

WISE Paragon d

Instructions for Use

20/03/2024
Art. 942428073

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Symbol key

Symbols on the machine

This product complies with applicable
EU directives



Symbols in this user manual

Warning/Caution!



References

www.swegon.com
Building Materials Declaration
WISE Paragon product data sheet
WISE System Guide
SuperWISE II / SuperWISE II SC User Manual
WISE Project Planning Guide - Heating, Cooling & Ventilation
and Electricity & Control



The document was originally written in Swedish

Swegon

Application area

The product is a comfort module with integrated radio transmitter designed for demand-controlled climate indoors within Swegon's ventilation system WISE. The product is used to ventilate, cool and heat premises exactly as needed.

The product may not be used for anything other than its intended use.



General

Read through the entire instructions for use before you install/use the product and save the instructions for future reference. It is not permissible to make changes or modify this product other than those specified in this document.

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1 x Instructions for use



Protective equipment

Always use appropriate personal protective equipment for the work in question, in the form of gloves, respirators, protective glasses and helmets during handling, installation, cleaning and service/maintenance.



Electrical safety

Permitted voltage, see Electrical data.

It is not permissible to insert foreign objects into the product's contactor connections or ventilation openings; risk for short circuiting.

24 V isolation transformer to be connected should comply with the provisions of IEC 61558-1.

Cable sizing must be carried out for cabling between the product and the power supply source.

Disconnect the power supply when working on products that are not required to run.

Always follow the local/national rules for who shall be permitted to carry out this type of electrical installation.

Handling

Always use appropriate transport and lifting devices when the product is to be handled to reduce ergonomic loads.

The product must be handled with care.

Installation

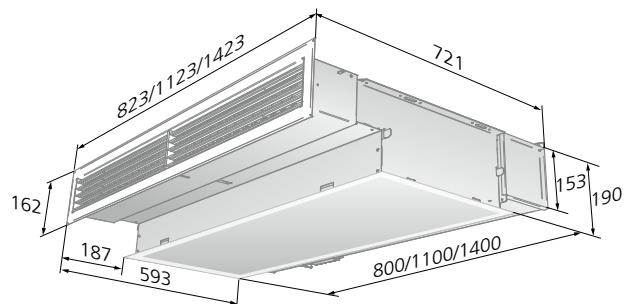
- Moist, cold and aggressive environments must be avoided.
- Assemble the product according to this instruction and applicable industry regulations.
- Install the product for easy access during service/maintenance.
- Avoid installing the product near a heat source.
- Check to make sure that the product does not have any visible defects.
- Check that the product is properly secured after it has been installed.
- Secure cables with cable ties.
- Check that all cables are properly secured in place after installation.

Dimensions and weight

Weight

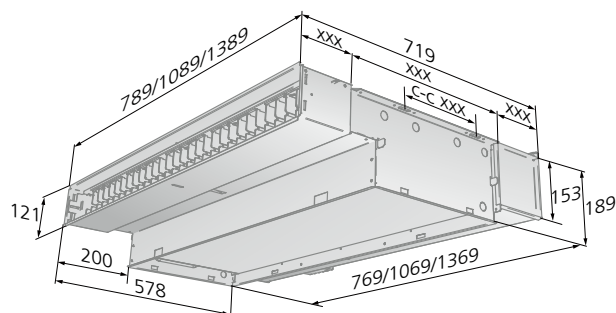
WISE Paragon 800

| Length mm | Type | Dim. Ø | Dry weight* (kg) | | Water volume (l) | |
|--------------|------|-----------|-------------------|-----------------|------------------|---------|
| | | | without grills | incl. grills | cooling | heating |
| 800 R | A | 125 | 14.0 | 16.9 | 1.39 | |
| 800 L | A | 125 | 14.0 | 16.9 | 1.38 | |
| 800 R | B | 125 | 14.0 | 16.9 | 1.39 | 0.38 |
| 800 L | B | 125 | 14.0 | 16.9 | 1.38 | 0.37 |
| 800 R | X | 125 | 14.0 | 16.9 | 1.39 | |
| 800 L | X | 125 | 14.0 | 16.9 | 1.38 | |



WISE Paragon 1100

| Length mm | Type | Dim. Ø | Dry weight* (kg) | | Water volume (l) | |
|--------------|------|-----------|-------------------|-----------------|------------------|---------|
| | | | without grills | incl. grills | cooling | heating |
| 1100 R | A | 125 | 18.8 | 22.6 | 1.93 | |
| 1100 L | A | 125 | 18.8 | 22.6 | 1.92 | |
| 1100 R | B | 125 | 18.8 | 22.6 | 1.93 | 0.52 |
| 1100 L | B | 125 | 18.8 | 22.6 | 1.92 | 0.51 |
| 1100 R | X | 125 | 18.8 | 22.6 | 1.93 | |
| 1100 L | X | 125 | 18.8 | 22.6 | 1.92 | |



