

Swegon **CASA**[®] duct coil in combination with ground source heat pump

Instructions for installation, operation and maintenance
For design engineers, installation engineers and service personnel



Important information

Qualified personnel only

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

Important details to consider during installation

The duct coil for the brine solution is installed in the outdoor air duct before the ventilation unit. The duct coil must be mounted so that the coil is horizontal in relation to the airflow.

The coil must not be installed directly next to the ventilation unit or a bend in the duct, as the airflow that passes over the coil will then not remain even resulting in an impaired output.

Commissioning

The duct connections on the duct coil must be capped during transport, when in storage and during installation.

Make sure that the duct coil and the ducts are clean and that there are no loose objects in them before you commission the ventilation system.

Ensure that the brine solution pipes are mounted and insulated and that the venting connections are mounted.

Do not commission a duct coil until all work that produces large quantities of sanding dust or other impurities has been completed.

Sizing the brine solution circuit

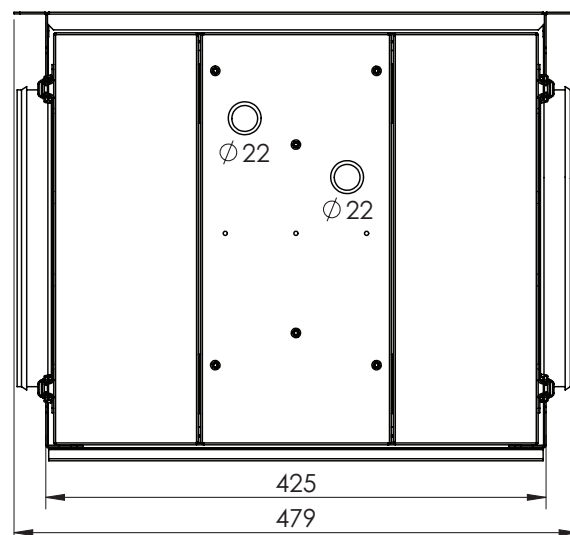
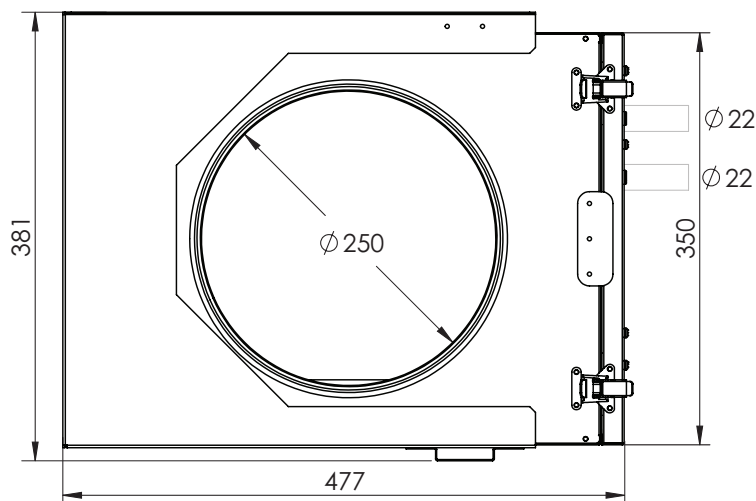
Consideration must be taken to the effect of duct coil at the design stage.

Included in the delivery:

- CASA W250F duct coil
- Temperature sensor (T8) cable length 3 m
- Wall mounting bracket/ceiling mounting frame
- Wide-mesh filter
- Instructions

Accessories:

- Condensate hose W2504F for duct coil: 502130



NOTE! The manual's original language is Finnish.

1. General Description

The duct coil heats the incoming air during the winter and ensures that the ventilation unit works with a high degree of efficiency even in the severe cold. During the summer, the ground circuit's cold solution is used to cool the building. The control technology CASA Smart for ventilation units automatically enables the best utilisation of the duct coil all year round.

2. Project planning

Remember when planning: familiarise yourself with the brochure's output tables and notice the coil's output at specified airflows when sizing the ground source heating well. For the design of the pump, familiarise yourself with the brine solution flows and the pressure loss in the coil. Take into consideration the pressure loss caused by the coil when sizing the airflows.

