

Swegon **CASA**[®] Air heater for heating the supply air

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.

Freeze protection

The air heater must be equipped with freeze protection when there is a risk of freezing. The freeze protection switches off the ventilation unit's fans and closes an outside air damper if fitted and activates the alarm.

The air heater can burst if the water freezes in the heater, which in turn causes the pipe system to drain and water damage can occur.

Observe the following during installation

The air heater must be installed in an area that is equipped with a drain. The air heater must not be installed in the immediate vicinity of the ventilation unit or duct bends,

as this will prevent an even airflow across the heater resulting in impaired output.

Commissioning

The duct connection sleeves of the air heater must be covered during transport, storage and installation.

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

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

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

Air heaters in two sizes for supply air duct:

- **For 125 mm ducts; SDHW 125 (LVI-no. 7906558)**

The following components are included in the delivery:

- CASA CWW 125-3-2.5 air heater
- 3-way valve (1/2" female thread, kvs 0.4) Belimo R3015-P4-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m, 2 pcs.
- SET connection unit
- CAT45 cable, 3 m, 2 pcs.
- Power supply 24 VDC 12 W

- **For 160 mm ducts; SDHW 160 (LVI-no. 7906559)**

The following components are included in the delivery:

- CASA CWW 160-3-2.5 air heater
- 3-way valve (1/2" female thread, kvs 0.4) Belimo R3015-P4-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m, 2 pcs.
- SET connection unit
- CAT45 cable, 3 m, 2 pcs.
- Power supply 24 VDC 12 W

NOTE! The manual's original language is Finnish.

1. General Description

Separate air heater for installation in ducts, utilises the heating circuit's water. Can be used in the supply air duct to heat the room air.

Heating control can be fully transferred to the CASA Smart control technology.

2. Planning

To observe during planning: when sizing the pump and pipe system, find out the heating net's temperature and flow and the air heater's pressure loss. Swegon recommends its own heating pipe system for air heaters. Take the pressure loss caused by the air heater into consideration when sizing the airflows and selection of the ventilation unit.

A shut-off damper must be installed in the outdoor duct. The shut-off damper's relay control is taken from a SET connection unit.

3. Installation

3.1. Installation of the air heater in the duct system

The air heater must be installed in the supply air duct.

The ducts are connected to the air heater's Ø125 mm or Ø160 mm connection sleeves. The air heater is supported either with the help of a shelf or another approved manner. The weight of the air heater in an operating state is about 5.5 kg. The ducts are pushed into the sleeves and locked with pop rivets. Keep in mind that the ducts' insulation must run right up to the unit. In cold areas the incoming duct must thermally insulated after the air heater using 10 cm mineral wool (general instruction).

The air heater can be installed in horizontal or vertical ducts with optional direction of airflow.

3.2. Water connection

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

1. Compression couplings are to be used to connect the air heater. Valve connection with threaded couplings: 2-way valve (½" female thread, kvs 0.4) Belimo R3015-P4-S1
2. The air heater'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. The valve's actuator can be mounted horizontally or so that the actuator is above the pipe system.
3. Ensure that the unit's expansion forces or the pipe system's own weight does not load the connections on the air heater.
4. To facilitate venting of the air heater, water is generally supplied through the lowermost pipe on the heater. The venting valve is normally placed on the air heater or at the unit's highest point. Heating pipes must be fitted with filters.
5. The air heater must be connected so that the pipe system can be drained easily, for example, during repairs, extended periods of downtime or when there is a risk of freezing.
6. The air heater and its connections must be checked for leakage once the pipe system has been completely filled with water. Any leakage can cause water damage.