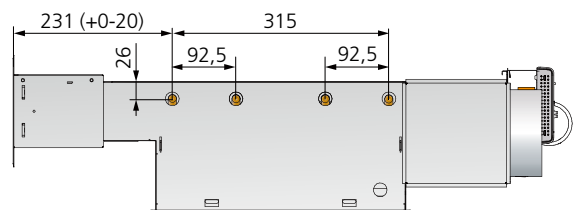
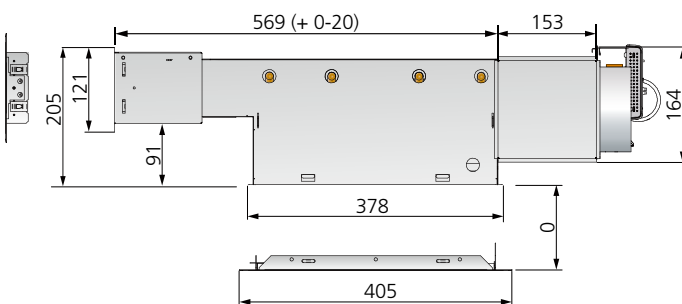
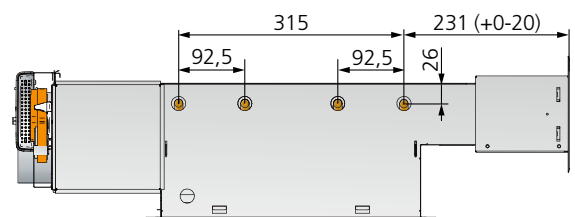
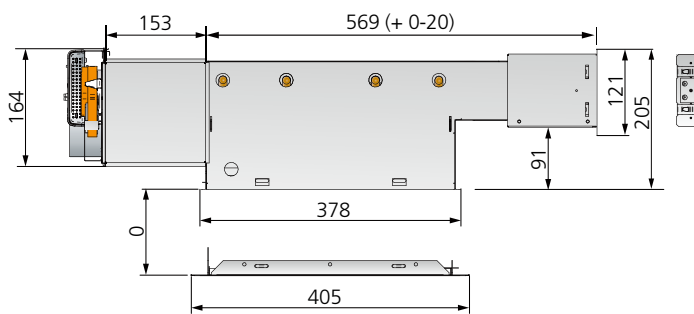
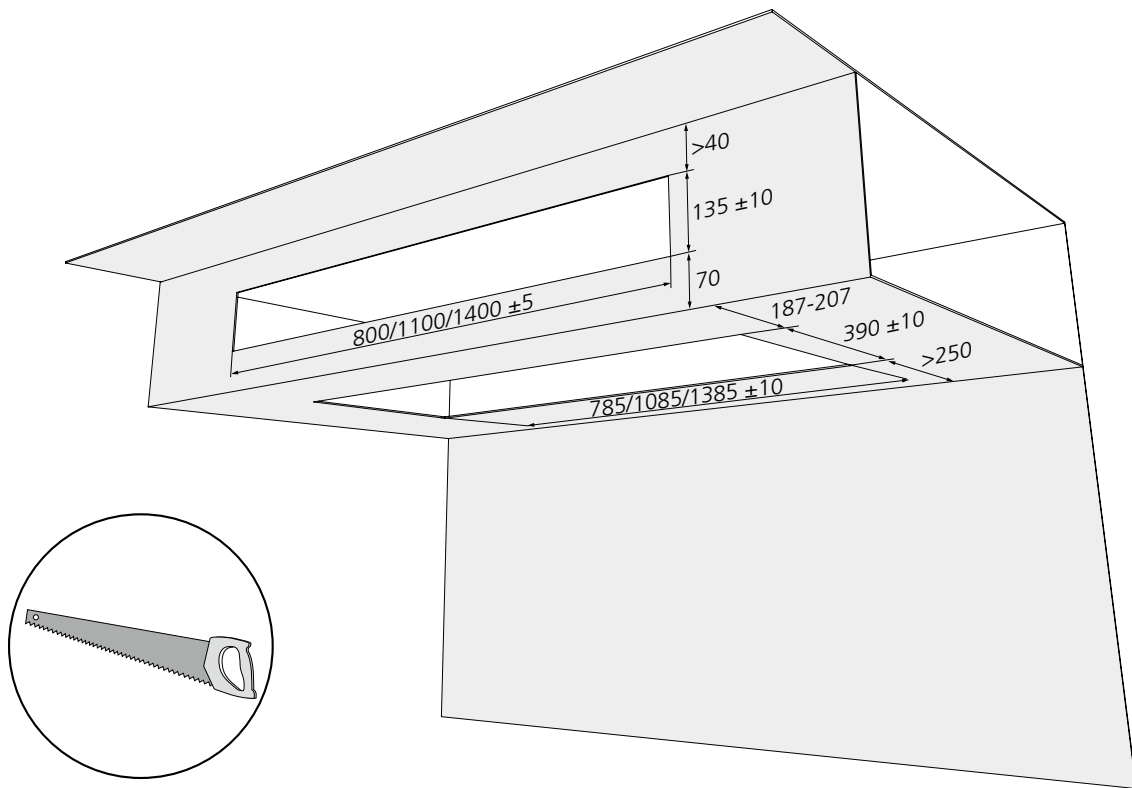
WISE Paragon 1400

| Length mm | Type | Dim. Ø | Dry weight* (kg) | | Water volume (l) | |
|--------------|------|-----------|-------------------|-----------------|------------------|---------|
| | | | without grills | incl. grills | cooling | heating |
| 1400 R | A | 125 | 23.0 | 27.6 | 2.47 | |
| 1400 L | A | 125 | 23.0 | 27.6 | 2.46 | |
| 1400 R | B | 125 | 23.0 | 27.6 | 2.47 | 0.65 |
| 1400 L | B | 125 | 23.0 | 27.6 | 2.46 | 0.64 |
| 1400 R | X | 125 | 23.0 | 27.6 | 2.47 | |
| 1400 L | X | 125 | 23.0 | 27.6 | 2.46 | |

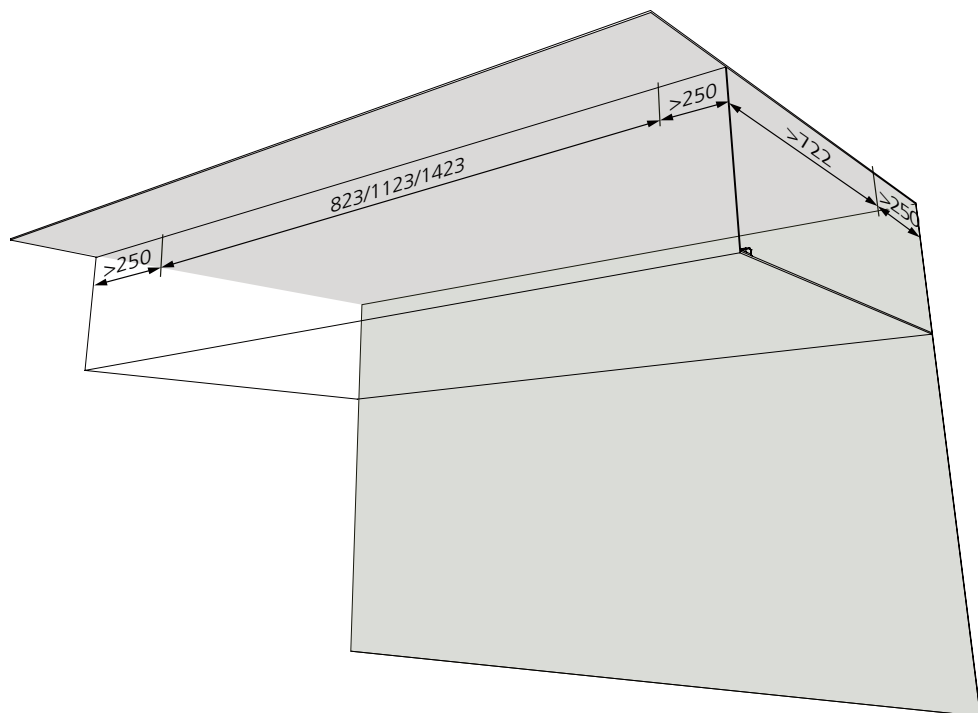
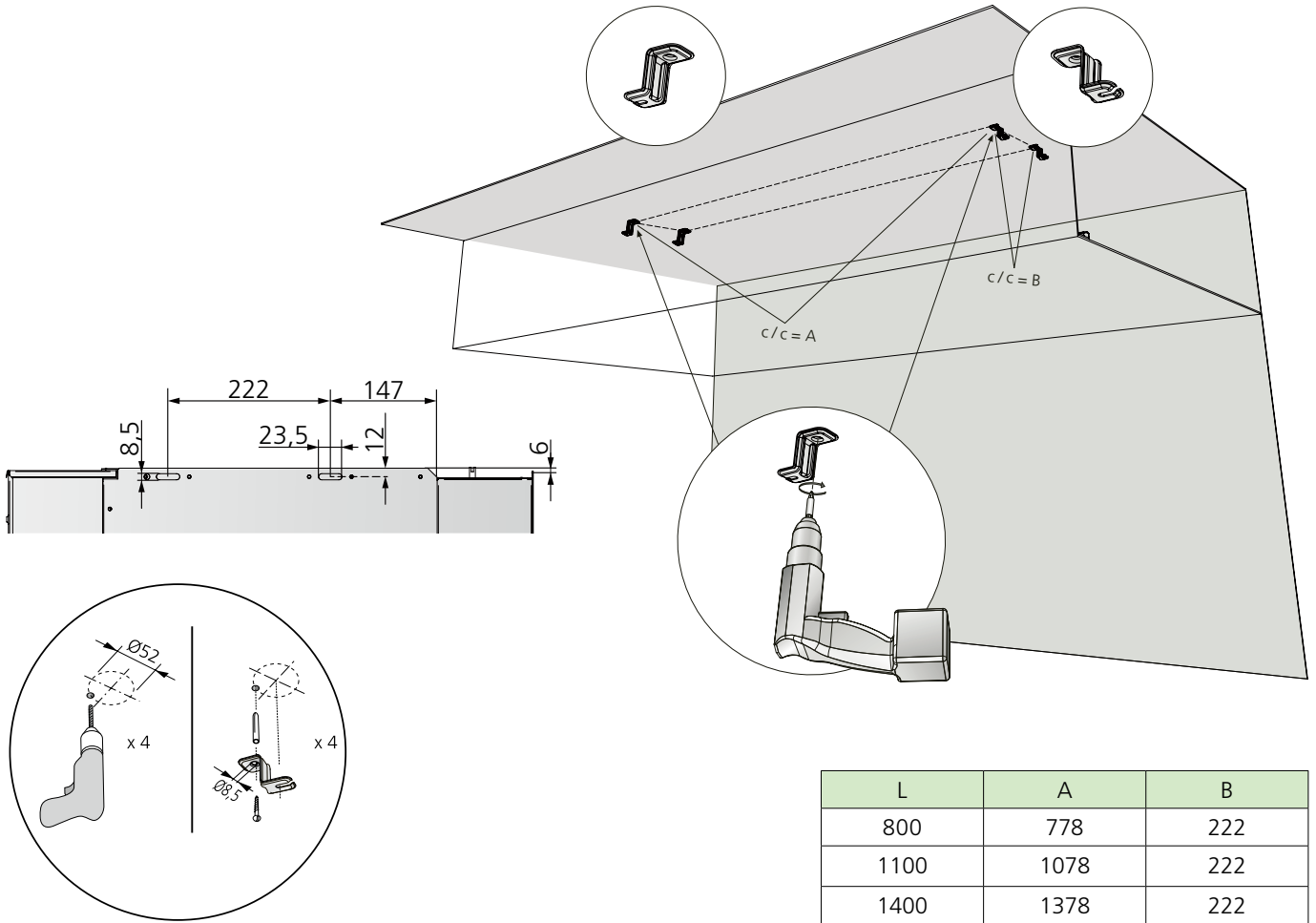
* Weights above are excl.:
Control equipment: 0,74 kg

