLLL	29.7	32	214	285	356	428	292	340	389	438	486	3.13	0.023
	LHLH	37.5	35	270	360	450	540	314	366	418	470	523	3.95	0.023
	HHHH	45.2	36	325	434	542	651	359	418	478	538	598	4.76	0.023

1) For the sizing of alternative nozzle settings, use the Swegon ProSelect or IC Design sizing program that is available for use at www.swegon.com.

2) Room attenuation = 4 dB

3) The water capacity can vary depending on the installation and how the air deflectors are set. The primary air capacity is not affected. Note! The total cooling capacity is the sum of the airborne and waterborne cooling capacities.

Table 3. Cooling capacity WISE Parasol EX 1290

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Cooling capacity of primary air (W) for ΔT_1				Cooling capacity of the water (W) at ΔT_{mk} 3)					Pressure drop constant air/water	
				6	8	10	12	6	7	8	9	10	k_{pl}	k_{pk}
50 Pa	LLLL	13	<20	94	125	156	187	349	404	459	515	569	1.84	0.0183
	LHLH	29.4	22	212	282	353	423	444	517	583	649	715	4.16	0.0183
	HHHH	35.6	26	256	342	427	513	463	531	599	667	740	5.04	0.0183
70 Pa	LLLL	15.4	<20	111	148	185	222	389	457	518	580	641	1.84	0.0183
	LHLH	34.8	26	251	334	418	501	498	578	651	730	802	4.16	0.0183
	HHHH	42.2	29	304	405	506	608	519	594	669	749	823	5.04	0.0183
90 Pa	LLLL	17.5	<20	126	168	210	252	425	491	558	630	696	1.84	0.0183
	LHLH	39.5	29	284	379	474	569	541	626	704	788	864	4.16	0.0183
	HHHH	47.8	32	344	459	574	688	555	643	722	807	892	5.04	0.0183

Table 4. Cooling capacity WISE Parasol EX 1290 PF

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Cooling capacity of primary air (W) for ΔT_1				Cooling capacity of the water (W) at ΔT_{mk} 3)					Pressure drop constant air/water	
				6	8	10	12	6	7	8	9	10	k_{pl}	k_{pk}
50 Pa	LLLL	40.6	25	292	390	487	585	362	422	483	543	603	5.74	0.022
	LHLH	53.8	25	387	516	646	775	394	460	525	591	657	7.61	0.022
	HHHH	59.6	26	429	572	715	858	421	491	561	632	702	8.42	0.022
70 Pa	LLLL	48	30	346	461	576	691	422	492	562	633	703	5.74	0.022
	LHLH	63.7	30	459	612	764	917	456	532	608	684	760	7.61	0.022
	HHHH	70.4	32	507	676	845	1014	493	575	657	740	822	8.42	0.022
90 Pa	LLLL	54.5	34	392	523	654	785	475	554	634	713	792	5.74	0.022
	LHLH	72.2	34	520	693	866	1040	510	595	680	765	850	7.61	0.022
	HHHH	79.9	36	575	767	959	1151	548	639	731	822	913	8.42	0.022

1) For the sizing of alternative nozzle settings, use the Swegon ProSelect or IC Design sizing program that is available for use at www.swegon.com.

2) Room attenuation = 4 dB

3) The water capacity can vary depending on the installation and how the air deflectors are set. The primary air capacity is not affected.

Note! The total cooling capacity is the sum of the airborne and waterborne cooling capacities.

Table 5. Cooling capacity for natural convection

Unit (mm)	Cooling capacity (W) at temperature difference, room - water ΔT_{mk} (K)						
	6	7	8	9	10	11	12
690	17	21	25	29	34	39	43
1290	41	51	61	72	83	95	107

Calculation example - cooling

A cellular office without suspended ceiling with dimensions $w \times d \times h = 2.4 \times 4 \times 2.7$ m is to be equipped with a comfort module. The total cooling requirement is estimated to 50 W/m². In order to meet this cooling requirement one WISE Parasol EX is needed that gives $50 \times 2.4 \times 4 = 480$ W.

Design room temperature (t_r) 24°C, cooling water temperature (flow/return) 14/16°C and the primary air temperature (t_p) 16°C produces:

$$\Delta T_k = 2 \text{ K}$$

$$\Delta T_{mk} = 9 \text{ K}$$

$$\Delta T_p = 8 \text{ K}$$

Required primary air flow for the room (q_p) has been set to 16 l/s. A zone damper ensures that the pressure in the duct is held constant at approx. 73 Pa which in this case gives a nozzle pressure of 70 Pa.

The sound from the unit must not exceed 30 dB (A).