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 CAT45 cables (2 pcs.) supplied with the SET unit to the specified connections on the ventilation unit.
- Install the supplied temperature sensor in the supply air duct, after the air heater seen from the direction of flow.
- Connect the sensor to the SET module's free Sensor connection.
- Install it in the supplied anti-frost sensor by taping it to the heater's return pipe. Make sure the sensor is sufficiently insulated so that the ambient temperature does not affect the measurement. Connect the sensor to the SET module's free Sensor connection.
- Connect the valve motor control and the power source supplied with the delivery to the connections shown on the function diagram.
- Install a possible room temperature sensor (PRTG, accessory) in the room area whose temperature the system should control. Connect the sensor to the SET module's free Sensor connection.
- Install any actuators according to the manufacturer's instructions and connect the control cable to the SET card'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

The commissioning of the air heater 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 checked="" type="checkbox"/>
Post heater out limit	8°C
External post cooling	<input type="checkbox"/>
External electric preheater	<input type="checkbox"/>
External liquid coil	<input type="checkbox"/>

Heating function

Put the heating function into service from the menu item *External after heater*.

When using the air heater, heating always occurs primarily through control of the air heater, yet if the air heater'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.

Outdoor air limit

If necessary set *Outdoor air limit after heating*. After heating is permitted when the outdoor temperature falls below the set value.

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

Supply air sensor

Select the SET sensor input to which supply air sensor is connected:

"SET T6 -T9" = SET-connection unit's Sensor inputs.

"Internal" = The unit's internal supply air temperature sensor.

Air heater sensor (freeze protection)

Select the SET sensor input to which supply air heater sensor is connected:

"SET T6 -T9" = SET-connection unit's Sensor inputs.

Room air sensor

Select the room air sensor which is used:

"Internal" = The unit's internal extract air temperature sensor.

"SET T6 -T9" = SET connection's Sensor inputs.

"UP1" = Internal temperature sensor in CASA Smart control panel 1.

"UP2" = Internal temperature sensor in CASA control panel 2.

Relay control functions

If you wish to use relay control functions, e.g. for a circulation water pump or a duct damper, the SET unit's relays can be programmed for the required function from the *Sensor/Control* menu.

5. Use and function

The after heating is regulated automatically when the outdoor temperature has fallen below the set limit value.

You can select supply air or room air control as the after heating control method. *Main menu/Settings/(1234)/Heating and cooling/Control method*

Control type	
Control type	Room air
Supply control min value	17°C
Supply control max value	17°C
Cooling min setpoint	14°C
Cooling max setpoint	25°C

Supply air control

During the heating season you should attempt to keep the supply air stable.

NOTE! Due to the high efficiency of the heat exchanger, the supply air temperature may be higher than the set point value even though the outdoor air is cool.

Room air control

For room air control, the temperature of the supply air is based on the measurement of the room air temperature. It is possible, from the *Control mode* menu, to select the highest and lowest set point for cooling and heating to the supply air. The heating values should be kept close to the comfort temperature for the heating season.

The control's set point

The set point can be changed directly from the *Main menu*. From the *Heating and cooling* menu you can also select separate set point values for Away and Travelling modes.

Diagnostics

Heating and Cooling	
Eftervärme effekt	0%
Supply air setpoint	17°C
Supply air temperature	16,5°C
Summer mode	100%
Preheater status	0%

Control of cooling can be observed from a diagnostics screen. *Main menu/Diagnostics/Heating and cooling*.

Depending on the selected control mode, the set point value is shown for room air control's supply air or the set point value for supply air control, the measured supply air temperature and the heating and or cooling capacity.

Temperature boost

if the after heating works as the home's primary heating source and room air control is selected, you can use heating boost. The function increases the ventilation capacity variably to improve the efficiency of heating.

The function is put into service from the "Smart-functions" menu *Main menu/Settings/Smart functions/ Temperature boost* The efficiency of the temperature boost can be regulated by changing the heating boost.

Temperature boost works automatically, but it can be temporarily taken out of service by changing the ventilation mode. Boost will then be out of service for the following six hours. During temperature boost you can select Away and Boost speeds as normal. However, you can decide whether the function should be permitted in Away mode from the temperature boost menu.