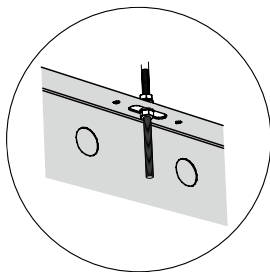
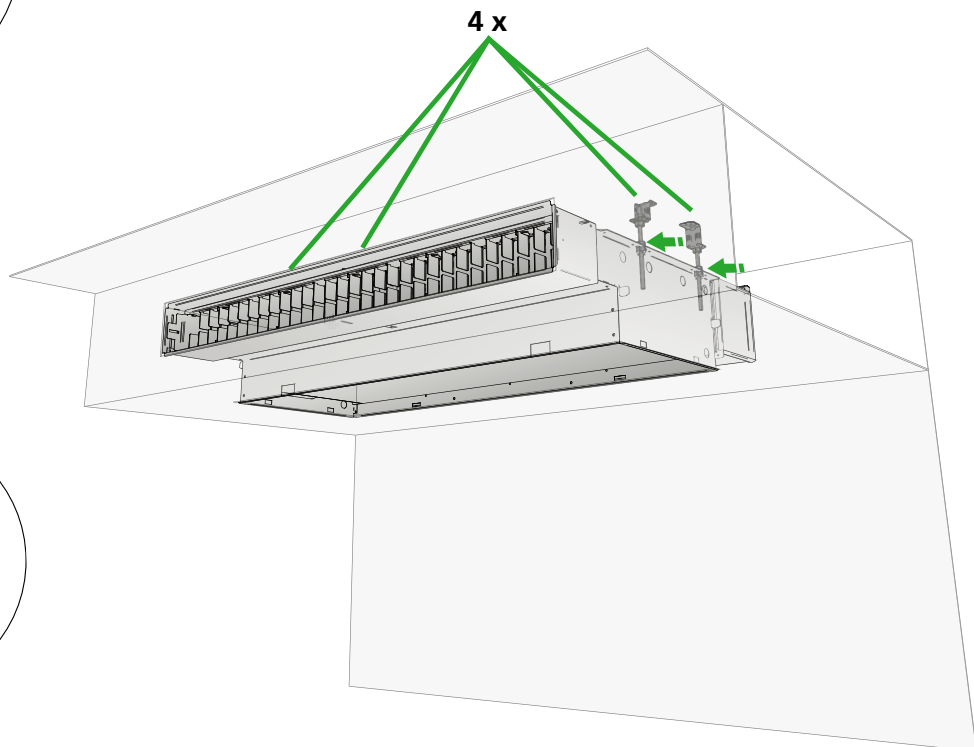
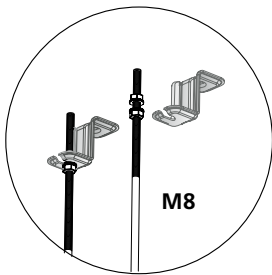
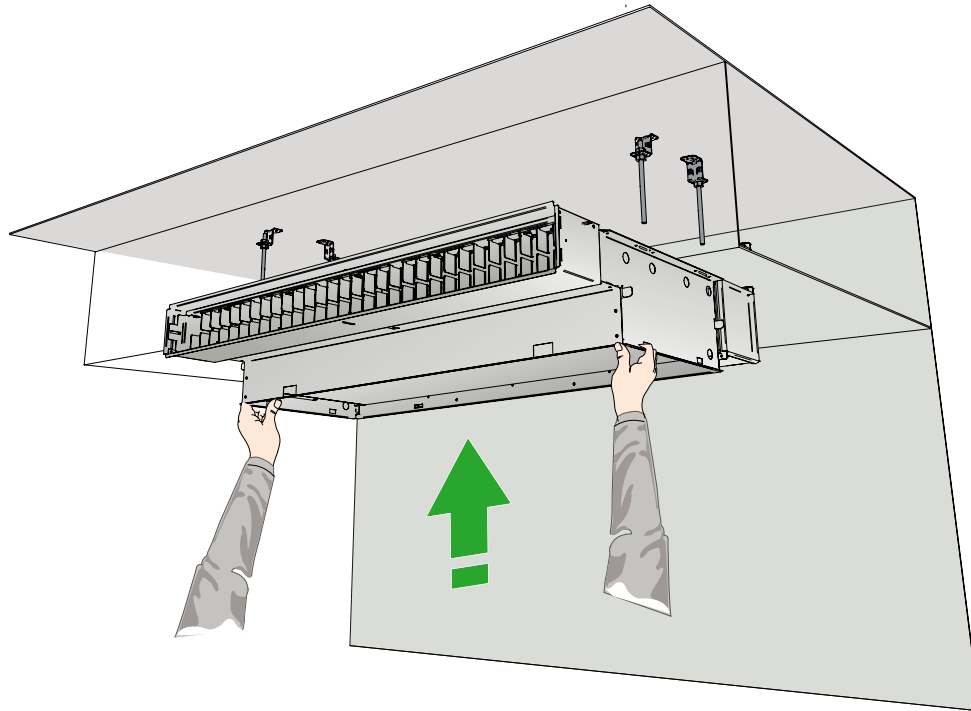
Installation