Solution

Cooling

The cooling capacity of the primary air can be calculated using the following formula: $P_1 = 1.2 \cdot \Delta T_p \cdot q_p$

$$P_1 = 1.2 \cdot 8 \cdot 16 = 154 \text{ W}$$

Accordingly, the comfort module WISE Parasol EX shall be able to give $480 - 154 = 326$ W in cooling capacity on the water side.

From Table 1 we can read that a WISE Parasol EX 690 x 690 mm with a nozzle setting LHLH for a primary air flow of 15.8 l/s gives 378 W in cooling capacity on the water side. Thus this is sufficient to meet the cooling requirement.

At the same time, this nozzle configuration means that a large amount of air can be saved for absence mode, which in this case gives 4.3 l/s (see ProSelect or IC Design).

Alternatively, nozzle HHHH can be set, it then gives more air for absence (minor saving), but an overcapacity in air flow and cooling is available if, for example, you visit the office often.

Cooling water

With a cooling capacity requirement of 326 W for cooling water, the necessary water flow can be obtained in Diagram 1. With the temperature increase $\Delta T_k = 2$ K the water flow will be 0.039 l/s.

In Diagram 2 we can read that a water flow of 0.039 l/s does not produce a fully turbulent outflow, but the capacity must be corrected by a reduction factor of 0.97. The loss of capacity

is compensated by calculating the comfort module's required cooling capacity as follows: $P_k = 326 / 0.97 = 336$ W. New water flow is obtained from Diagram 1, $q_k = 0.040$ l/s. The pressure drop can now be read at 5.5 kPa from Diagram 4.

Heating

Heating function

As the comfort module is able to quickly mix the primary air with room the air, WISE Parasol EX 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. When WISE Parasol EX maintains a high nozzle pressure even at low flow rates, there is a specific heating output even, for example, for weekend operations when the flow is reduced over a longer period.

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, computers and people are present, the stratification is reduced or disappears depending on the heating load.

When heating with WISE Parasol EX, the use of an extra temperature sensor mounted on the inner wall of the room is recommended. The WISE system has several sensors that gives the possibility of this in combination with other function such as: WISE RTA, WISE IAQ and WISE RTS.

Calculation formulae - water-based heating

Below are some formulae that enable the user to calculate which comfort module selection is best suited for the application. The values for the calculations are in Tables 6-9.

The cooling or heating capacity of the air

$P_i = 1.2 \cdot q_i \cdot \Delta T_i$

P_i The cooling or heating capacity of the air (W)

q_i Flow of primary air (l/s)

ΔT_i Temperature difference between primary air (t_p) and room air (t_r) (K)

Pressure drop for heating coil

$\Delta p_v = (q_v / k_{pv})^2$

Δp_v Pressure drop in cooling coil (kPa)

q_v Flow of heating water (l/s), see Diagram 6

k_{pv} Pressure drop constant for heating coil, see Tables 6-9

Heating capacity of the water

$P_v = 4186 \cdot q_v \cdot \Delta T_v$

P_v Heating capacity of the water (W)

q_v Flow of heating water (l/s)

ΔT_v Temperature difference between the heating water's flow and return flow (K)