Freeze protection

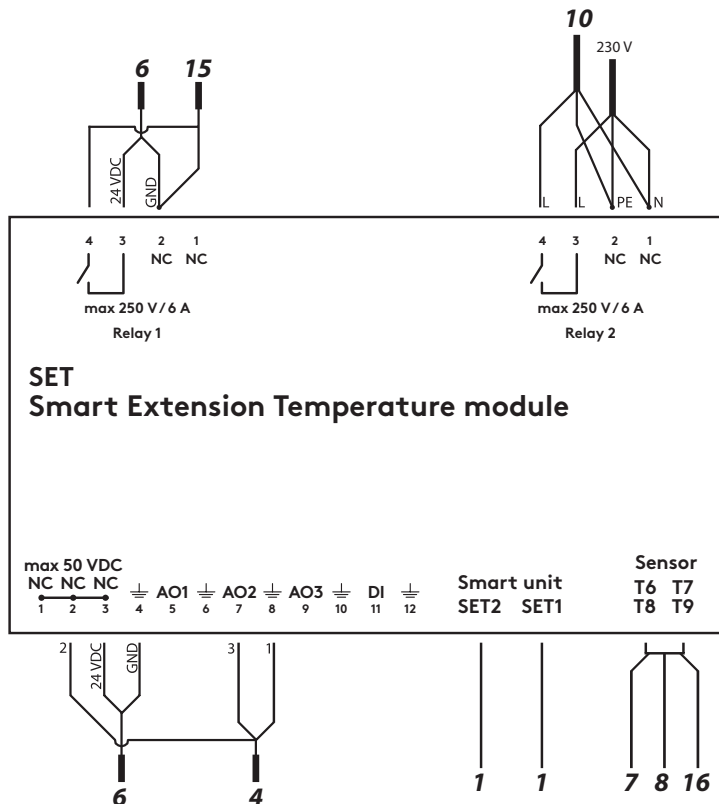
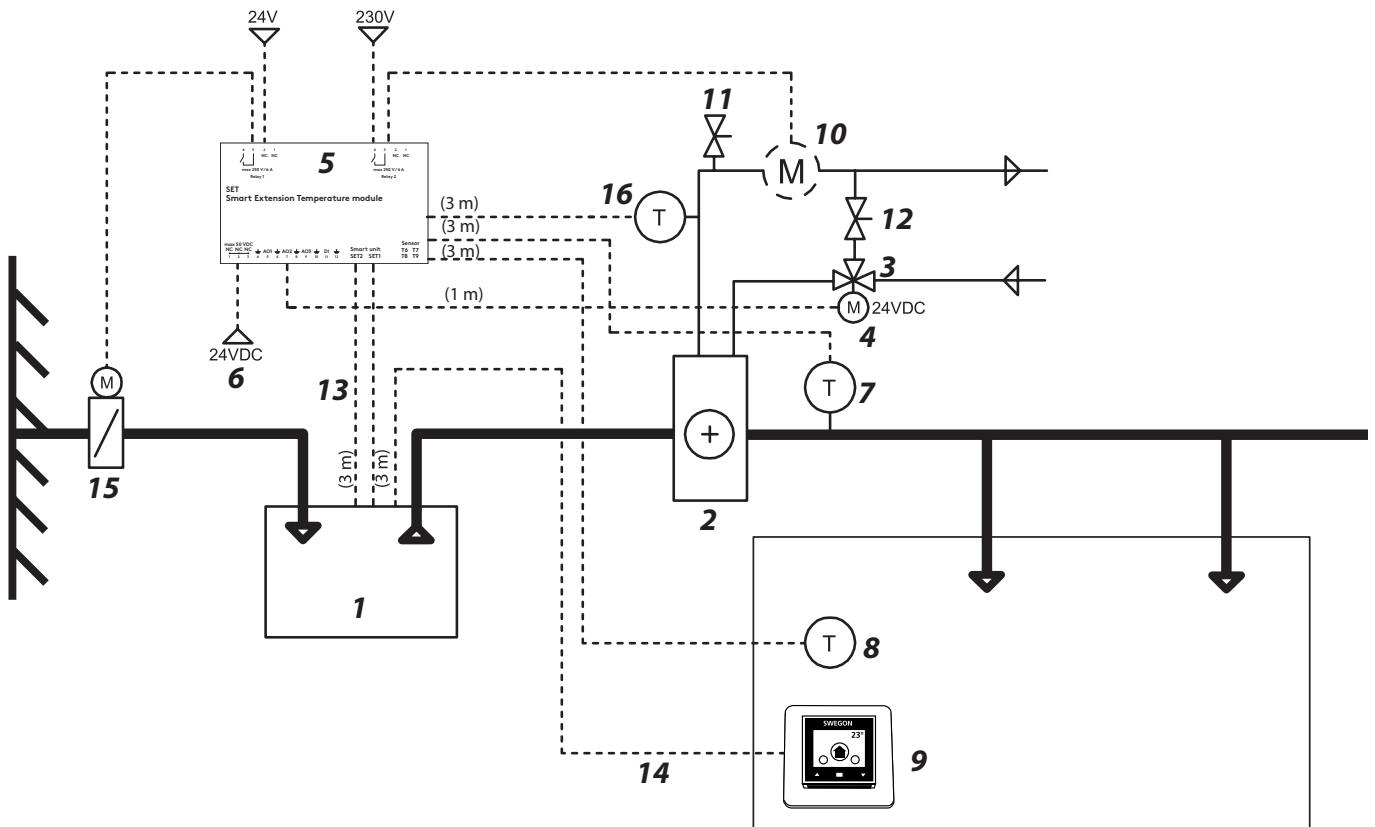
The air heater is equipped with anti-frost sensor that protects the air heater from freezing. The freeze risk alarm is activated if the outdoor temperature is below 0 °C and the return water temperature drops below the alarm limit. If the return water's temperature drops yet further, the unit is switched off to prevent freezing. The unit starts again, when the temperature of the return water or the outdoor temperature has risen to a safe level.