Cutout dimensions



Suspension





Water connection

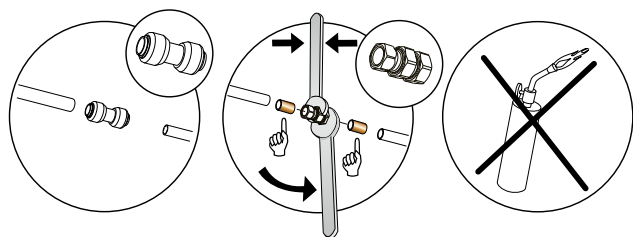
Water dimensions

Standard variant with factory fitted valves:

| Length (mm) | Cooling Return | Heating Return |
|-----------------|----------------------|----------------------|
| 800, 1100, 1400 | DN15 external thread | DN15 external thread |

Standard variant without factory fitted valves:

| Length (mm) | Cooling Supply and return | Heating Supply and return |
|-----------------|------------------------------|------------------------------|
| 800, 1100, 1400 | Plain pipe | Plain pipe |
| | (Cu) Ø 12 x 1,0 mm | (Cu) Ø 12 x 1,0 mm |

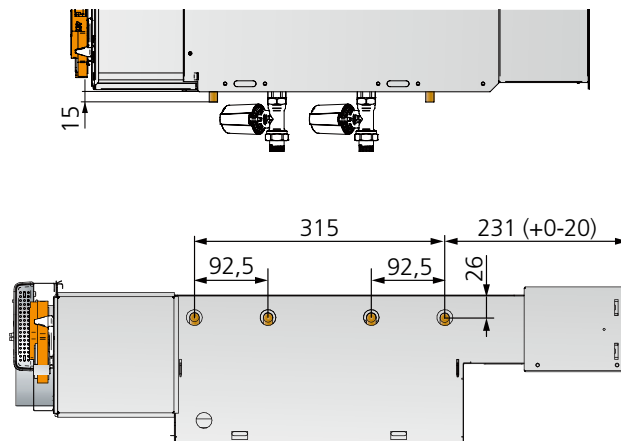


Note that compression ring couplings require support sleeves inside the pipes.

Connecting water

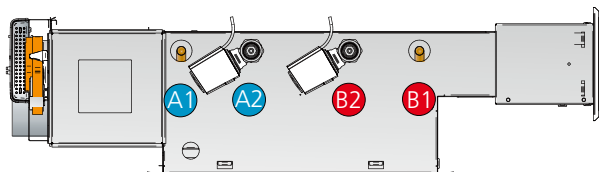
Connect the water pipes using push-on couplings or compression ring couplings when the product is ordered without valves. Note that compression ring couplings require support sleeves inside the pipes.

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.

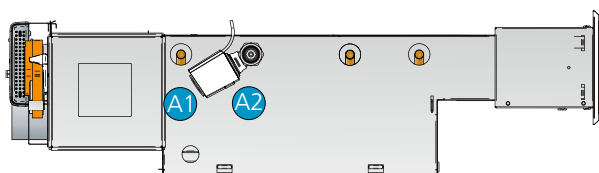


Water connection on right side "R"

Cooling and heating on right side "R", all sizes



Cooling on right side "R", all sizes

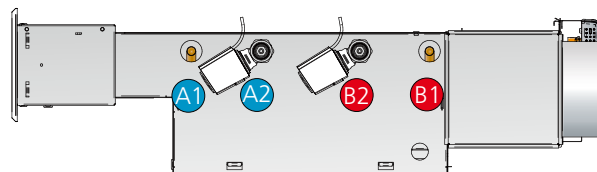


Water connection on right side (R).

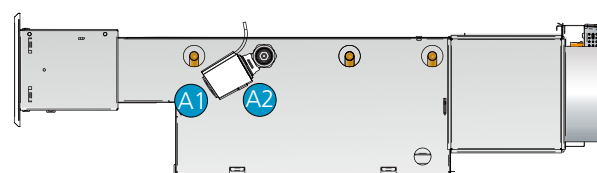
- A1 = Cooling water, supply
- A2 = Cooling water, return
- B1 = Heating water, supply
- B2 = Heating water, return

Water connection on left side "L"

Cooling and heating on left side "L", all sizes



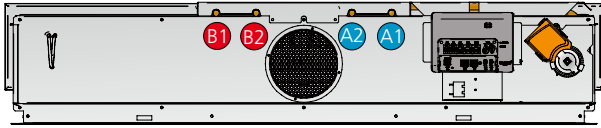
Cooling on left side "L", all sizes



Water connection on left side (L).

- A1 = Cooling water, supply
- A2 = Cooling water, return
- B1 = Heating water, supply
- B2 = Heating water, return

Water connection on back side "WB"



Water connection on back side "B".

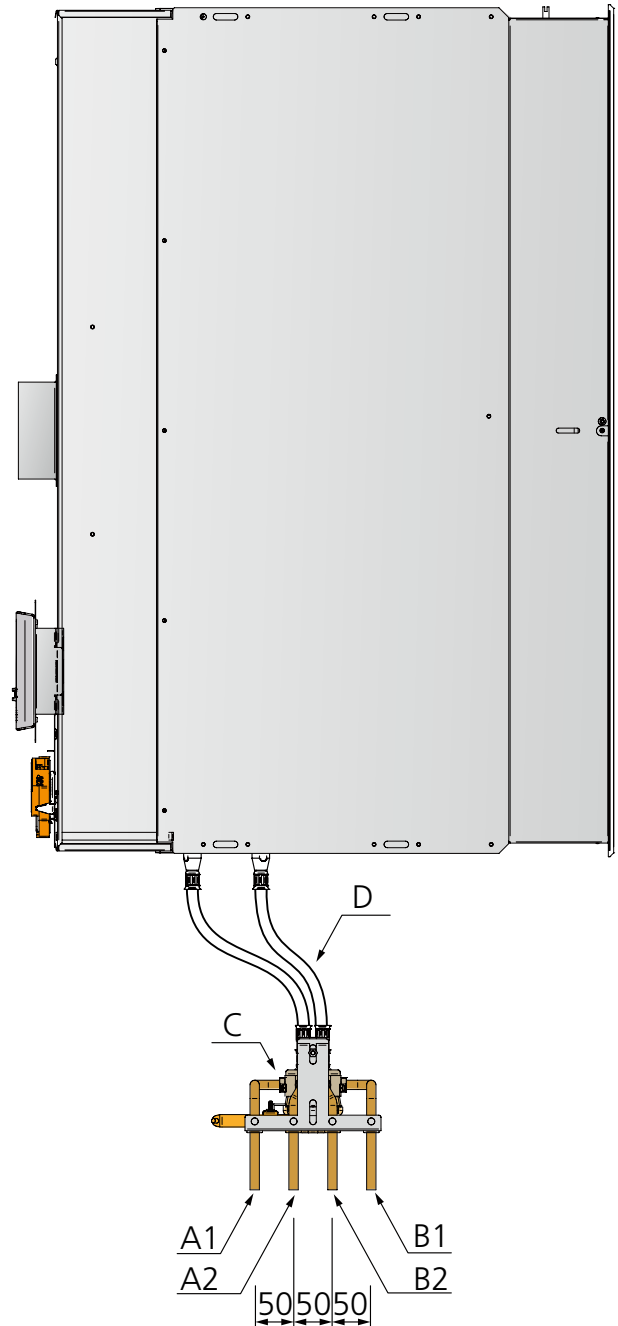
- A1 = Cooling water, supply
- A2 = Cooling water, return
- B1 = Heating water, supply
- B2 = Heating water, return