Diagram 5. Water flow - heating capacity

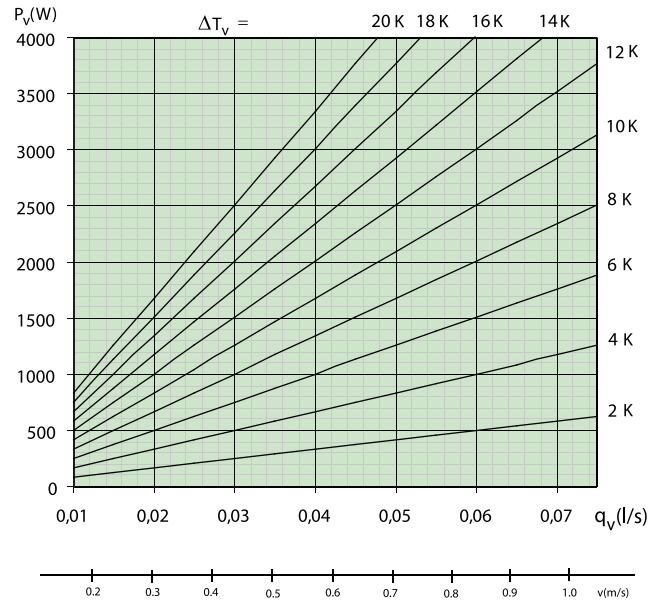


Diagram 6. Pressure drop – heating water flow

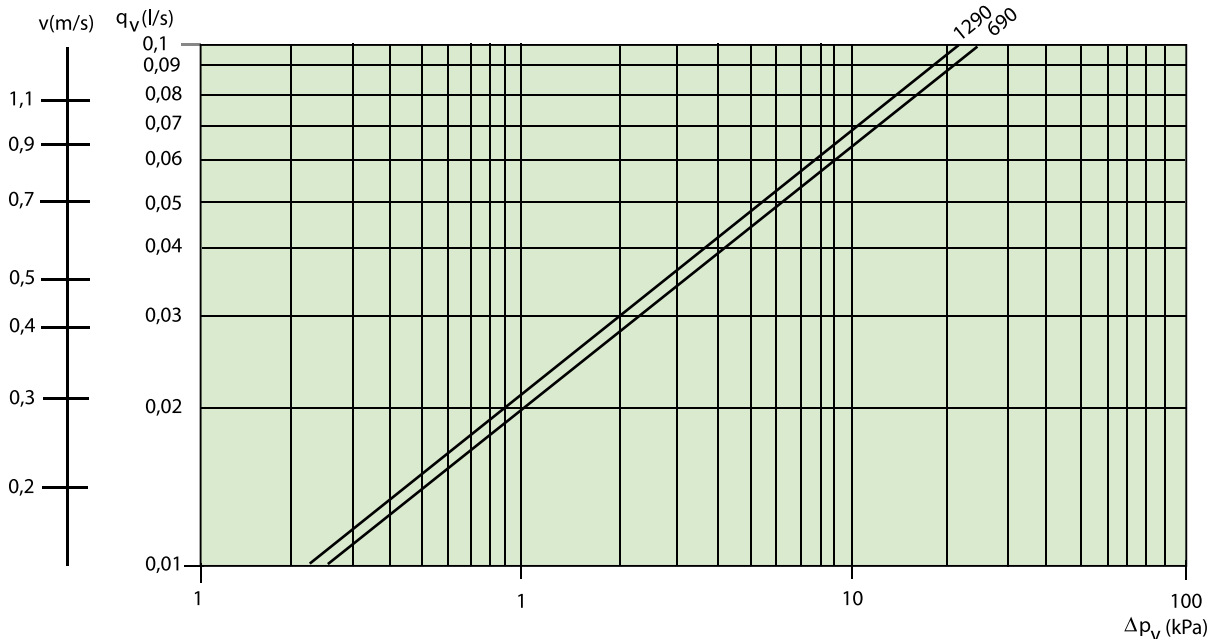


Table 6 - Heating capacity WISE Parasol EX 690

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Heating capacity, water (W) for ΔT_{mv} 3)						Pressure drop constant air/water	
				5	10	15	20	25	30	k_{pl}	k_{pv}
50 Pa	LLLL	7.2	<20	114	190	285	379	473	567	1.01	0.0200
	LHLH	13.4	<20	125	248	365	485	600	716	1.89	0.0200
	HHHH	19.6	20	135	270	396	524	647	774	2.77	0.0200
70 Pa	LLLL	8.5	<20	110	221	331	442	552	661	1.01	0.0200
	LHLH	15.8	24	140	281	416	551	682	816	1.89	0.0200
	HHHH	23.2	25	151	304	448	592	733	875	2.77	0.0200
90 Pa	LLLL	9.6	20	124	245	365	488	609	731	1.01	0.0200
	LHLH	17.9	27	152	306	453	600	745	890	1.89	0.0200
	HHHH	26.3	29	165	327	485	641	797	950	2.77	0.0200

Table 7 - Heating capacity WISE Parasol EX 690 PF

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Heating capacity, water (W) for ΔT_{mv} 3)						Pressure drop constant air/water	
				5	10	15	20	25	30	k_{pl}	k_{pv}
50 Pa	LLLL	22.1	23	103	206	308	411	514	617	3.13	0.018
	LHLH	27.9	27	117	233	350	466	583	699	3.95	0.018
	HHHH	33.7	27	121	243	364	485	606	728	4.76	0.018
70 Pa	LLLL	26.2	28	121	242	362	483	604	725	3.13	0.018
	LHLH	33	32	134	267	401	534	668	801	3.95	0.018
	HHHH	39.8	32	139	278	416	555	694	833	4.76	0.018
90 Pa	LLLL	29.7	32	135	269	404	538	673	807	3.13	0.018
	LHLH	37.5	35	147	294	440	587	734	881	3.95	0.018
	HHHH	45.2	36	152	304	455	607	759	911	4.76	0.018

1) For the sizing of alternative nozzle settings, use the Swegon ProSelect or IC Design sizing program that is available for use at www.swegon.com.

2) Room attenuation = 4 dB

3) The water capacity can vary depending on the installation and how the air deflectors are set. The primary air capacity is not affected.

Note! The total heating capacity is the sum of the airborne and waterborne heating capacities. If the primary air temperature is lower than the room temperature, it causes a negative impact on the total heating capacity.