6. Service

Stop the ventilation before servicing.

The unit must be cleaned at regular intervals to obtain full power from the air heater. The length of the service interval is entirely dependent on the cleanliness of the air, and of how well the filters and unit are maintained in general. The air heater can be easily cleaned once the heater's cover has been removed. The inlet side of the air heater is cleaned first with a brush, and then you can clean the entire air heater with compressed air, water or steam. Blow or wipe off dirt in the direction from the output side towards the input side. Exercise care so that the thin edges of the fins are not damaged.

7. Function diagram and connections



!

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.

1: CASA Smart ventilation unit* | 2: SDHW air heater | 3: 3-way valve | 4: Actuator | 5: SET connection unit | 6: Power source 24 VDC | 7: Supply air temperature sensor | 8: Room air temperature sensor* | 9: Control panel | 10: Circulation water pump* | 11: Extract air | 12: Flow regulator | 13: CAT45 cable (2 pcs.) | 14: Modular cable PMK20* | 15: Duct actuator* | 16: Air heater's anti-frost sensor*

*) Not included in the delivery.

CASA air heater for the supply air duct:

CASA air heater										
	ØD mm	B mm	H mm	Øo.d. mm	F	G mm	K mm	L mm	Pipe system's int. volume l	Weight, kg
CWW 125	125	313	255	10	175	40	276	356	0.20	5.5
CWW 160	160	313	255	10	175	40	276	356	0.42	5.4