The duct coil for the brine solution must always be mounted horizontally, as condensate is formed during the summer and this must be led to a drain.

Reserve service space at the side of the unit in the project documents.

3. Installation

3.1. Coil installation in the duct system

The duct coil is installed in the outdoor air duct when connected as preheater/chiller. A duct coil 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. There is a condensate hose (502130) available as an accessory for duct coil 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 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 in the duct coil'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 duct coil, 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 duct coil 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 brine solution

The pipes for the heating/cooling medium are connected to the duct coil's pipe connections (Cu 22 mm) for the outgoing solution and the return solution. Remember the need to vent the pipes for the heating/cooling medium in connection with the pipe installation. The duct coil's coarse filter must always be installed outside of the unit.

The following must be taken into account when connecting the heater/chiller to the pipe system:

1. The duct coil's connection pipes must not be subjected to distortion or bending movements when the connections are made. Counterhold with a tool when assembling the connections.
2. Make sure that the unit's expansion forces and the self-weight of the pipe system does not load the coil connections.
3. In order to facilitate venting of the coil, the brine solution is usually led in via the lower tube. The venting valve is generally positioned at the highest point on the line.
4. Immediately after filling the pipe system, you must check that the duct coil and its connections do not leak.

3.3 Electric and control cables

Temperature sensor T8 is mounted in the outdoor air duct before the coil in the direction of flow and sensor cable is routed to the unit's circuit board. The temperature sensor is connected to the circuit board's T8 outlet. The duct coil for the brine solution includes temperature sensor T8 (604930) with 3 m cable.

Furthermore, the extra circulation pump's and the solenoid's operating signal (potential-free contact) from the circuit board outlet "PUMP CTRL" must be connected to the low voltage side of an intermediate relay via a 2x0.5 mm² cable. The intermediate relay, the solenoid valve and the pump are not included in the delivery.

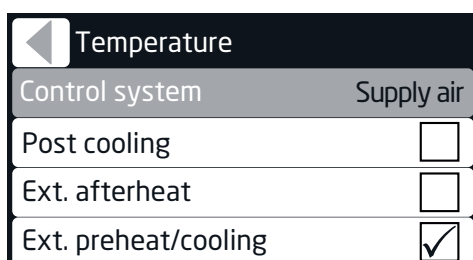
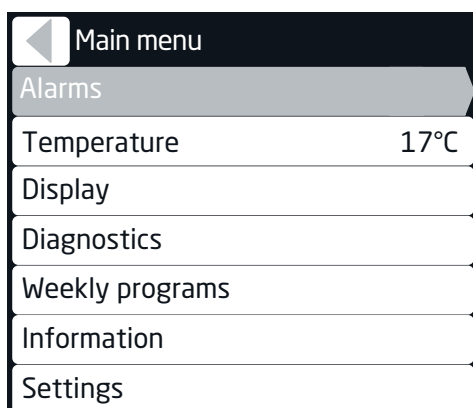
Important

Only a qualified electrician may make the electrical connections.

4. Commissioning

Commissioning the duct coil is performed with a Smart control panel.

Switch to the main menu and open the settings for temperature control by pressing and holding the acknowledgement button next to the "Temperature" menu.



4.1 Settings for winter operations

Select the external preheating's desired start outdoor temperature, which gives the start signal to the pump and solenoid valve, on the Smart control panel from the menu item "External preheating/cooling" on the Temperature menu. The factory setting for the outdoor temperature limit value is -2 °C.