Table 8 - Heating capacity WISE Parasol EX 1290

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Heating capacity, water (W) for ΔT_{mv} 3)						Pressure drop constant air/water	
				5	10	15	20	25	30	k_{pl}	k_{pv}
50 Pa	LLLL	13	<20	155	313	584	850	1008	1163	1.84	0.0213
	LHLH	29.4	22	199	394	735	1072	1272	1471	4.16	0.0213
	HHHH	35.6	26	205	410	760	1110	1311	1515	5.04	0.0213
70 Pa	LLLL	15.4	<20	176	353	658	959	1136	1312	1.84	0.0213
	LHLH	34.8	26	220	439	819	1201	1421	1645	4.16	0.0213
	HHHH	42.2	29	225	455	846	1237	1466	1691	5.04	0.0213
90 Pa	LLLL	17.5	<20	190	384	712	1044	1234	1428	1.84	0.0213
	LHLH	39.5	29	239	474	885	1298	1537	1767	4.16	0.0213
	HHHH	47.8	32	245	490	912	1334	1579	1811	5.04	0.0213

Table 9 - Heating capacity WISE Parasol EX 1290 PF

Nozzle pressure	Nozzle setting 1)	Primary air flow (l/s)	Sound level dB(A) 2)	Heating capacity, water (W) for ΔT_{mv} 3)						Pressure drop constant air/water	
				5	10	15	20	25	30	k_{pl}	k_{pv}
50 Pa	LLLL	40.6	25	238	477	715	954	1192	1431	5.74	0.027
	LHLH	53.8	25	278	556	834	1112	1389	1667	7.61	0.027
	HHHH	59.6	26	282	565	847	1130	1412	1694	8.42	0.027
70 Pa	LLLL	48	30	281	561	842	1123	1404	1684	5.74	0.027
	LHLH	63.7	30	325	650	975	1301	1626	1951	7.61	0.027
	HHHH	70.4	32	330	659	989	1319	1648	1978	8.42	0.027
90 Pa	LLLL	54.5	34	312	625	937	1249	1562	1874	5.74	0.027
	LHLH	72.2	34	359	719	1078	1437	1797	2156	7.61	0.027
	HHHH	79.9	36	365	731	1096	1461	1826	2192	8.42	0.027

1) For the sizing of alternative nozzle settings, use the Swegon ProSelect or IC Design sizing program that is available for use at www.swegon.com.

2) Room attenuation = 4 dB

3) The water capacity can vary depending on the installation and how the air deflectors are set. The primary air capacity is not affected.

Note! The total heating capacity is the sum of the airborne and waterborne heating capacities. If the primary air temperature is lower than the room temperature, it causes a negative impact on the total heating capacity.

Calculation Example - Heating

In a cellular office without a suspended ceiling with dimensions $w \times d \times h = 2.4 \times 4 \times 2.7$ m (same room as in the example for cooling) there is also heating requirement during the winter of 450 W. The primary air flow must be the same as in the summer case, 16 l/s and the duct pressure is now also held constant.

Design room temperature (t_r) 22 °C, the heating water temperature (supply/return) 45/39 °C and the primary air temperature (t_p) 20 °C give:

$$\Delta T_v = 6 \text{ K}$$

$$\Delta T_{mv} = 20 \text{ K}$$

$$\Delta T_r = -2 \text{ K}$$

Solution

Heating

The primary air flow of 16 l/s in combination with the primary air temperature of 20°C produces a negative impact on the heating capacity: $1.2 \times 16 \times (-2) = -38$ W. The heating capacity requirement from the heating water is thus increased to $450 + 38 = 488$ W. Table 6 gives at $\Delta T_{mv} = 20$ K and primary air flow 16 l/s, a heat capacity $P_v = 551$ W from a single-module unit with nozzle setting LHLH, which is enough to meet the heating requirement.

Heating water

With a heating requirement of 488 W and $\Delta T_v = 6$ K the requisite water flow is then obtained from Diagram 5: 0.019 l/s. The pressure drop for the heating water is calculated on the basis of a water flow of 0.019 l/s and pressure drop constant $k_{pv} = 0.0200$, which is taken from Table 6. The pressure drop will then be: $\Delta p_v = (q_v/k_{pv})^2 = (0.019 / 0.0200)^2 = 0.90$ kPa. Alternatively, the pressure drop can be read from Diagram 6.

Acoustics

Natural attenuation and end reflection

Natural attenuation ΔL (dB) including end reflection.