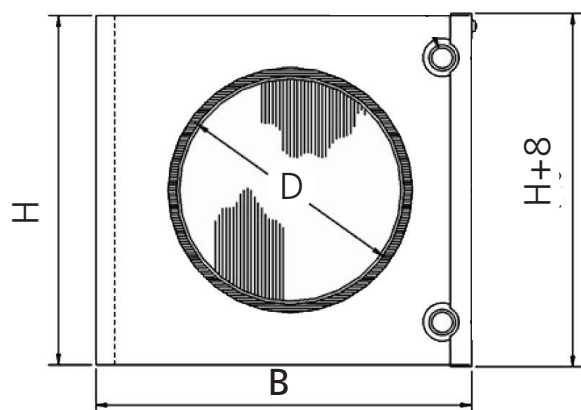
CWW 125

Water temperature				in/out 80°C/60°C				in/out 60°C/40°C				in/out 55°C/45°C			
Airflow	Pressure loss for air	Air in	Air out	Capacity,	Water flow	Pressure loss for air	Air out	Capacity,	Water flow	Pressure loss for air	Air out	Capacity,	Water flow	Pressure loss for air	
l/s m³/h	Pa	°C	°C	kW	l/s	kPa	°C	kW	l/s	kPa	°C	kW	l/s	kPa	
25 90	4	0	63.7	2.0	0.02	2.6	45.2	1.4	0.02	1.5	44.9	1.4	0.03	5.1	
25 90	4	7.5	65.0	1.7	0.02	1.7	46.0	1.1	0.01	1.0	46.0	1.1	0.03	3.6	
25 90	4	15	66.9	1.5	0.02	1.5	46.6	0.9	0.01	0.7	47.0	0.9	0.02	2.5	
40 140	10	0	57.4	3.1	0.04	5.9	40.4	2.2	0.03	3.3	40.7	2.2	0.05	11.9	
40 140	9	7.5	59.2	2.7	0.03	4.7	42.0	1.8	0.02	2.3	42.4	1.8	0.04	8.5	
40 140	9	15	60.9	2.3	0.03	3.6	43.3	1.4	0.02	1.6	43.9	1.5	0.04	5.7	
60 210	18	0	52.8	4.1	0.05	9.9	37.1	2.9	0.03	5.4	37.5	2.9	0.07	19.8	
60 210	17	7.5	55.1	3.6	0.04	7.7	39.1	2.4	0.03	3.8	39.7	2.4	0.06	14.1	
60 210	17	15	57.2	3.1	0.04	5.9	40.9	1.9	0.02	2.5	41.7	1.9	0.05	9.5	

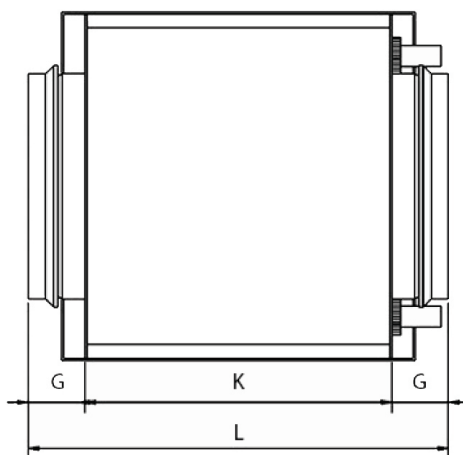
CWW 160

Water temperature				in/out 80°C/60°C				in/out 60°C/40°C				in/out 55°C/45°C			
Airflow	Pressure loss for air	Air in	Air out	Capacity,	Water flow	Pressure loss for air	Air out	Capacity,	Water flow	Pressure loss for air	Air out	Capacity,	Water flow	Pressure loss for air	
l/s m³/h	Pa	°C	°C	kW	l/s	kPa	°C	kW	l/s	kPa	°C	kW	l/s	kPa	
40 90	9	0	57.8	3.0	0.04	5.7	40.7	2.1	0.03	3.1	40.9	2.1	0.05	11.3	
40 90	9	7.5	59.6	2.6	0.03	4.4	42.3	1.8	0.02	2.2	42.6	1.8	0.04	8.1	
40 90	9	15	61.2	2.3	0.03	3.4	43.5	1.4	0.02	1.5	44.1	1.4	0.03	5.5	
70 250	23	0	50.8	4.6	0.06	12.2	35.6	3.2	0.04	6.6	36.1	3.3	0.08	24.4	
70 250	22	7.5	53.2	4.0	0.05	9.5	37.8	2.7	0.03	4.7	38.5	2.7	0.07	17.4	
70 250	22	15	55.6	3.4	0.04	7.2	39.8	2.1	0.03	3.1	40.7	2.2	0.05	11.7	
100 360	41	0	45.8	5.9	0.07	19.3	32.0	4.1	0.05	10.3	32.7	4.2	0.10	39.0	
100 360	40	7.5	48.8	5.1	0.06	15.0	34.7	3.4	0.04	7.3	35.5	3.5	0.08	27.7	
100 360	39	15	51.6	4.4	0.05	11.4	37.3	2.7	0.03	4.8	35.1	2.4	0.06	24.0	

8. Dimensions



Leave at least 40 cm service space in front of the door.



CWW 125

H 255

B 313

D 125

CWW 160

H 255

B 313

D 160

CWW 125

K 276

L 356

CWW 160

K 276

L 356