

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

Products

For 250 mm duct; SDHW 250F (LVI nro. 7906808)

- CASA W2504F air heater/cooler, fully insulated
- SET connection unit
- Temperature sensor, cable length 3 m
- Wall / ceiling mounting bracket
- Coarse filter

Accessories

- Condensate hose: 502130

General Description

Outdoor air duct mounted heating / cooling unit.

In the winter the unit 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.

Planning

Take into account the duct battery's capacity for the established airflows when sizing the depth of the ground source heating well (see Technical data). Take the pressure loss caused by the duct battery into consideration when sizing the airflows.

The duct battery must always be mounted horizontally, so that condensate which is formed is led to a drain as planned.

Reserve at least 500 mm servicing space at the sides of the unit.

NOTE! The manual's original language is English.



Important information

Only qualified personnel

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

Observe the following during installation

The duct battery is installed in the outdoor air duct before the ventilation unit. The duct battery must be mounted horizontally. The unit must be accessible without obstruction.

Sizing the heating medium circuit

Consideration must be taken during planning to the effect of the duct battery.

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

Commissioning

The duct connection spigots of the unit must be capped during transport, storage and installation.

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

Ensure that the ground medium pipe system is mounted and insulated and that the venting sleeves and shut-off valves are mounted.

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

Installation

1. Installation in the duct system

The unit must be installed in the outdoor air duct.

The unit is supported either with the supplied mounting bracket or another approved manner. Make sure that the support will withstand the weight of the unit in its operating condition.

The coarse filter must always be placed in outdoor air side of the unit.

The unit must be mounted horizontally. There should be at least 500 mm servicing space at the sides of the unit.

NOTE! The ducts, after the unit, must be heat- and condensate-insulated. Insulation must be designed according to national regulations, with nonflammable insulation for example mineral wool. Keep in mind that the ducts' insulation must run right up to the unit. The supply air duct after the battery must be insulated in cold and warm space. The outdoor air duct, the ducts after the battery 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).

Condensate discharge

The discharge 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. The hose must not be led off directly to the drain. There must not 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 unit.

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.

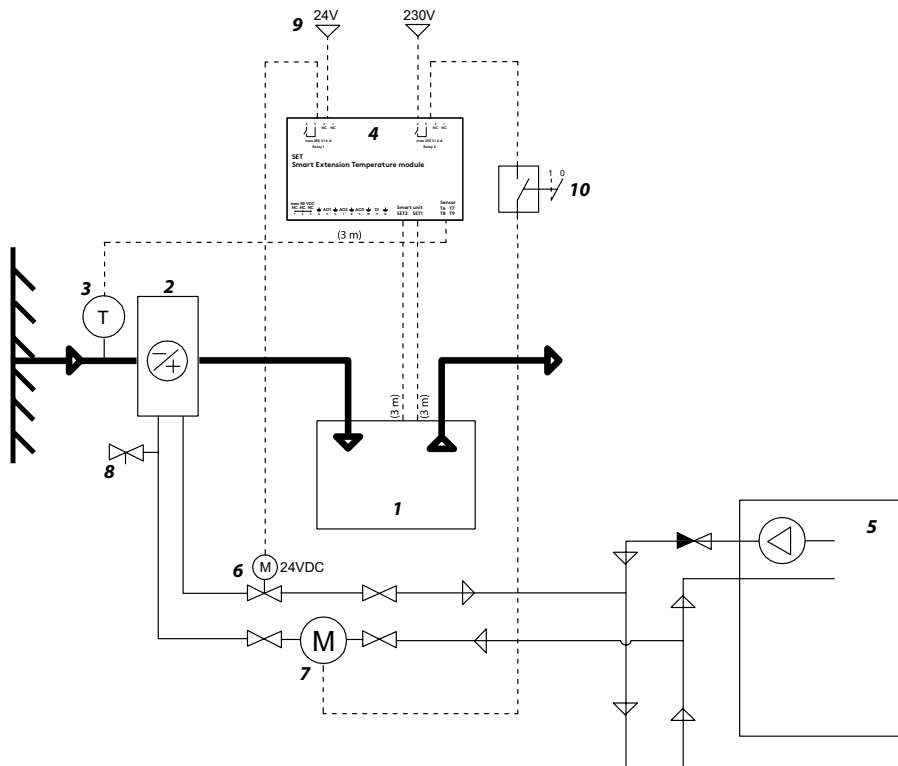
Pipe connections for the medium

The pipes for the heating/cooling medium is connected to the unit's pipe connections (Cu 22 mm). Remember the need to vent the heating medium pipes in connection with the pipe installation.

The unit's connection pipes must not be subjected to distortion or bending movements when the connections are made. Ensure that the unit's expansion forces or the pipe system's own weight does not load the connections on the unit.

The unit and its connections must be checked for leakage once the pipe system has been completely filled.