Table 10. Natural attenuation ΔL (dB) WISE Parasol EX 690

Nozzle setting	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
LLLL	19	20	17	16	17	16	15	15
MMMM	17	18	15	14	15	14	13	13
HHHH	15	16	13	12	13	12	11	11

Table 11. Natural attenuation ΔL (dB) WISE Parasol EX 1290

Nozzle setting	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
LLLL	18	19	16	15	16	15	14	14
MMMM	16	17	14	13	14	13	12	12
HHHH	14	15	12	11	12	11	10	10

Dimensions

WISE Parasol EX 690

Dimensions 690, base module

Variant	Length (mm) *	Width (mm) *	Height (mm)
690	567 (+ 41)	567 (+ 72)	178
690 PF	567 (+ 41)	567 (+ 72)	208

* Dimensions (in brackets) refer to protruding pipes

Dimensions 690 complete with design module

Length (mm)	Width (mm)	Height (mm)
690	690	250*

* When WISE SMB is installed in the face plate the height measurement (H) increases by 12 mm

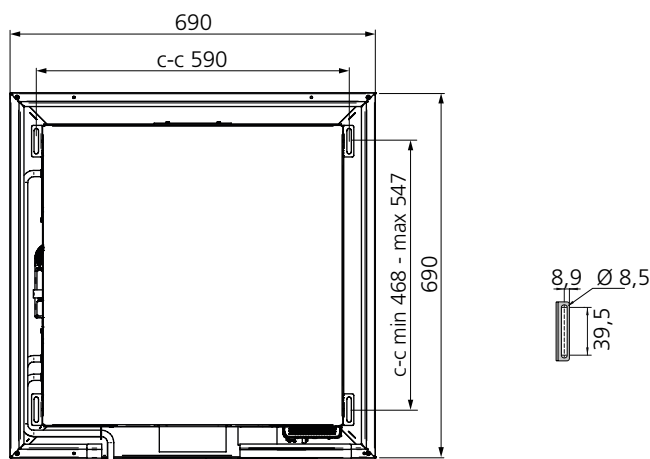


Figure 19. WISE Parasol EX 690, top view

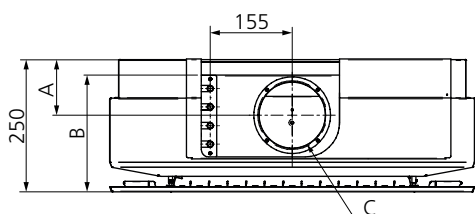


Figure 20. WISE Parasol EX 690, side view

Variant	A (mm)	B (mm)	C
MF/HF	105	220	Ø125
PF	101	250	Ø160

* When WISE SMB is installed on the face plate the height measurement increases by 12 mm

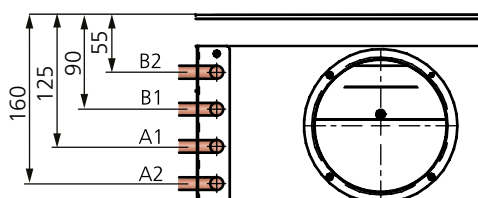


Figure 21. WISE Parasol EX 690, side view
 A1 = Supply cooling water $\phi 12 \times 1.0$ mm (Cu)
 A2 = Return cooling water $\phi 12 \times 1.0$ mm (Cu)
 B1 = Supply heating water $\phi 12 \times 1.0$ mm (Cu)
 B2 = Return heating water $\phi 12 \times 1.0$ mm (Cu)

WISE Parasol EX 1290

Dimensions 1290, base module

Variant	Length (mm) *	Width (mm) *	Height (mm)
1290 MF/HF	1167 (+ 41)	567 (+ 72)	178
1290 PF	1167 (+ 41)	567 (+ 72)	208

* Dimensions (in brackets) refer to protruding pipes

Dimensions 1290 complete with design module

Length (mm)	Width (mm)	Height (mm)
1290	690	250 *

* When WISE SMB is installed on the face plate the height measurement increases by 12 mm

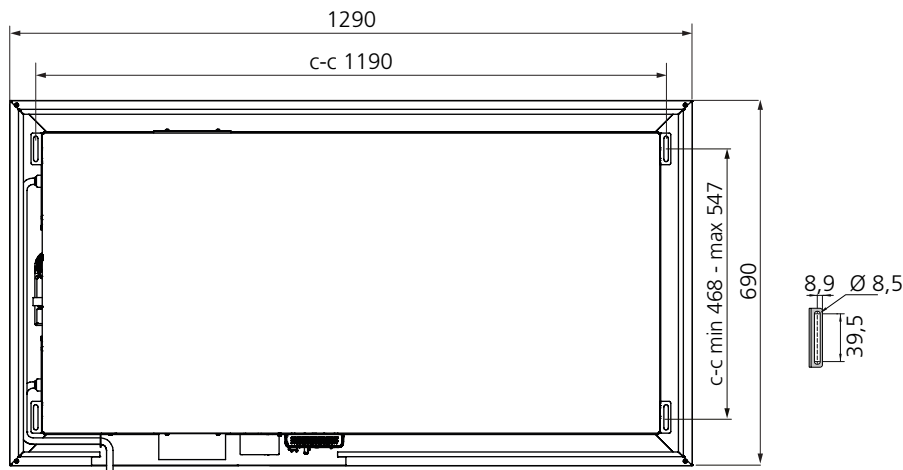
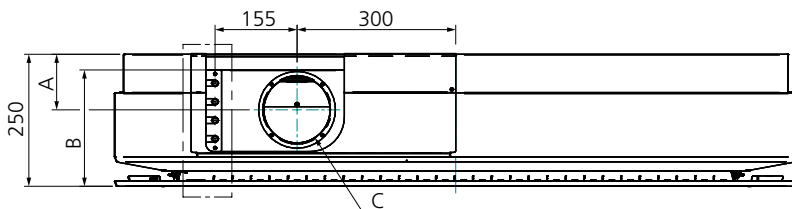


