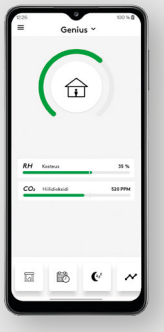
CASA R2 Genius

Technical catalogue



Available on the App Store

Get it on Google play

QUICK FACTS

- CASA Genius control system
- Automatic rotor speed control for demand controlled humidity function as standard
- Automatic summer function and passive cooling
- Anti-frost protection ensures continuous ventilation
- External coils for heating and cooling as an option
- Can be connected to the automated building management system (I/O/Modbus)
- Can be wall mounted above the cooker hood in place of a spice rack

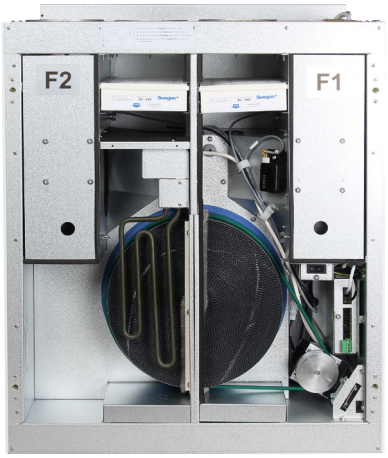
UNIT TECHNICAL CONTENT	
Air flow range	18-60 l/s | 65-216 m³/h
Dimensions, w x l x h	598 x 320 x 734 mm
Duct outlets	4 x Ø 125 mm
Cooker hood outlet	Ø 125 mm
Energy calculations and acoustic data	procasa.swegon.com
Connection power	640 W | 940 W
Power connection	230 V, 50 Hz, 10 A
Fans	240 W, EC
Filters	ISO ePM1 55% (F7) filters for supply air and for extract air
Colour	Exterior White, RAL 9016 (corresponds to NCS S0502-G50Y)

Content

Technical description

Swegon CASA R2 Genius

Air handling unit with rotary heat exchanger (598 x 320 x 734 mm, Ø 125 mm) suitable installation in homes (140 m²). The unit's sound level is low. The intelligent demand-controlled humidity function is standard.



Indoor environmental quality

Ventilation control

The unit is controlled steplessly with automation functions to quarantee the best indoor environmental quality. The user can select five operating modes home, away, boost, travelling and home+ by using control panel, cooker hood or Swegon CASA app. Operation modes can be automated with unit's weekly programs.

Temperature control

The supply air temperature is controlled with heat exchanger and if needed with optional heating or cooling element.

The unit has automatic summer time detection. The function sets lower supply air temperature setpoint and boost ventilation in order to bring more fresh outdoor air to the apartment during summer nights.

Available variants

Standard units are available in following variants:

- Unit with 400 W postheater and RH sensor
  L (supply air left) / **R** (supply air right)
- Unit with 700 W postheater RH sensor
  L (supply air left) / **R** (supply air right)
- Unit with 700 W postheater RH + CO2 sensors
  L (supply air left) / **R** (supply air right)

Components

Fans

CASA R2 is equipped with energy efficient EC fans.

Filter

The ventilation unit is equipped with ISO ePM1 55% (F7) filters for supply air and for extract air. The need of filter replacement is indicated on the control panel and on the CASA cooker hood.

Heat exchanger

The ventilation unit is equipped with a **speed controlled rotary heat exchanger**. Heath exchanger is controlled either to maintain constant supply air temperature or to achieve maximum energy efficiency (winter mode).

External connections

All connections can be made without opening the electrical box. Plug-in modules are available for external connections. Wide variety of IO functions are available.

The ventilation unit is equipped with In-build Modbus. Modbus cabling can be made easily with external cable (SEC) or module (SEM). Unit can be fully controlled with Modbus and all external IO´s can be configured to Modbus usage.

Protective functions

The heat exchanger freeze protection

The defrosting function guarantees continuous ventilation and maintains units performance even during extreme conditions. If reheat can't maintain sufficient supply air temperature, the air flows are reduced.

The fan overheating protection

The fan overheat protection stops the fan if the temperature rises too high and is reseted automatically. If protection stops the fans an alarm is generated.

Rotor guard

Rotor guard detects that the rotor is working. Malfunction generates an alarm.

Cold supply air

The ventilation unit has built-in condensation protection. If the supply air is too cold, the ventilation unit stops and an alarm is generated

High temperature

If supply air or units internal temperature is detected dangerously high the unit is stopped and an alarm is generated.

