

Swegon **CASA**[®] Air heater/cooler in combination with ground source heat pump

Installation, operation and maintenance instructions
for design engineers, installation engineers and service personnel



Important information

Only qualified personnel

Only qualified personnel should carry out installation, configuration and commissioning.

Observe the following during installation

The air heater/cooler is installed in the outdoor air duct before the ventilation unit. The air heater/cooler must be mounted so that the air heater/cooler is horizontal in relation to the airflow.

The air heater/cooler must not be installed in the immediate vicinity of the ventilation unit or duct bends, as this will prevent an even airflow across the air heater/cooler resulting in impaired output.

Commissioning

The air heater/cooler's duct sleeves must be covered during transport, storage and installation.

Make sure that the air heater/cooler and the ducts are clean and that there are no loose objects in them before you commission the ventilation system.

Ensure that the heating medium pipe system is mounted and insulated and that the venting sleeves are mounted.

Do not commission the air heater/cooler until all work that produces large quantities of sanding dust or other impurities has been completed.

Sizing the heating medium circuit

Consideration must be taken during planning to the effect of the air heater/cooler.

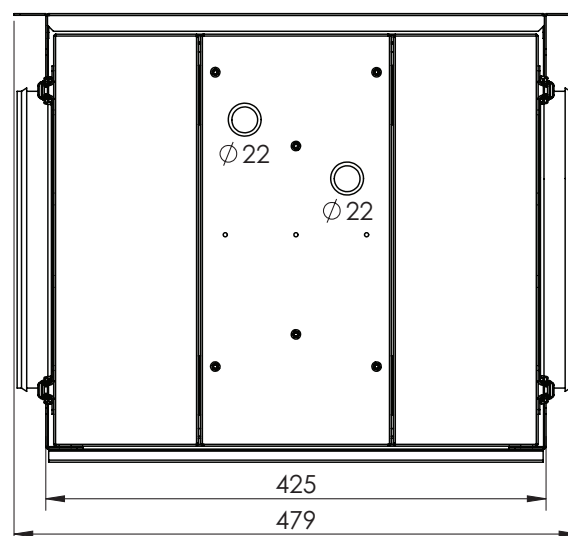
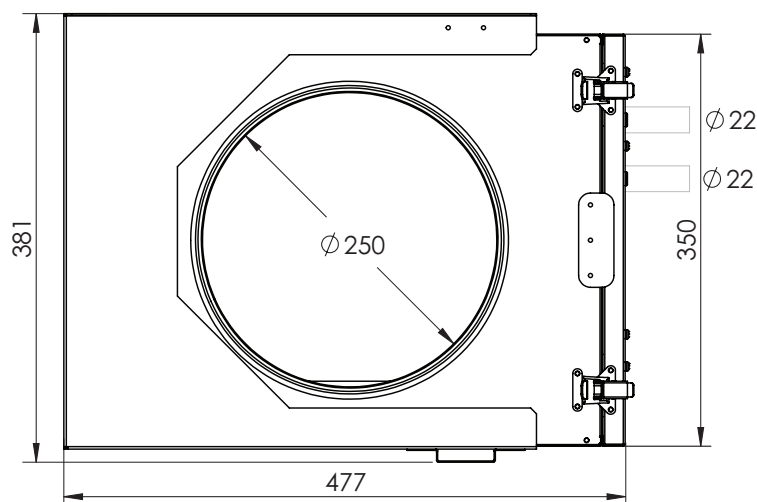
Ensure that the ground source heating well cannot freeze on account of the heater/cooler being added to the system. Supplement with the necessary protection.

Included in the delivery:

- CASA W250F air heater/cooler, fully insulated
- Temperature sensor (T8) cable length 3 m
- SET connection unit
- RJ45 cable, 3 m, 2 pcs.
- Wall mounting bracket/ceiling mounting frame
- Wide-mesh filter
- Instructions

Accessories:

- Condensate hose W2504F for the air heater/cooler: 502130



NOTE! The manual's original language is Finnish.

1. General Description

In the winter the air heater/cooler heats the air taken in and ensures that the ventilation unit operates with the greatest efficiency even in extreme cold. In the summer, the medium in the ground circuit is used to cool the building. The control technology in CASA Smart ventilation units automatically enables the best utilisation of the air heater/cooler all year round.

2. Planning

To observe during planning: when sizing the depth of the ground source heating well, review the capacity tables in the brochure and take into account the air heater/cooler's capacity for the established airflows. To size the pump, find out the heating medium flow and the air heater/cooler's pressure loss. Take the pressure loss caused by the air heater/cooler into consideration when sizing the airflows.

The air heater/cooler must always be mounted horizontally, as condensate is formed during the summer and this must be led to a drain.

Reserve servicing space at the sides of the unit in the plans.