Figure 22. WISE Parasol EX 1290, top view (example with connection on side 2).



Variant	A (mm)	B (mm)	C
MF/HF	105	220	Ø125
PF	101	250	Ø160

* When WISE SMB is installed on the face plate the height measurement increases by 12 mm

Figure 23. WISE Parasol EX 1290, side view (example with connection on side 2).

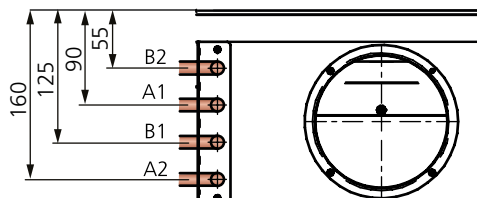


Figure 24. WISE Parasol EX 1290, water connection on side 2.

- 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)

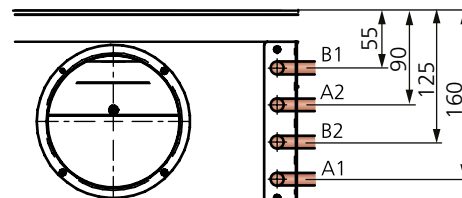


Figure 25. WISE Parasol EX 1290, water connection on side 4.

- 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)

Accessories, factory-fitted

Air quality sensor, WISE SMA (Sensor Module Advanced)

WISE SMA is a sensor that measures temperature, RH and VOC.

WISE SMA can be factory fitted in climate products, dampers or air diffusers in the WISE system and which are equipped with a WISE CU. The unit is powered by a 5V DC from WISE CU and communicates via Modbus with this.



Occupancy sensor, WISE SMB (Sensor Module Basic)

WISE SMB measures temperature and detects occupancy and indicates status via its LED.

WISE SMB can be factory fitted in air diffusers or climate products in the WISE system and which are equipped with a WISE CU.

The unit is powered by a 5V DC from WISE CU and communicates via Modbus with this.



Valve, cooling & heating, VDN 215

Factory fitted valves for cooling and heating.

The valve is mounted on the product and preset fully open on K_v 0.89. DN15 (1/2") K_v -value can be set between 0.1 to 0.89 m³/h.

For more information about the valve, see the separate product data sheet on www.swegon.com.



Actuator, cooling & heating, ACTUATORc 24 V 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.



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

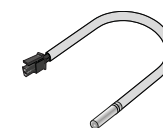
Enclosure IP33



WISE dewpoint monitoring

The PT1000 sensor measures the supply temperature on water pipes in order to give the function WISE dewpoint monitoring.

Note that other accessories that measure RH and temperature are needed in combination with the PT1000-sensor to realise this function.

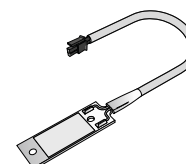


Condensation sensor, CG IV

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.



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.

A. Face plate standard PB

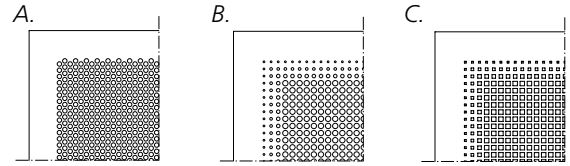
Circular holes arranged in a triangular pattern.

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.



The face plate, like the design cover and connection casing, can be delivered in several different colours, see the description on page 26.

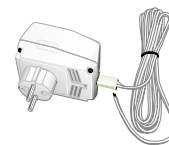
If other patterns and colours are required, please contact Swegon for more information.

The aforementioned factory-fitted accessories, in addition to WISE SMA and WISE SMB, are available to order as loose items.

Accessories

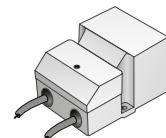
Transformer, Power ADAPT 20 VA (ARV)

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



Transformer, SYST TS-1

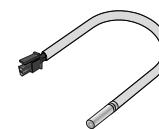
Double-insulated protective transformer 230 V, AC/24 V AC
 Input voltage 230 V, 50-60 Hz
 Output voltage 24 V AC,
 Power 20 VA,
 Enclosure IP33



For more information, see the separate product data sheet on www.swegon.com.