Temperature sensors

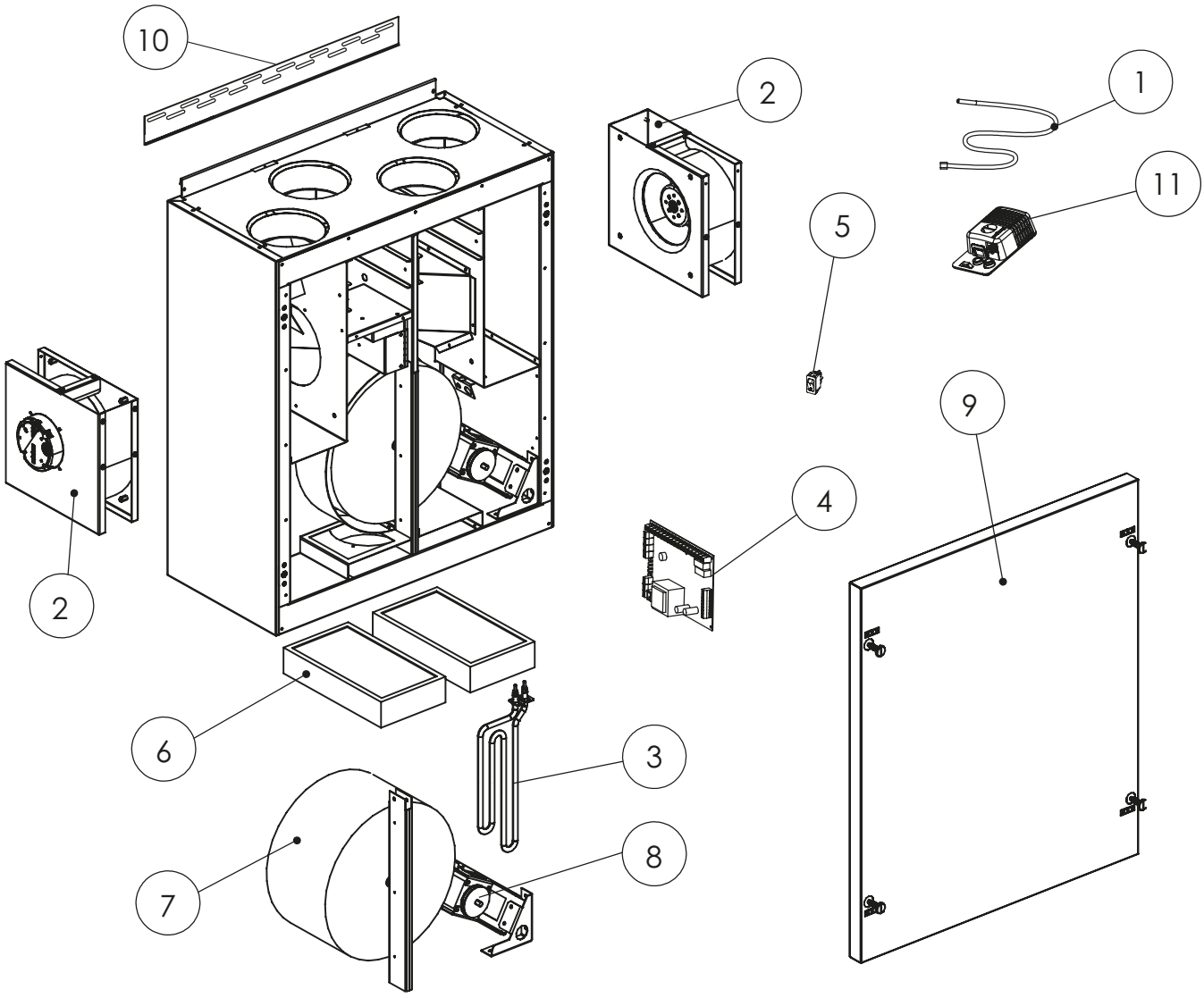
If a sensor fault is detected, an alarm is generated. If the faulted sensor is critical the ventilation unit is stopped. The ventilation unit returns to normal mode once the fault has been corrected.

The delivery includes

- Ventilation unit
- Wall mounting bracket
- Quick Guide
- Installation and commissioning instruction
- Product fiche

Standard connections

- Power cord with earthed plug (2 m)
- Cable for SEC/SEM connection module with RJ45 connector (2m)
- Modular cable with RJ9 connector (1.5 m)
- Freely configurable I/O contacts for connection of accessories (2 pcs.)



1. **Temperature sensors**
2. **Fan**
3. **Postheater module**
4. **Genius control board**
5. **Use switch**
6. **ISO ePM1 55% (F7) filters for supply air and for extract air**
7. **Rotor**
8. **Rotor motor**
9. **Door**
10. **Wall mounting bracket**
11. **Sensor package, RH/RH + CO2**

Swegon CASA Genius

Intelligent control of the ventilation

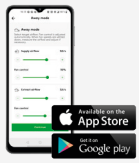
With Swegon CASA Genius residents can monitor the indoor air quality (RH, CO2, VOC, °C), adjust ventilation to their wishes or let the intelligent control to adjust ventilation automatically while saving energy and providing fresh and healthy indoor air.