3. Installation

3.1. Installation of the air heater/cooler in the duct system

The unit is installed in the outdoor air duct when connected as preheater/chiller. The air heater/cooler must be mounted horizontally. Remember that the condensate outlet must be connected to the building's drainage system. There should be at least 500 mm free space in front of the hatch.

The condensate hose is connected to the condensate outlet (G3/8"). The condensate is led off to a floor drain or the like using a hose with an inner diameter of at least 12 mm. The condensate hose (502130) is available as an accessory for air heater/cooler W2504F. The hose must not be led off directly to the drain. There must be two water traps or a horizontal section on the condensate hose. The damming height of the water trap should be at least 100 mm.

Check that the condensate discharge outlet is not

clogged and check its outflow by pouring water on the bottom of the ventilation unit.

The condensate pipe must be placed in a heated space. A condensate pipe that is installed in a cold space must always be insulated with at least 50 mm mineral insulation or 30 mm cellular rubber insulation and fitted with a heating cable.

The ducts are mounted on the air heater/cooler's Ø250 mm connection sleeves. The ducts are slid into the sleeves and locked with pop rivets. Keep in mind that the ducts' insulation must run right up to the unit. After the air heater/cooler, the supply air duct must be insulated using 10 mm thick mineral wool in both the heated and cold areas (remember moisture insulation). The outdoor air duct, the ducts after the air heater/cooler as well as the outgoing exhaust air duct must also be insulated against moisture (for example with a layer of plastic film above the layer with insulation or cellular-rubber insulation).

3.2. Pipe connections for the heating medium

The pipes for the air heater/cooler's heating medium is connected to the unit's pipe connections (Cu 22 mm) for the outgoing solution and the return solution. Remember the need to vent the heating medium pipes in connection with the pipe installation. The air heater/cooler's coarse filter must always be installed on the unit's outdoor side.

The following must be taken into consideration when the air heater is connected to the pipe system:

1. The air heater/cooler's connection pipes must not be subjected to distortion or bending movements when the connections are made. Counterhold with a tool when assembling the couplings.
2. Ensure that the unit's expansion forces or the pipe system's own weight does not load the connections on the air heater/cooler.
3. To facilitate venting of the air heater/cooler, heating medium is generally supplied through the lowermost pipe on the heater/cooler. The venting valve is normally placed at the highest point of the pipe system.
4. The air heater/cooler and its connections must be checked for leakage once the pipe system has been completely filled.

3.3 Electric and control cables

- Install the SET-connection unit in an appropriate position in the vicinity of the sensor and actuator. Connect the RJ45 cables (2 pcs.) supplied with the SET unit to the specified connections on the ventilation unit.
- Install the supplied temperature sensor in the outdoor air duct, before the air heater/cooler seen from the direction of flow.
- Connect the sensor to the SET module's free Sensor connection.
- Connect the heating medium pump's power supply to the SET-connection unit's other relay output according to the function diagram.
- Install any actuators according to the manufacturer's instructions and connect the control cable to the SET connection unit's relay outputs according to the function diagram.

NOTE! If the SET module is used for 230 VAC control, the module must be installed, according to the electrical safety directives, in a separate enclosure.

NOTE! Make sure that the strain relief is arranged for the connections according to the electrical safety directives.

Important

Only a qualified electrician may make the electrical connections.

4. Commissioning

Commissioning the air heater/cooler is performed with a Smart control panel. *Main menu/Settings/(1234)/Heating and cooling*

Heating and Cooling	
Control type	Supply air
Sensors / controls	
Setpoint	17°C
Setpoint (Away)	17°C
Setpoint (Travelling)	17°C
Internal post heater	<input checked="" type="checkbox"/>
External post heater	<input type="checkbox"/>
Post heater out limit	8°C
External post cooling	<input type="checkbox"/>
External electric preheater	<input type="checkbox"/>
External liquid coil	<input checked="" type="checkbox"/>
Liquid heating out limit	-2°C
Liquid cooling out limit	15°C

Commissioning of the air heater/cooler

Select operation of the unit by highlighting the menu item *External after heater*.

Limit value (heating)

Select the required start temperature for external preheating. When the outdoor temperature (transferred outside temperature) measured before the air heater/cooler drops below the limit value, the relays in the SET unit selected for the heat medium pump are activated. The operating signal is received from the relay output, for example, the heat medium pump and/or solenoid valve.

Limit value (cooling)

Select the required start temperature for external precooling. When the outdoor temperature (transferred outside temperature) measured before the air heater/cooler rises above the limit value, the relays in the SET unit selected for the heat medium pump are activated. The operating signal is received from the relay output, for example, the heat medium pump and/or solenoid valve.

Select the functions for the temperature sensors used and fine adjust the measurements if necessary from the *Sensor/Control* menu.