Temperature sensor, TEMP. SENSOR PT-1000

The temperature sensor is used to measure the supply temperature on water pipes in order to give the function WISE dewpoint monitoring. NOTE! Other accessories that measure RH and temperature are needed in combination with the TEMP SENSOR PT-1000-sensor to realise the dewpoint monitoring function.



Can also be used to measure the temperature of the main pipe in change-over systems.

Length: 1000 mm

Valve, cooling & heating, SYST VDN 215

Factory fitted valves for cooling and heating.

The valve is preset fully open on K_v 0.89. DN15 (1/2") K_v -value can be set between 0.1 to 0.89 m³/h.

For more information about the valve, see the separate product data sheet on www.swegon.com.



Valve actuator, cooling & heating, ACTUATORc 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.

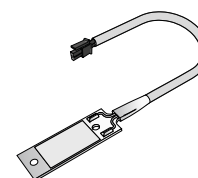


Condensation sensor KIT for subsequent fitting CONDENSATION SENS CG IV-KIT

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.

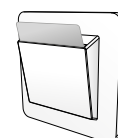
The sensor is positioned on the coil fins by the cooling supply.

For more information about the condensation sensor, see the separate product data sheet and installation instructions on www.swegon.com.



Card switch, SYST SENSO II

Key card holder for hotel rooms.



Assembly fitting, SYST MS M8

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



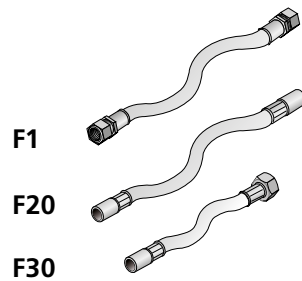
Flexible connection hoses, SYST FH

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 = Flexible hose with clamping ring couplings.

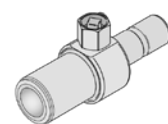
F20 = Flexible hose with quick couplings (push-on)

F30 = Flexible hose with quick couplings (push-on) on one end and the G20ID sleeve nuts on 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 insertion joint between the WISE Parasol EX and the duct system. Available in two sizes: Ø125 and Ø160 mm.



Connection piece, air, SYST CA

90° duct bend

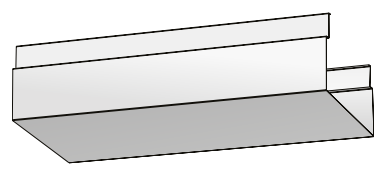
Available in two sizes: Ø125 and Ø160 mm.



Connection casing Parasol EX c T-CC

Telescopic casing for concealing ducts, pipework and control equipment

Width: 380 mm	Length interval:	400 - 700 mm
	175 - 250 mm	700 - 1200 mm
	250 - 400 mm	1200 - 2000 mm



The connection casing is available in several different colours, see the description on page 26.

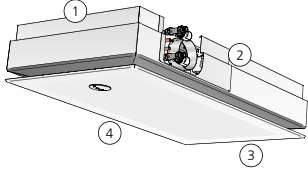
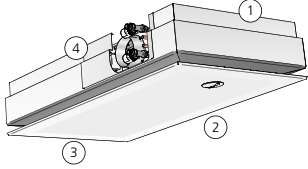
Assembly piece SYST MS M8 is required for suspended installation from hangers (ordered separately). One kit is sufficient to mount two connection casings. No extra mounting parts are needed if the module is installed directly against the ceiling.

Tool for nozzle adjustment, SYST TORX

Tools to facilitate adjustment of nozzle strips.



Specification

Size	690x690; 690x1290
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
Air flow variant	Single-module unit: WISE Parasol EX 690 (Ø125) WISE Parasol EX 690 PF (Ø160) Double module unit: WISE Parasol EX 1290 (Ø125) WISE Parasol EX 1290 PF (Ø160)
Connection side	2: Water and air connection on side 2 (standard)  4: Water and air connection on side 4 
Software configuration	The product is supplied unconfigured from the factory. When commissioning it is paired with SuperWISE and is allocated functions and setpoint parameters that have been set up via IC Design.
Nozzle setting	Each side can be set in three different ways L, M or H L = Low air flow M = Medium air flow H = High air flow
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 19 to 25.

For further information, see also the relevant documentation at www.swegon.com

- WISE Parasol EX Instructions for Use
- WISE Project Planning Guide - Heating, Cooling & Ventilation
- WISE Project Planning Guide - Electricity & Control
- WISE System Guide

- 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. (Male thread, DN ½").
- 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 mm². For safe operation, we recommend cable ends with ferrules.