The Swegon CASA control panel (GC10)

Wall-mounted touch screen for external or flush mounting. From the touch screen user can monitor ventilation, change ventilation mode, change the settings and commission the ventilation unit. The screen can be connected to the home WLAN, enabling the ventilation to be controlled remotely from a Swegon CASA mobile app

The Swegon CASA app

With Swegon CASA app residents can use all the control functions remotely from their own smartphone. Users get more information about their home's air quality as well as valuable instructions and advice about the ventilation (requires Swegon Genius control panel).



The CASA Service app

for quick and easy commissioning. The app works locally together with the ventilation unit and doesn't require connection to network. The app defines the I/O connections, presets the fan speeds that correspond to specified air volumes, as well as automatically sets air volumes for home and boost mode. Finished settings can be saved in the app and copied to the next apartment (requires Swegon Genius control panel).

Swegon CASA cooker hood

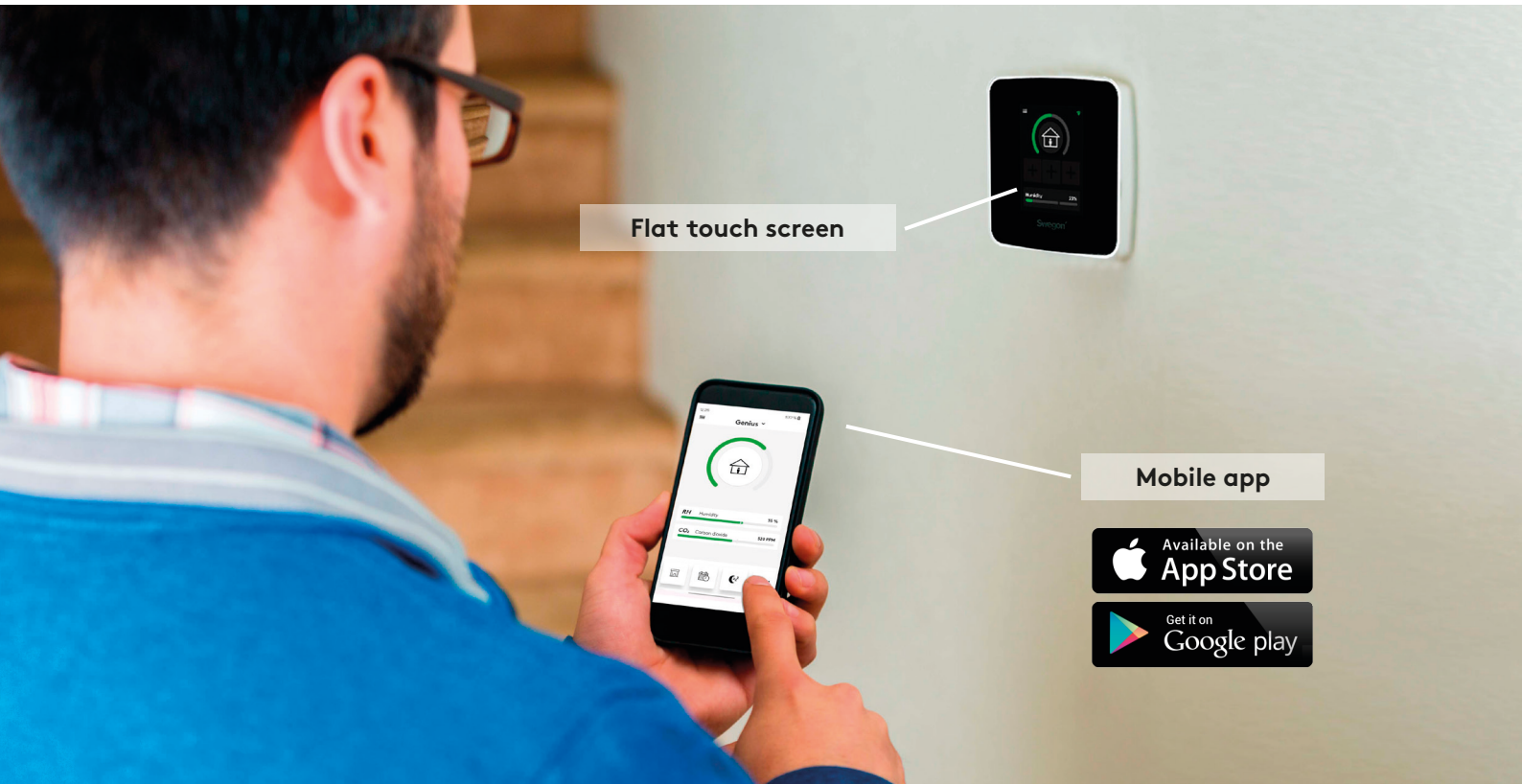
With cooker hoods, it is possible to control the ventilation unit's operating mode (home, away, boost), the cooker hood's shut-off damper and the lighting in the hood. The system balances the ventilation automatically when using the cooker hood.