Sensors / controls	
	22,2°C
Supply air	18,2°C
Fine tuning Room air	0,0°C
Room air sensor	Internal
Fine tuning Supply air	0,0°C
Supply air sensor	Internal
Outside air sensor	Internal
Water radiator sensor	Internal
SET Relay 1	Off
SET Relay 2	Off

Outdoor air sensor

Select the SET sensor input (T6–T9) to which outdoor air sensor is connected:

“**SET T6 -T9**” = SET-connection unit's Sensor inputs.

“Internal” = The unit's internal outdoor air temperature sensor.



Relay control functions

Select the heat medium pump function for the SET-connection unit's relays. **SET Relay 1 / SET Relay 2 = Heat medium pump.**

5. Use and function

Preheating with the heating medium is performed automatically according to the outdoor temperature through the unit's incoming air being heated in the winter and cooled in the summer. A minimum operating time (10 minutes) has been set for control of the heating medium pump.

6. Service

 **Important** 

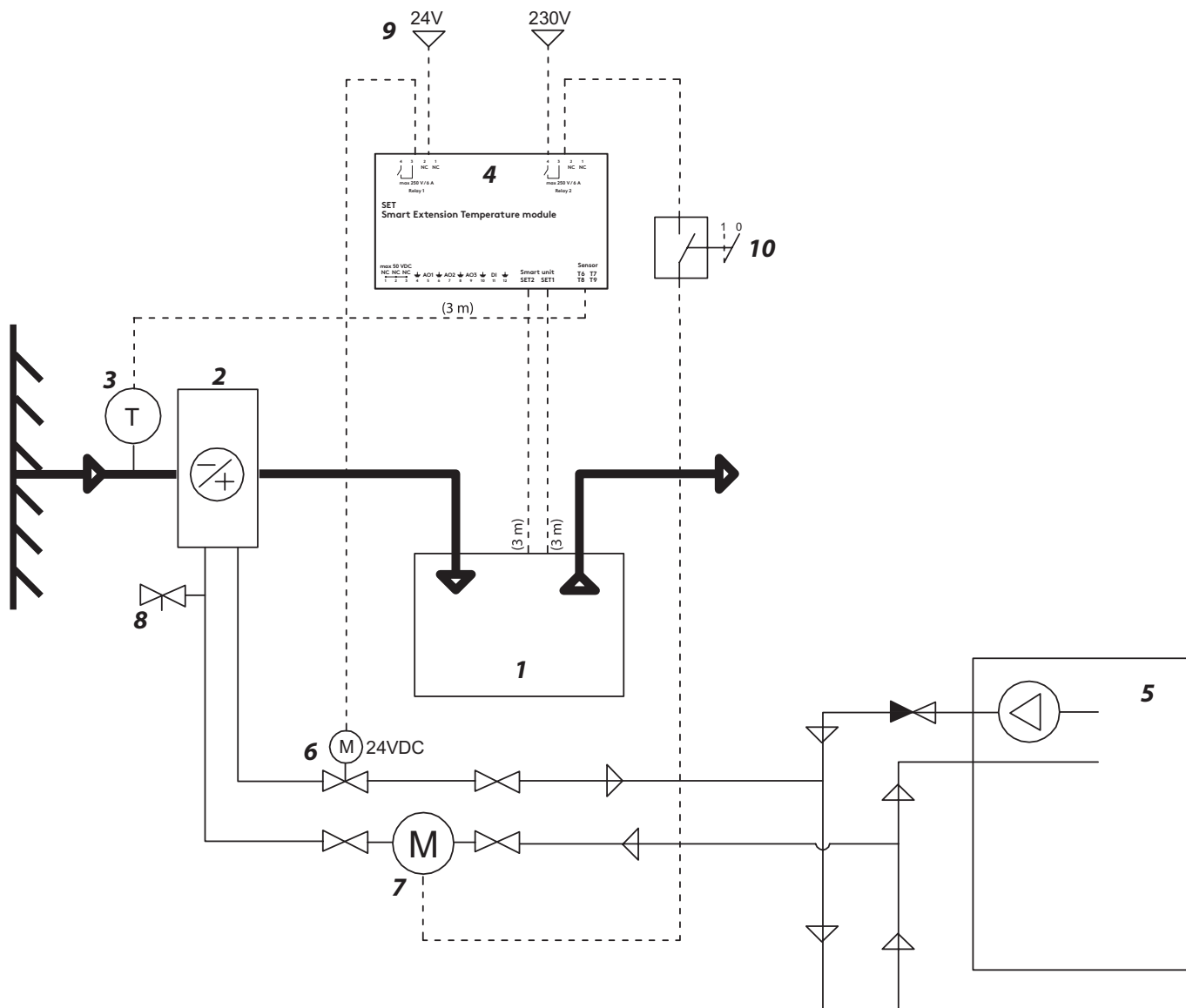
Stop the ventilation before servicing.