2. Electric and control cables

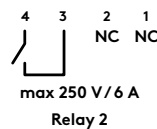
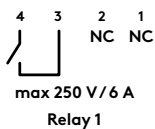
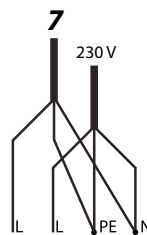
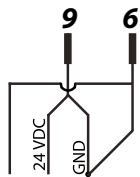


1. CASA Smart ventilation unit*
 2. SDHWM air heater/cooler
 3. Outdoor air temperature sensor
 4. SET connection unit
 5. Heat pump*
 6. Solenoid valve*
 7. Circulation water pump*
 8. Vent valve
 9. Power source 24 VDC*
 10. Operating switch for the circulation water pump ON/OFF*
- *) Not included in the delivery.

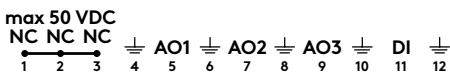
NOTE! If the SET module is used for 230 VAC control, the module must be installed, according to the electrical safety directives, in a separate enclosure.

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

NOTE! Only a qualified electrician may make the electrical connections.



SET Smart Extension Temperature module



- Install the SET-connection unit in an appropriate position in the vicinity of the sensor and actuator.
- Connect the SET-connection unit (4) to the ventilation unit (1) by connecting RJ45 cables to the SET1 and SET2 connectors.
- Install the supplied temperature sensor (3) in the outdoor air duct, before the battery 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 drawing.
- Install any actuators according to the manufacturer's instructions and connect the control cable to the SET connection unit's relay outputs.

3. Commissioning

Select the functions for the temperature sensors used and fine adjust the measurements if necessary from the *Main menu / Settings / (1234) / Heating/cooling / Sensor/Control* menu.

Outdoor air sensor

Select the SET sensor input 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.

The commissioning of the battery is performed from the *Heating/cooling* menu.

Heating function

Put the heating function into service from the menu item *External liquid coil -> selected*.

Heating always occurs primarily through control of the duct battery, yet if the battery's heating capacity is insufficient to maintain the required temperature or if the freeze protection is activated, a possible internal electrically powered air heater in the unit is also controlled. Thus, do not turn off the internal air heater for after-heating when using external after heating.

Limit value (heating)

Select the required start temperature for external pre-heating. 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. A minimum operating time has been established for the heating medium pump's control (10 minutes).

Limit value (cooling)

Select the required start temperature for external pre-cooling. 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. A minimum operating time has been established for the heating medium pump's control (10 minutes).

4. Use

When the unit is commissioned it operates automatically according to the outdoor temperature. 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.

5. Service

NOTE! Disconnect the power to duct battery and ventilation unit before servicing..

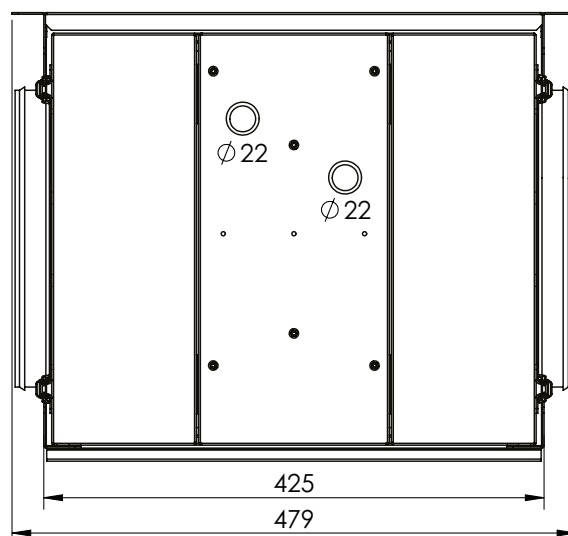
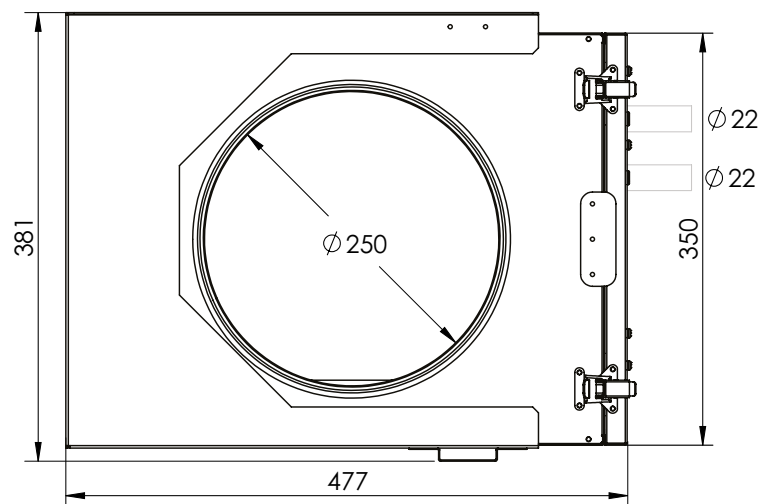
Service should always be carried out on the duct battery when servicing the ventilation unit. Check that dirt has not collected in the air cooler, clean if necessary.

The filter is cleaned by vacuuming and replaced if necessary. Order new filters (W2504FSS) from the web casastore.fi.

The inlet side of the air cooler is cleaned first with a brush, and then you can clean the entire air cooler. If the compressed air is used, blow off dirt in the direction from the output side towards the input side. Be careful so that the thin edges of the fins are not damaged.

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.

Dimensions



Leave at least 50 cm service space in front of the door.

Technical 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 dm ³ /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