The Swegon CASA HOME/AWAY/BOOST control switch (GC04)

Wall-mounted control switch for selecting boost, home and away modes.

Home automation

Can be connected to the home automation for centralised monitoring and control, either directly via configurable I/O or with the aid of a separate Modbus connection module (SEM).



Basic modes

You can switch as required to an appropriate operating mode or let the pre-programmed weekly clock switch operating mode according to the diurnal rhythm you want.

Home
Normal air flow. Sufficient amount of fresh indoor air to ensure the wellbeing of the residents and the structural building elements when there are people in the home.

Home+
Higher air flow. Can be used when more ventilation is required. The home owner can change the efficiency of the operating mode from the settings.

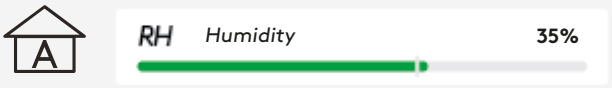
Boost
High air flow. Used if the ventilation requirement increases, for example, when cooking, taking a bath or drying laundry, or when an unusually large number of people are in the home.

Away
Low air flow. Reduces the energy consumption when nobody is present in the home.

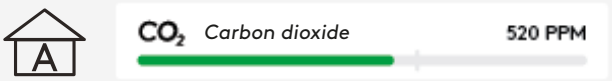
Travelling
Very low air flow and lower supply air temperature. Used when nobody is present in the home.

Automatic functions

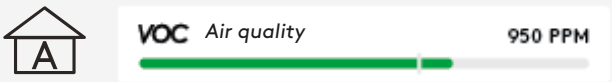
The intelligent ventilation monitors the quality of the indoor air and adjusts the ventilation automatically.



Automatic RH system included as standard
Humidity automation removes damaging moisture. The intelligent control analyses the indoor air continuously and regulates the ventilation steplessly so that excess moisture is removed, for example when you are washing.