Optional colours on the design module, face plate and connection casing

Colour no.	Colour
RAL 9003	Standard colour, white, gloss ratio 30 ± 6%
RAL 7037	Grey (Grey Dusty shade), gloss ratio 30-40%
RAL 9010	White (White), gloss ratio 30-40%
RAL 9005	Black (Black Jet), gloss ratio 30-40%
RAL 9006	White (White Aluminium), gloss ratio 70-80%
RAL 9007	Grey (Grey Aluminium), gloss ratio 70-80%.

Specification text

Example of a specification text according to VVS AMA.

PTD.4 Duct connected room devices for heating and cooling

Make: Swegon

Type: WISE Parasol EX

Suspended comfort module for Swegon's system WISE, with the following functions:

- Waterborne cooling and heating
- Ventilation
- Adjustable air direction
- ADC comfort guarantee feature
- Integrated circulating air opening in face plate
- Enclosed version for circulating air
- Cleanable air duct
- Fixed measurement tapping with hose
- Painted design module in standard white finish RAL 9003
- Wireless communication in Swegon's demand-controlled indoor climate system WISE
- 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 connection points the pipe contractor connects to \varnothing 12 mm plain pipe ends (cooling) or to \varnothing 12 mm plain pipe ends (heating). When the unit is equipped with built-in room control equipment, the pipework connector mounts the valve kit and connects to male threads DN 1/2".
- 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 connects to connecting sleeves \varnothing 125/160 mm.
- The ventilation contractor conducts initial commissioning of the air flows

Specification

Power supply: 24V AC \pm 15% 50 - 60Hz

Total cooling capacity, max.: 1930 W

Heating capacity, total, max.: 2450 W

Air flow single module unit: 7-34 l/s

Air flow double module unit: 9-55 l/s

Type: WISE Parasol EXa aaaa-b-cc-d-eeee (ffff) xx items
WISE Parasol EXa 1290-B-HF-2-9003 (HHHH)

Factory fitted room control and accessories

- Control unit
 - WISE CU
- Transformer
 - Power ADAPT 20 VA (optional extra)
- Valves and actuators for cooling and heating
 - Straight valve, VDN 215 (optional extra)
 - Actuator, 24V NC (optional extra)
- Sensors
 - Air quality sensor, WISE SMA (optional extra)
 - Presence sensor, WISE SMB (optional extra)
 - WISE dewpoint monitoring (optional extra)
 - Condensation sensor, CG IV (optional extra)
 - Temp. sensor (WISE DPS Modbus)
- Optional perforation patterns PARASOLc T-PP

Room accessories

- Hand-held terminal, TuneWISE, xx items
- Dongle for hand-held terminal, ConnectWISE USB, xx items
- Scanner, Scanner TuneWISE xx items
- Temp. sensor (WISE DPS Modbus)
- Setpoint selector switch with integrated temperature sensor, WISE RTA, xx items
- Sensor (VOC, CO₂, RH, Temp), WISE IAQ MULTI, xx items
- Sensor (CO₂, RH, Temp), WISE IAQ CO₂, xx items
- Sensor (VOC, RH, Temp), WISE IAQ VOC, xx items
- Temperature sensor (IR) WISE IRT, xx items
- Occupancy sensor (Occupancy, RH, Temp), WISE OCS, xx items
- Control unit Input/output radio extender, WISE IORE, xx items
- Window/door contact WISE WCS, xx items
- Temperature sensor WISE RTS, xx items
- Sensor, Input radio extender for junction boxes, (analogue/digital) WISE IRE, xx items
- Sensor for wall mounting, Input radio extender (analogue/digital) WISE IRE-W, xx items

Product accessories

- Transformer, POWER Adapt 20 VA (ARV), xx items
- Transformer, SYST TS-1, xx items
- Temperature sensor, TEMP. SENSOR PT-1000, xx items
- Condensation sensor KIT for subsequent fitting CONDENSATION SENS CG IV-KIT, xx items
- Card switch, SYST SENSO II, xx items
- Assembly fitting, SYST MS M8 aaaa–b-cccc, xx items
- Flexible connection hose, SYST FH aaa- bbb-12, xx items
- Venting nipple, push-on, SYST AR-12, xx items
- Connection piece, air – nipple, SYST AD1-aaa, xx items
- Connection piece, air (90°elbow), SYST CA-aaa-90, xx items
- Tool for nozzle adjustment, SYST TORX-6-200, xx items
- ADC for subsequent installation, SYST ADC-2-105, xx items
- Valve actuator, ACTUATORc 24V NC, xx items
- Valve straight, SYST VDN 215, xx items
- Telescopic connecting casing PARASOL EX c T-CC-aaa-bbb, xx items

Further information is available for download from www.swegon.com

WISE System Guide

WISE Project Planning Guide - Heating, Cooling & Ventilation

WISE Project Planning Guide - Electricity & Control

WISE Parasol EX Instructions for Use