Water quality

Swegon recommends water quality according to VDI 2035-2 for both the heating and cooling systems. In order to maintain the oxygen content in the water below the levels (<0.1 mg/l) prescribed in VDI 2035-2, it is recommended to install a vacuum degasser, particularly in the cooling system where it's more challenging to dissolved gas. It is also important that the pre-pressure in the expansion vessel is dimensioned according to EN-12828 for both the heating and cooling systems and that regular checks are made of the pre-pressure. The cooling and heating systems must be designed to prevent oxygen from entering the system, this is particularly important to consider when selecting flex hose, pipes and expansion vessels. When the system is filled with fresh water, it has an oxygen content of approximately 8 mg/l, however, this oxygen is consumed quickly through corrosion processes and within a few days the oxygen in the water should be consumed. Nevertheless, it is important to avoid filling the system with fresh water unnecessarily.

Automatic deaerators are often installed to facilitate filling of the system. It is recommended that the automatic deaerators are turned off once the system has been fully vented to avoid these drawing in air in the system if the pre-pressure in the expansion vessel should drop.

Water connection, CCO-valve



Water connection - CCO-valve.

- A1 = Cooling water, supply
- A2 = Cooling water, return
- B1 = Heating water, supply
- B2 = Heating water, return
- C = CCO valve
- D = Flexible hose

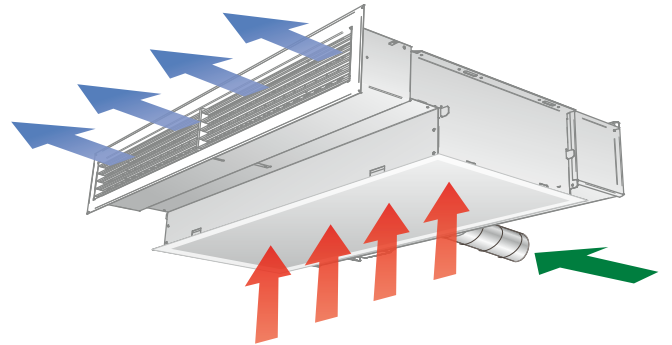
Air connection

All variants have an air connection $\varnothing 125$.

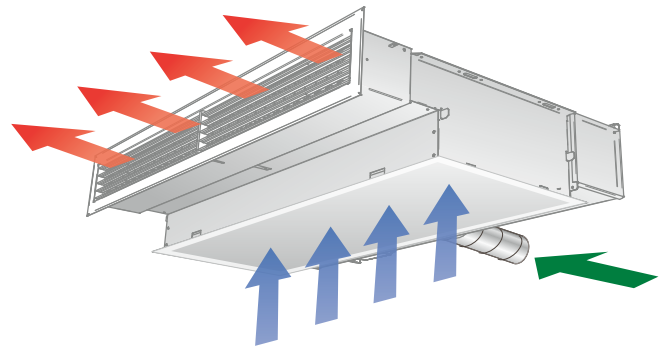
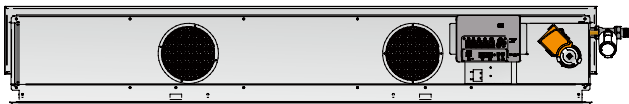
The standard variant has the air connection centered on the back of the product for easy access from both ends and back.

The suite variant, which is only available in length 1400 mm, has two parallel air connections on the back (2x $\varnothing 125$).

WISE Paragon, view from the back



WISE Paragon suite, view from the back

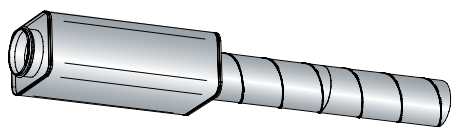


Connection dimensions air

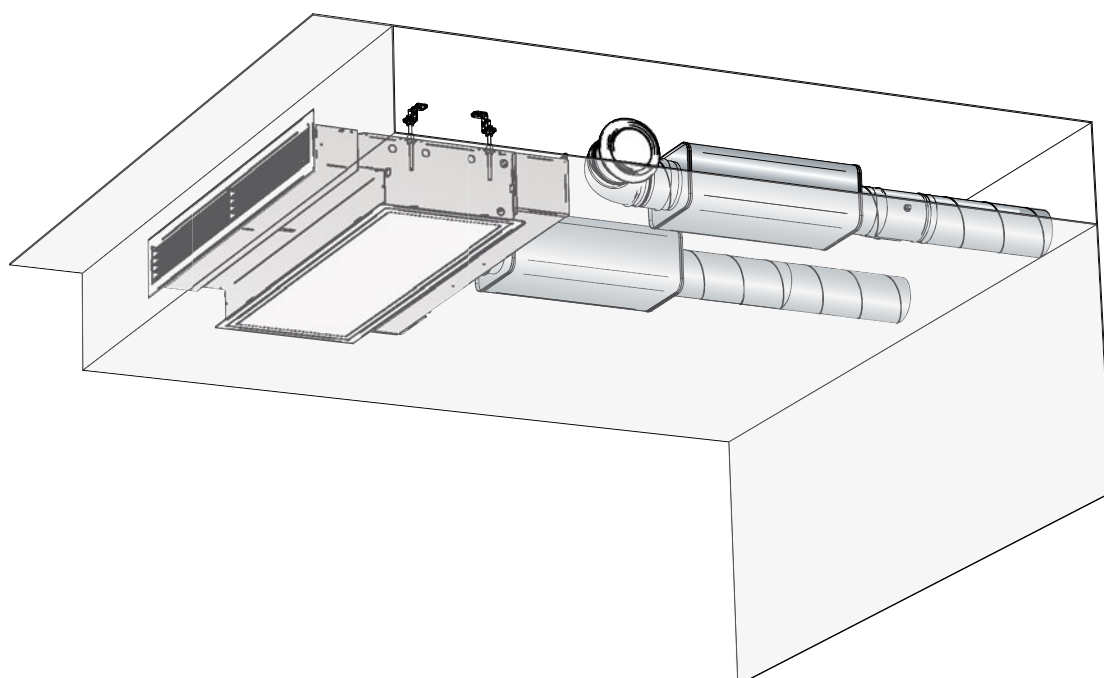
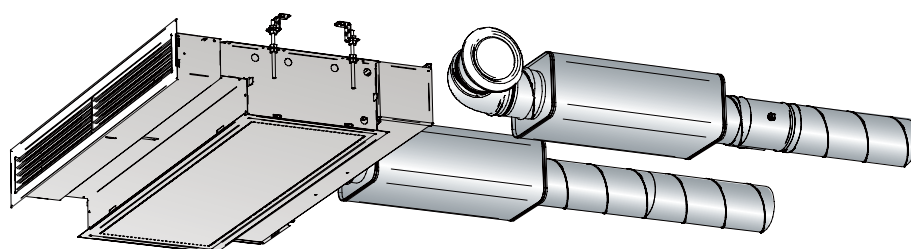
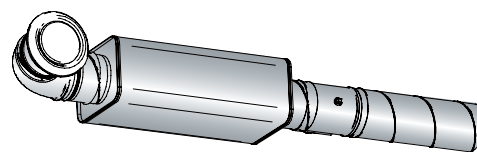
| Variant | Length | Air connection | |
|-------------|-----------------|-----------------------|-----------------------|
| | (mm) | 1 x $\varnothing 125$ | 2 x $\varnothing 125$ |
| 1: Standard | 800, 1100, 1400 | Yes | No |
| 2: Suite | 1400 | No | Yes |