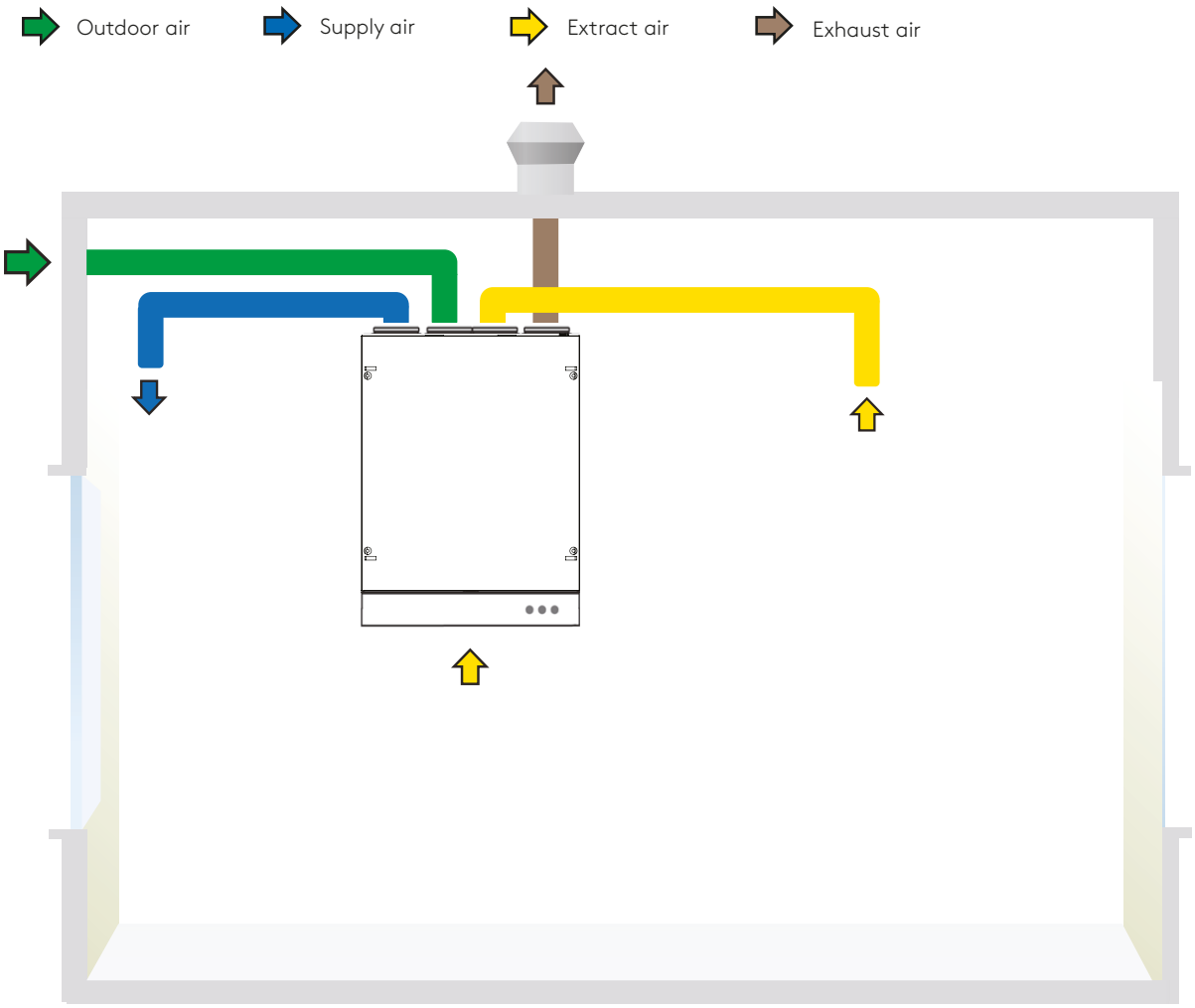


Automatic CO2 system as optional equipment
Automatically lowers the ventilation and saves energy when nobody is in the home. When the residents are at home, the ventilation is automatically boosted to bring exactly the right amount of fresh air into the home.



Automatic VOC system as optional equipment
The automatic air quality system boosts the ventilation if pollution, odours or vapours (evaporating organic compounds) are detected in the indoor air.

Design data



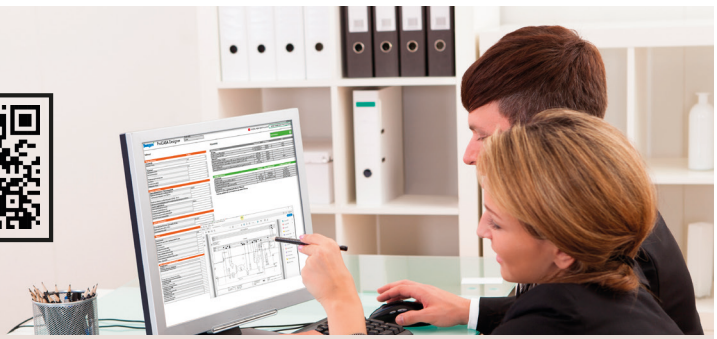
CASA R2 L, duct connections and cooker hood connected to the bottom of the ventilation unit.

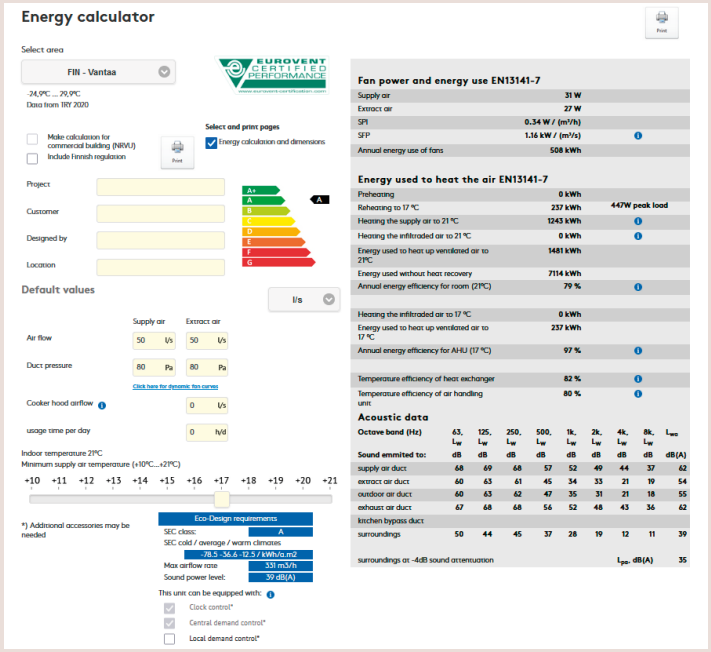
Note! Always check the unit design (L/R) and correct duct sequence in the installation instruc tions.