The unit's doors can be lifted from their hinges after their fastening catches have been opened.

The radiator in the unit, can e.g. be cleaned by gently brushing the surface or gentle rinsing with water (only at low pressure). Any dirt that has accumulated on the bottom of the condensate tray can be wiped off using a cloth and mild detergent.

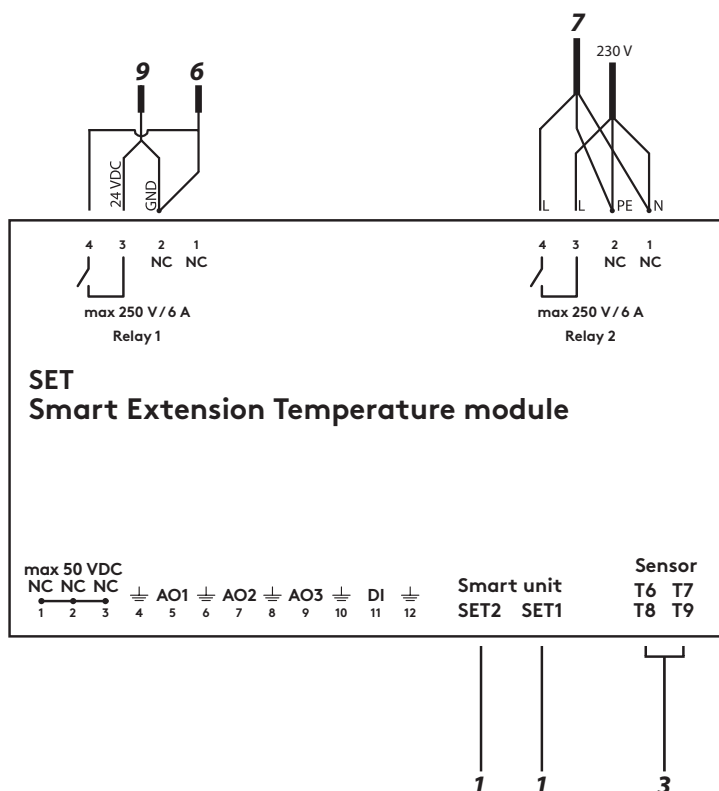
The function of the water trap and drainage pipes for condensate water should be checked at least twice a year by pouring water in the bottom of the condensate tray.

7. Function diagram and connections



1: CASA Smart ventilation unit* | 2: SDHWM air heater-cooler | 3: Outdoor air temperature sensor | 4: SET connection unit | 5: Heat pump* | 6: Solenoid valve* | 7: Circulation water pump* | 8: Extract air | 9: Power source 24 VDC* | 10: Operating switch for the circulation water pump ON/OFF*

*) Not included in the delivery.



1: CASA Smart ventilation unit* | 3: Outdoor air temperature sensor
| 6: Solenoid valve* | 7: Circulation water pump* | 9: Power source
24 VDC* |

*) Not included in the delivery.



Important



If the SET module is used for 230 VAC control, the module must be installed, according to the electrical safety directives, in a separate enclosure.

Make sure that the strain relief is arranged for the connections according to the electrical safety directives.

Air heater/cooler's performance data:

Air heater/cooler's performance data			
Cooling:			
Capacity, kW	0.8	1.2	1.4
Air flow l/s	40	100	150
INCOMING AIR			
Temperature °C	25	25	25
Relative humidity %	55	55	55
OUTGOING AIR			
Temperature °C	13	17	18
Relative humidity %	95	87	82
INCOMING FLUID			
Temperature °C	4	4	4
OUTGOING FLUID			
Temperature °C	9	8.5	9.5
Fluid flow dm³/s	0.04	0.06	0.07

Pre-heating:					
Capacity, kW	1.0	1.4	1.5	1.7	1.8
Air flow l/s	40	60	70	90	100
Incoming air °C	-26	-26	-26	-26	-26
Outgoing air °C	-5	-7	-8	-10	-11
Air's velocity, m/s	0.4	0.7	0.8	1.0	1.1
Pressure loss for air Pa	5	9	11	16	19
Incoming fluid °C	2	2	2	2	2
Outgoing fluid °C	-2	-2	-2	-2	-2
Fluid flow l/s	0.06	0.08	0.09	0.11	0.11
Fluid velocity m/s	0.3	0.3	0.4	0.4	0.5
Fluid's pressure loss kPa	5.9	7.9	8.7	10.0	10.6
Pipe connection DN	25	25	25	25	25

The unit's function for use as a preheater has been sized with 28% ethanol