Supply and extract air

Supply air kit



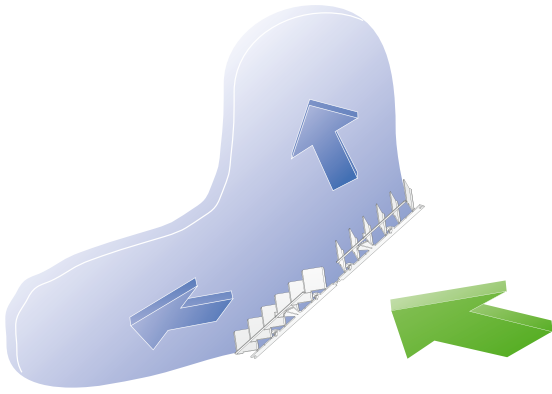
Extract air kit



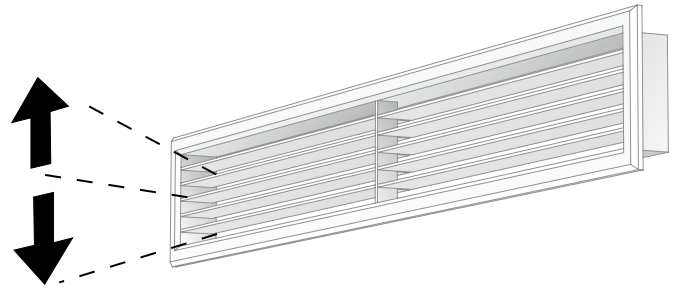
Commissioning

WISE Paragon is a part of the WISE system that demands controls both air and water on a room level and guarantees the highest level of indoor climate with minimum energy consumption. This means that when the installation and pairing of the system are completed, no further trimming is required except for any adjustment of ADC.

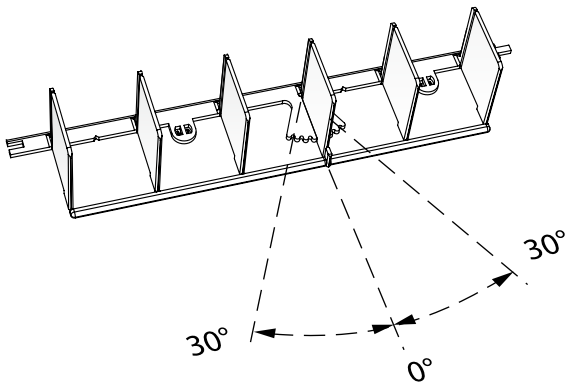
Air distribution



Horizontal air distribution with ADC

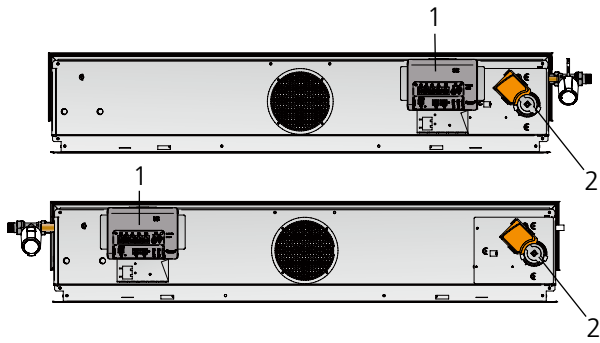


Vertical air distribution with adjustable slats in the supply air grille.



ADC

Connections



WISE Paragon with factory-fitted components

1. WISE CU (Controller Unit)
2. Motor for integrated air damper

Factory fitted components as an option

- Sensor Module Advanced (WISE SMA Multi), (Optional)
- Valves and actuators for cooling
- Valves and actuators for heating
- Temp. sensor
- Condensation sensor

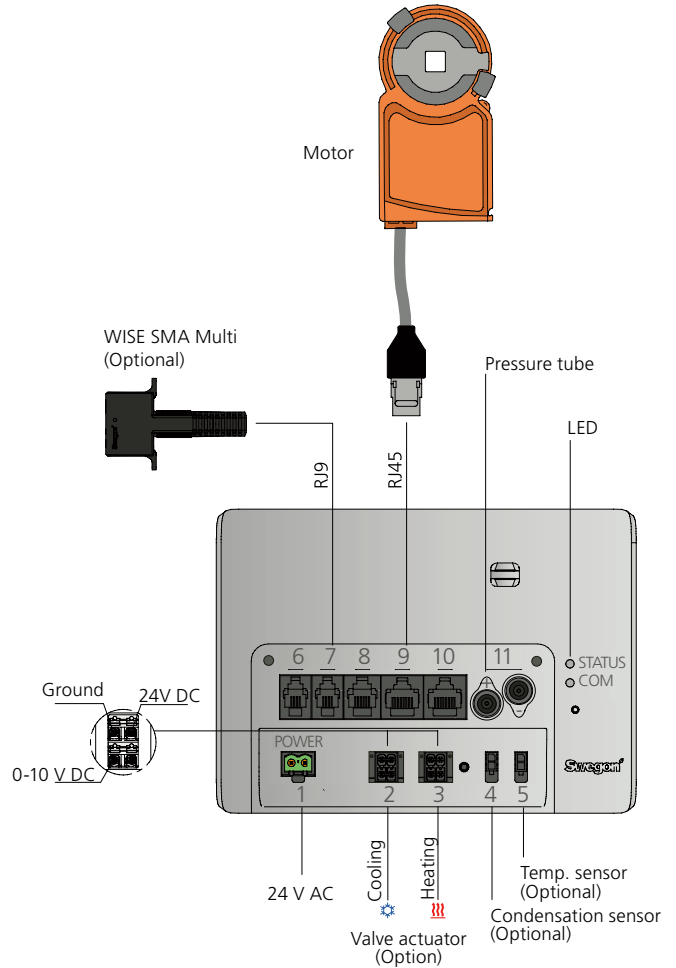
LED - Explanation

Not connected "paired"

| | Colour | Type |
|------------------------------------|--------|------------------------|
| Energized | White | Permanent |
| Selected in TuneWISE | White | Flashing, fast |
| Prepared to be added to the system | White | Flashing, slowly |
| To be added to the system | White | Flashing, fast for 5 s |

Connected "paired"

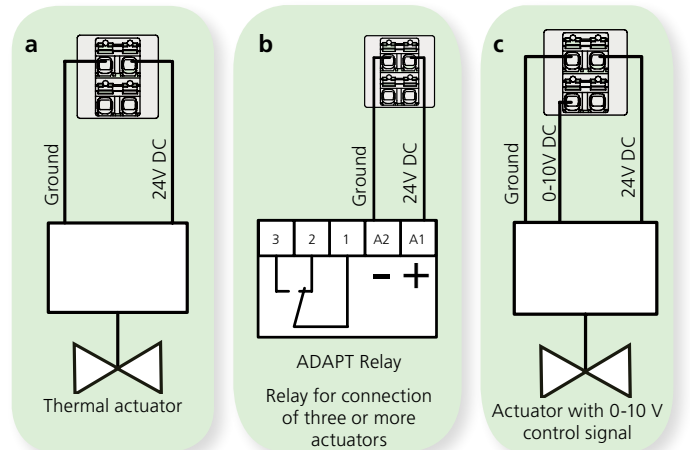
| | Colour | Type |
|-----------------------------|---------------|--------------------|
| Normal operation | Green | Permanent |
| Restart | Blue | Permanent for 10 s |
| Initiation | Blue | Flashing |
| Boosted max. flow | Orange | Permanent |
| Boosted min. flow | Orange | Permanent |
| Boosted water flow | Violet | Permanent |
| Boosted water flow/air flow | Violet/Orange | Alternating |
| Comfort alarm | Red | Permanent |
| Function alarm | Red | Flashing |
| Emergency mode | Green/Red | Alternating |
| Test mode | Green/Orange | Alternating |