ProCASA®

Energy calculation, functional diagram and acoustic data on ProCASA.

procasa.swegon.com





Energy calculator

Select area

FIN - Vantaa

-24,9°C ... 29,9°C
Data from TRY 2020

Select and print pages

Energy calculation and dimensions

Make calculation for commercial building (NRVU)

Include Finnish regulation

Project

Customer

Designed by

Location

Default values

l/s

	Supply air	Extract air
Air flow	50 l/s	50 l/s
Duct pressure	80 Pa	80 Pa
Cooker hood airflow		0 l/s
usage time per day		0 h/d

Indoor temperature 21°C
Minimum supply air temperature (+10°C...+21°C)

+10 +11 +12 +13 +14 +15 +16 +17 +18 +19 +20 +21

*) Additional accessories may be needed

Eco-Design requirements

SEC class: A

SEC cold / average / warm climates: -78.5 -36.6 -12.5 / kWh/a.m2

Max airflow rate: 331 m3/h

Sound power level: 39 dB(A)

This unit can be equipped with:

- Clock control*
- Central demand control*
- Local demand control*

Fan power and energy use EN13141-7

Supply air	31 W	
Extract air	27 W	
SPI	0.34 W / (m³/h)	
SFP	1.16 kW / (m³/s)	
Annual energy use of fans	508 kWh	

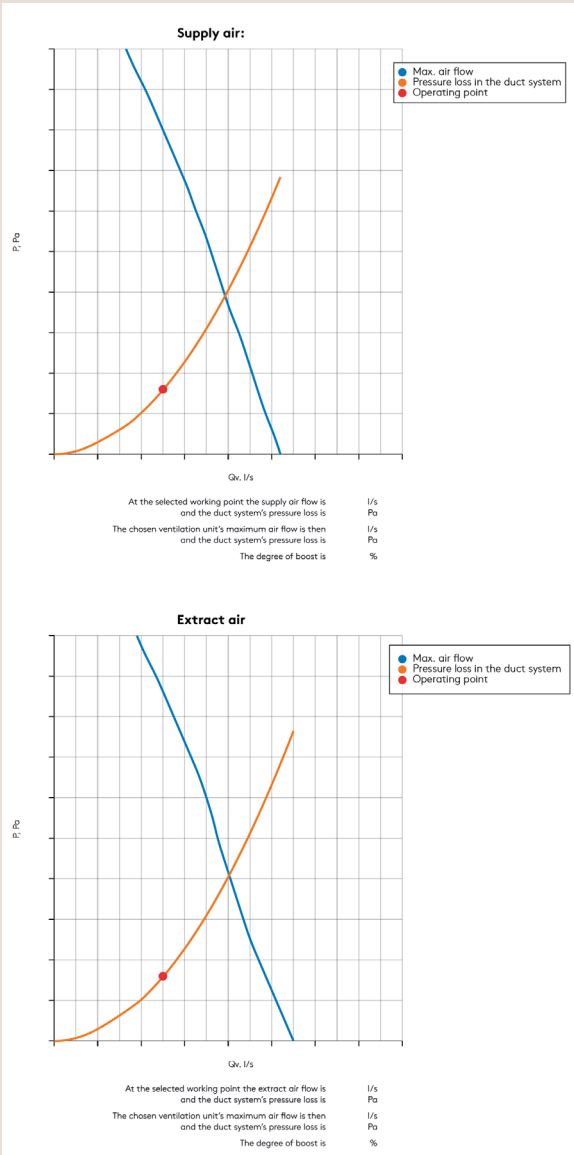
Energy used to heat the air EN13141-7

Preheating	0 kWh	
Reheating to 17 °C	237 kWh	447W peak load
Heating the supply air to 21 °C	1243 kWh	
Heating the infiltraded air to 21 °C	0 kWh	
Energy used to heat up ventilated air to 21°C	1481 kWh	
Energy used without heat recovery	7114 kWh	
Annual energy efficiency for room (21°C)	79 %	
Heating the infiltraded air to 17 °C	0 kWh	
Energy used to heat up ventilated air to 17 °C	237 kWh	
Annual energy efficiency for AHU (17 °C)	97 %	
Temperature efficiency of heat exchanger	82 %	
Temperature efficiency of air handling unit	80 %	

Acoustic data

Octave band (Hz)	63, L_w	125, L_w	250, L_w	500, L_w	1k, L_w	2k, L_w	4k, L_w	8k, L_w	L_{wa}
Sound emmited to:	dB	dB	dB	dB	dB	dB	dB	dB	dB(A)
supply air duct	68	69	68	57	52	49	44	37	62
extract air duct	60	63	61	45	34	33	21	19	54
outdoor air duct	60	63	62	47	35	31	21	18	55
exhaust air duct	67	68	68	56	52	48	43	36	62
kitchen bypass duct									
surroundings	50	44	45	37	28	19	12	11	39