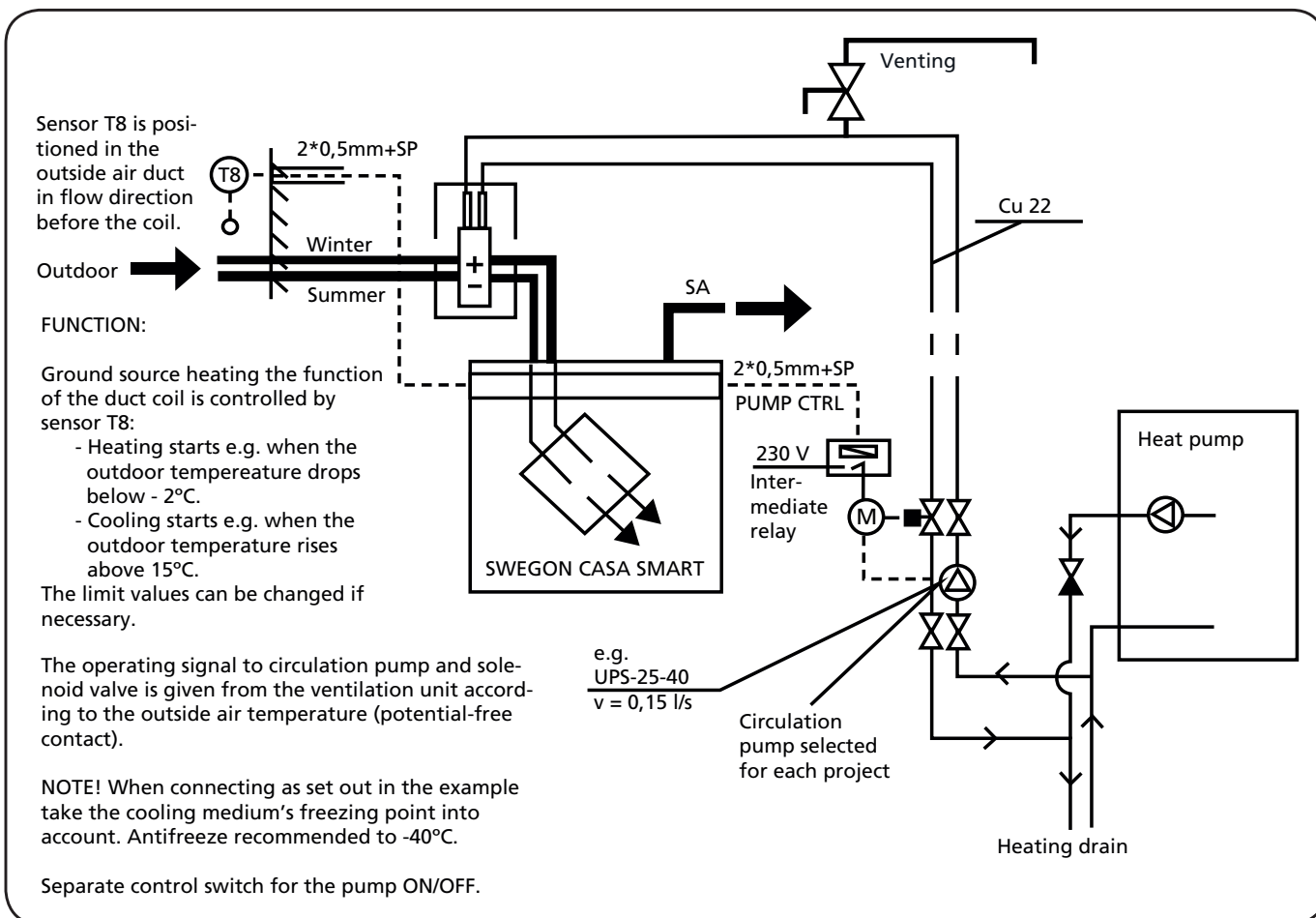
4.2 Settings for summer operations

Select the desired start outdoor temperature for the external preheating, which gives the start signal to the pump and solenoid valve, on the Smart control panel from the Temperature menu. The factory setting for the outdoor temperature limit value is above 15 °C.