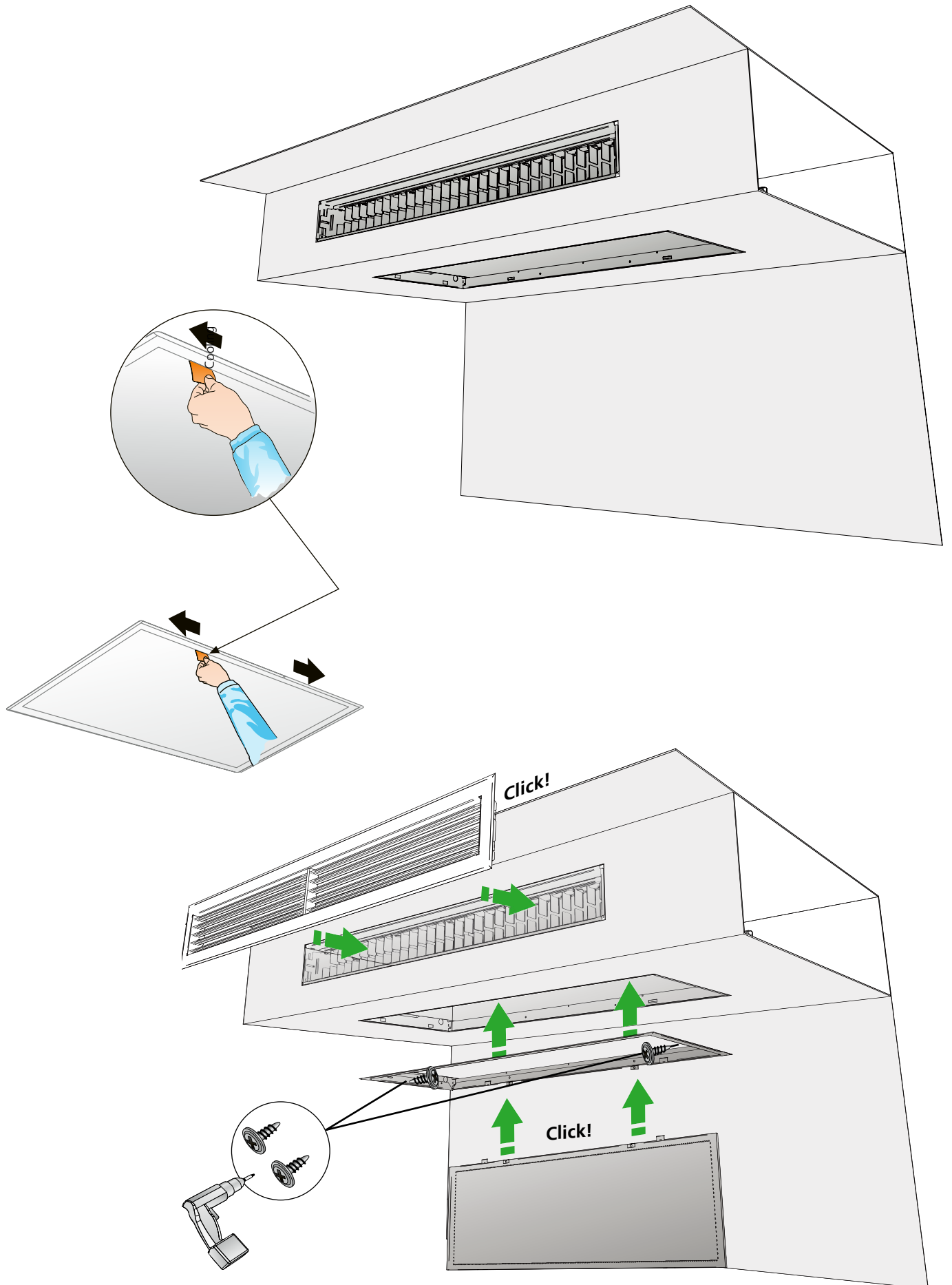
WISE Paragon, connection.

There are different types of actuators

- For connection of the thermal actuator such as Swegon's actuator ACTUATORc, see figure a
- When connecting the relay for connection of three or more actuators, see figure b
- When connecting of the actuator with 0-10 V control signal (NOTE! 24 V DC supply) see figure c



Mounting grills



Use

Use TuneWISE for commissioning. Commissioning must be performed by qualified and trained WISE service engineers.

Use SuperWISE for settings, reading alarms, etc. refer to the documentation for SuperWISE II / SuperWISE II SC.

Trouble shooting

The product is not shown in the system:

- Make sure that the product is energized. (e.g. diode)
- Make sure that the product is paired.
- Make sure the product is in the right network.

The product shows incorrect/no air flow/pressure

- Make sure that the product is installed according to the recommended distance.
- Check that there is air flow/pressure.
- Check that the measuring tube is mounted correctly.
- Check that the measuring tube is undamaged.

The product does not regulate the air flow/pressure

- Check that the motor has not become detached from the damper spindle.
- Check that the motor works by turning the motor's release button, turn the damper spindle, release the knob and then see whether the motor starts to move.

The product shows incorrect/no temperature

- Make sure the temperature sensor is not missing.
- Make sure that the temperature sensor does not hang outside the product.
- Check that the temperature sensor is connected to the right input.

The product shows incorrect/no VOC/CO2

- Make sure the VOC/CO2 sensor (WISE SMA Multi) is not missing.
- Check that the VOC/CO2 sensor is connected to the right input.

Cleaning

Ideally the product should be cleaned twice a year by vacuuming the coil to remove loose dust. In fibre dense environments as hotels and ward rooms a first vacuuming after three months is recommended and thereafter an interval of 1-2 times a year. This is due to the fact that new textiles often loose a lot of fibres in the beginning of their life cycle.

A simple visual inspection of connections is recommended when cleaning.

On painted surfaces such as grills: Avoid aggressive cleaning agents which may harm painted surfaces. Normally a mild soap or alcohol solution is fully adequate for cleaning. See also the maintenance section in this instructions for use.

Cleaning of electrical components

- If needed, use a dry cloth to clean the components.
- Never use water, detergent and cleaning solvent or a vacuum cleaner.

Service/maintenance

- In connection with a service, mandatory ventilation inspection or cleaning of the ventilation system, check that the general condition of the products looks ok. Pay particular attention to the suspension, cables and that they sit firmly in place.
- It is not permissible to open or repair electrical components.
- If you suspect that the product or a component is defective, please contact Swegon.
- A defective product or component must be replaced by an original spare part from Swegon.