surroundings at -4dB sound attenuation L_{pa} dB(A) 35



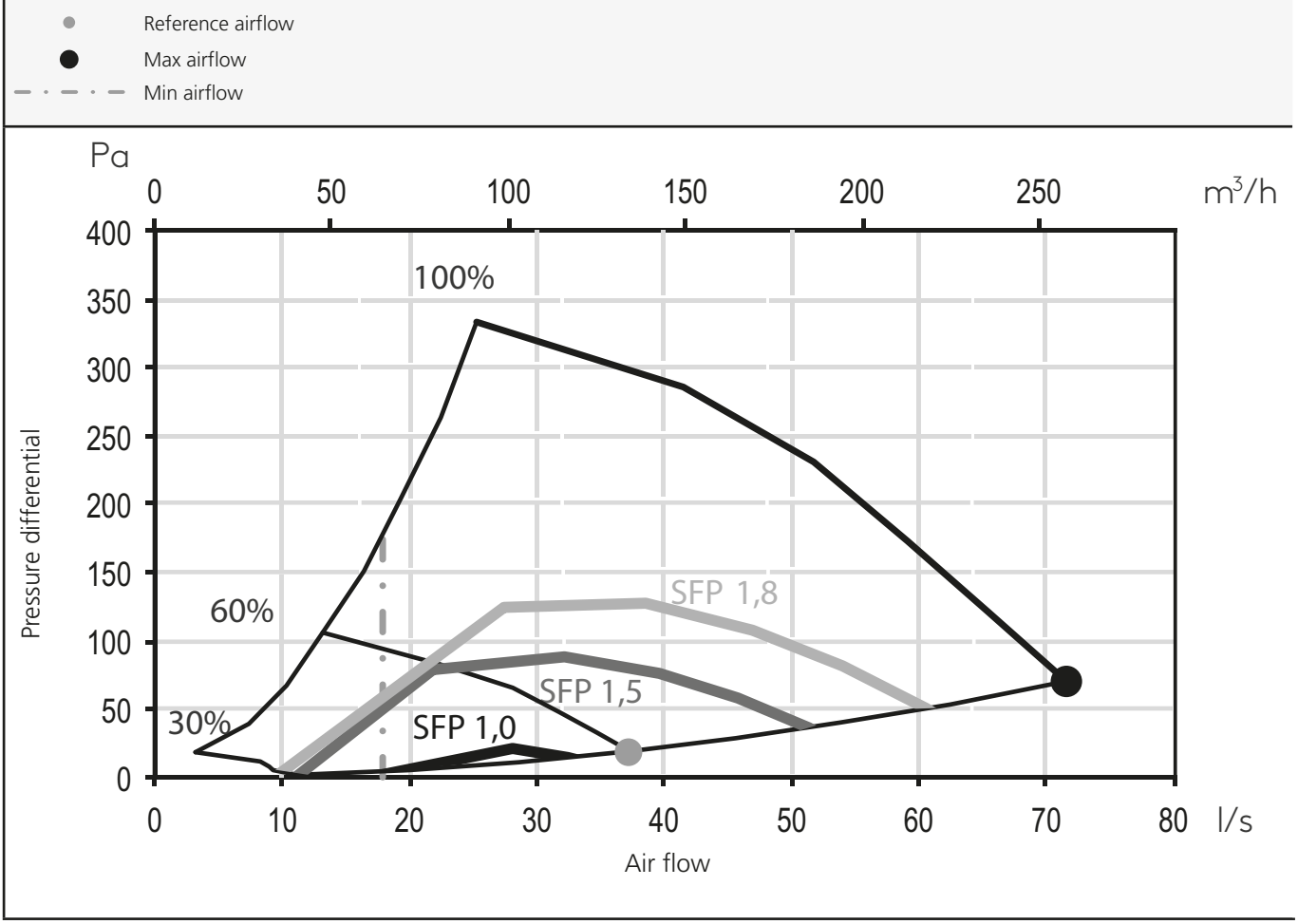
MagiCAD

3D models and CAD dimension sketches for all Swegon CASA products are available from MagiCloud. You can download DXF files directly from MagiCloud or use a MagiCAD plugin to transfer dimension sketches to the Revit and AutoCAD software packages.

www.magicloud.com

Air flows

Air flows
EN 13141-4
R2



Note! If the humidity production in the apartment is high, the boost margin must be at least 30%.

Acoustic data

See acoustic data on ProCASA.