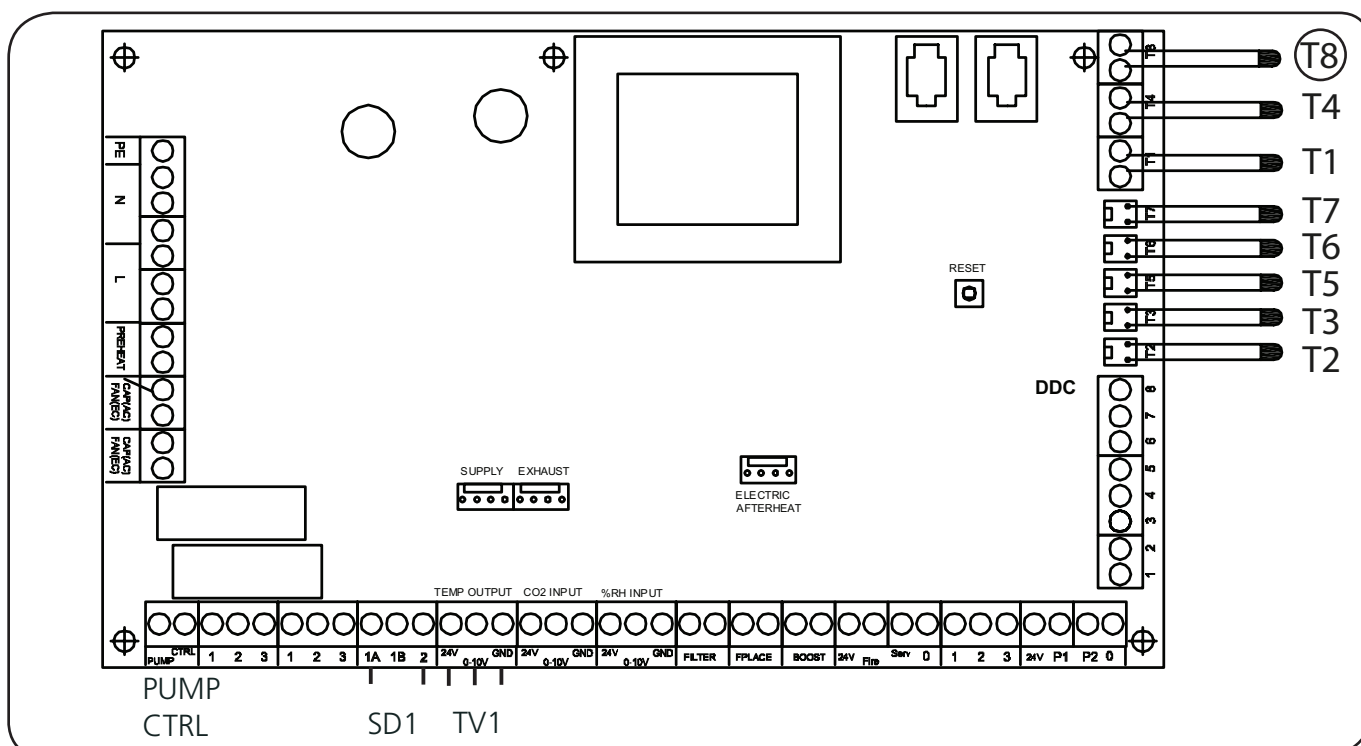
You should note that the start temperature for summer night cooling (factory setting 15 °C outdoor temperature and above 23 °C room temperature) should be set as needed.

Temperature	
Control system	Supply air
Post cooling	<input type="checkbox"/>
Ext. afterheat	<input type="checkbox"/>
Ext. preheat/cooling	<input checked="" type="checkbox"/>
Ext. preheat fresh air limit	-2°C
Ext. precooling fresh air limit	15°C



5. Wiring example



Connection example, coupling for preheating/cooling via the Smart control. *See the delivery content on page 2.*



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 pipe system for condensate drainage and the water trap must be checked twice a year by pouring water on the bottom of the condensate tray.

Chiller/heater's performance data:

Chiller's performance data			
Cooling:			
Capacity, kW	0,8	1,2	1,4
Airflow, 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

Preheating:					
Capacity, kW	1,0	1,4	1,5	1,7	1,8
Airflow, 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
Air's pressure loss 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 preheating is designed with 28% ethanol

DUCT COIL FOR BRINE SOLUTION