Materials and surface treatment

Sheet parts are made of galvanised sheet steel (Z275) and pre-painted sheet SS-EN 10143+10346 - DX52D + ZA95, NCS S 0500-N gloss 30+/-6%.

Disposal

Waste must be handled according to local regulations.

Product warranty

The product warranty or service agreement will not be in effect/will not be extended if: (1) The product is repaired, modified or changed, unless such repair, modification or change has been approved by Swegon AB; or (2) the serial number on the product has been made illegible or is missing.

Technical data

| | |
|--------------------------------|---|
| Max. radio frequency output: | 50 mW |
| Frequency band: | 2.45 GHz, IMS band (2400--2483 MHz) |
| Temperature sensor: | 0 - 50°C ± -0.5°C |
| Dynamic pressure sensor: | 0 - 300 Pa |
| With WISE SMA Multi | |
| VOC sensor | 450 - 2000 ppm |
| RH sensor | 0 - 100 RH% |
| CO ₂ sensor | 400 - 2000 ppm |
| IP class: | IP20 |
| Running time open/close (90°): | 120 s |
| Ambient temperature | |
| Operation: | 0 – 50°C |
| Storage: | -20 – +50°C |
| RH: | 10 - 95% (non condensing) |
| CE marking: | 2006/42/EC (MD) 2014/53/EU (RED) 2011/65/EU (RoHS2) |

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 Paragon in standard design: | VA / unit | Standard VA total |
|----------------------------------|-----------|-------------------|
| WISE CU | 2.3 | 4.8 |
| Damper motor (UM24) | 2.5 | |

| Option: | VA / unit | | |
|---------------------------|-----------|------|------|
| | 1 st | 2 st | 3 st |
| Valve actuator, ACTUATORc | 6 | 12 | 18* |
| WISE SMA Multi | 0,8 | | |

Example:
 WISE Paragon in standard design with the following options:
 Actuator for cooling and heating as well as WISE SMA Multi, gives a total power consumption of 4.8 + 6 + 0.8 = 11.6 VA
 *Valid for products with CU ver. 2, delivered from 01/10/2019

Declaration of Conformity

Swegon AB hereby affirms that

WISE Paragon with integrated radio, complies with the essential characteristic demands and relevant regulations specified in the following directives: 2006/42/EC (MD), 2014/53/EU (RED) and 2011/65/EU (RoHS2):

The following standards have been observed:

| | |
|---|--|
| EN ISO 12100:2010 | Safety of machinery - General principles for design - Risk assessment and risk mitigation |
| EN 60204-1:2006 | Safety of machinery - Electrical equipment of machines - Part 1: Generic standards |
| EN 60730-1:2011 | Automatic electrical control and control unit for household use - Part 1: Generic standards |
| EN 60730-2-14:2009 | Automatic electrical controls for household and similar use - Part 2 Particular requirements for electric actuators |
| IEC 60529:1992+A2:2013 | Degrees of protection provided by enclosures (IP code) |
| EN 61000-6-2:2007 | Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments |
| EN 61000-6-3:2007 | Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments |
| EN 300 328 V1.9.2, V1.9.1, V1.8.1 | Electromagnetic compatibility and Radio spectrum Matters (ERM) - Wideband Transmission systems - Data transmission equipment operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques |
| EN 60335-1:2012+A11:2014 EN 60335-2-30:2009+A11 EN 62233:2008 | Electric household appliances and similar appliances - Safety - Part 1: Generic standards |



Person responsible for this declaration:

Name: Per Eriksson, Product Development Manager
 Address: Fallebergsvägen 17, 671 34 Arvika, Sweden
 Date: Arvika 21/10/2021

This declaration is applicable only if the product has been installed according to the instructions in this document and if no modifications or changes have been made on this product.

Recommendation for electrical installations

- Swegon recommends that all electrical installations are carried out by a qualified electrician.
- Swegon recommends that a 24 V power supply is connected with a 1.5 mm² copper cable to minimise the risk of voltage drops in the case of long cable runs.
- Swegon recommends the use of Swegon-marked transformers for supplying power to Swegon’s products

Voltage drop table at different loads (amperes) with a 1.5 mm² cable

| Metres (m) | Current/Amperes | | | | | |
|---------------|-----------------|------|-------|-------|-------|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 10 | 0.24 | 0.48 | 0.72 | 0.96 | 1.20 | 1.44 |
| 20 | 0.48 | 0.96 | 1.44 | 1.91 | 2.39 | 2.87 |
| 30 | 0.72 | 1.44 | 2.15 | 2.87 | 3.59 | 4.31 |
| 40 | 0.96 | 1.91 | 2.87 | 3.83 | 4.78 | 5.74 |
| 50 | 1.20 | 2.39 | 3.59 | 4.78 | 5.98 | 7.18 |
| 60 | 1.44 | 2.87 | 4.31 | 5.74 | 7.18 | 8.61 |
| 70 | 1.67 | 3.35 | 5.02 | 6.70 | 8.37 | 10.05 |
| 80 | 1.91 | 3.83 | 5.74 | 7.65 | 9.57 | 11.48 |
| 150 | 3.59 | 7.18 | 10.76 | 14.35 | 17.94 | 21.53 |
| 160 | 3.83 | 7.65 | 11.48 | 15.31 | 19.13 | 22.96 |

The largest permitted voltage drop is 3.6 V

Description of problem:

Swegon’s electrical units and machines are designed to work within specific voltage intervals. If the voltage drops below the nominal value, this can lead to impaired performance or even damage to the equipment.

Voltage drops also entail increased resistance in cables and components, which generates heat. This heat represents a loss of electrical energy. Depending on the voltage drop, the energy losses can be significant.

A general guideline for a 24 V system is that a 15% voltage drop is acceptable (3.6 volts).

How is the voltage drop in the cable calculated:

Resistance (R) = (Resistivity (p) x Length (L)) / Area (a).

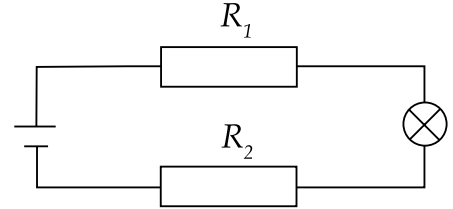
Voltage drop in wire (UL) = Resistance (R) x current (I)

$$R_1 = \frac{p \cdot L}{a}$$

$$R_2 = \frac{p \cdot L}{a}$$

$$R = R_1 + R_2$$

$$UL = R \cdot I$$



For example, the resistivity for copper is 0.0175 ohm mm²/m at 15°C. Bear in mind that the resistance increases by 0.4% per degree Celsius.

Examples of voltage drops in cables:

| Input data | value | Unit |
|-------------------------------------|-------|---------|
| Supply voltage | 24 | Volts |
| Current (load) | 1.25 | Amperes |
| Cable area | 1.5 | mm |
| Cable length (phase + neutral wire) | 50 | M |



| | | |
|--------------|-----|-------|
| Voltage drop | 1.5 | Volts |
|--------------|-----|-------|

Example 1 at 22°C

| Input data | value | Unit |
|-------------------------------------|-------|---------|
| Supply voltage | 24 | Volts |
| Current (load) | 1.25 | Amperes |
| Cable area | 1.5 | mm |
| Cable length (phase + neutral wire) | 200 | M |



| | | |
|--------------|---|-------|
| Voltage drop | 6 | Volts |
|--------------|---|-------|

Example 2 at 22°C

Maintenance