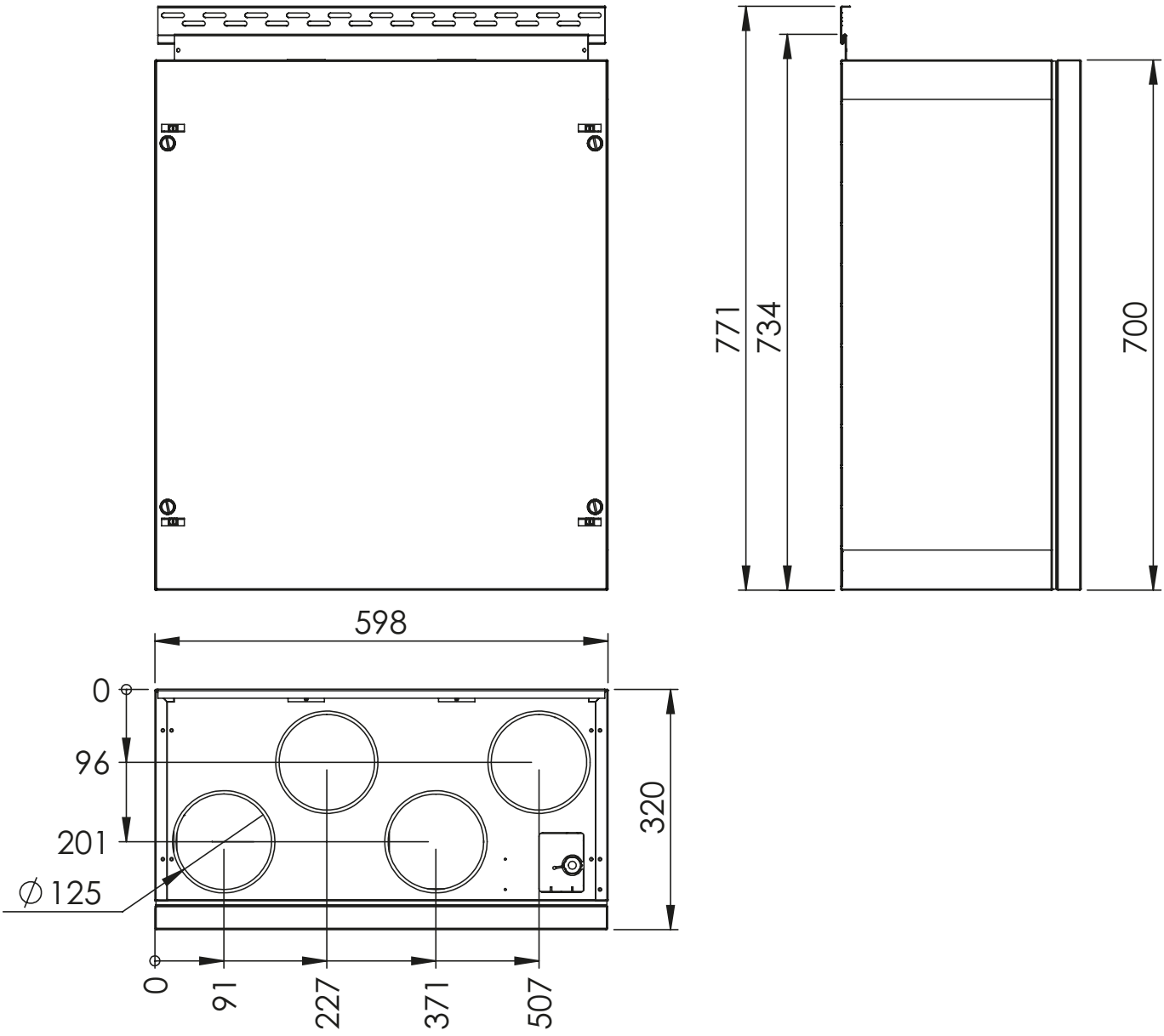
procasa.swegon.com

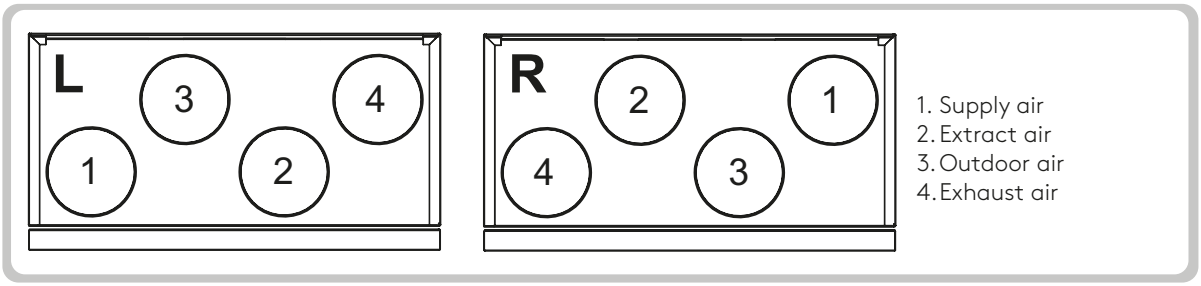
Dimensions and weight

Dimensions

R2

Weight of the unit: **48 kg**

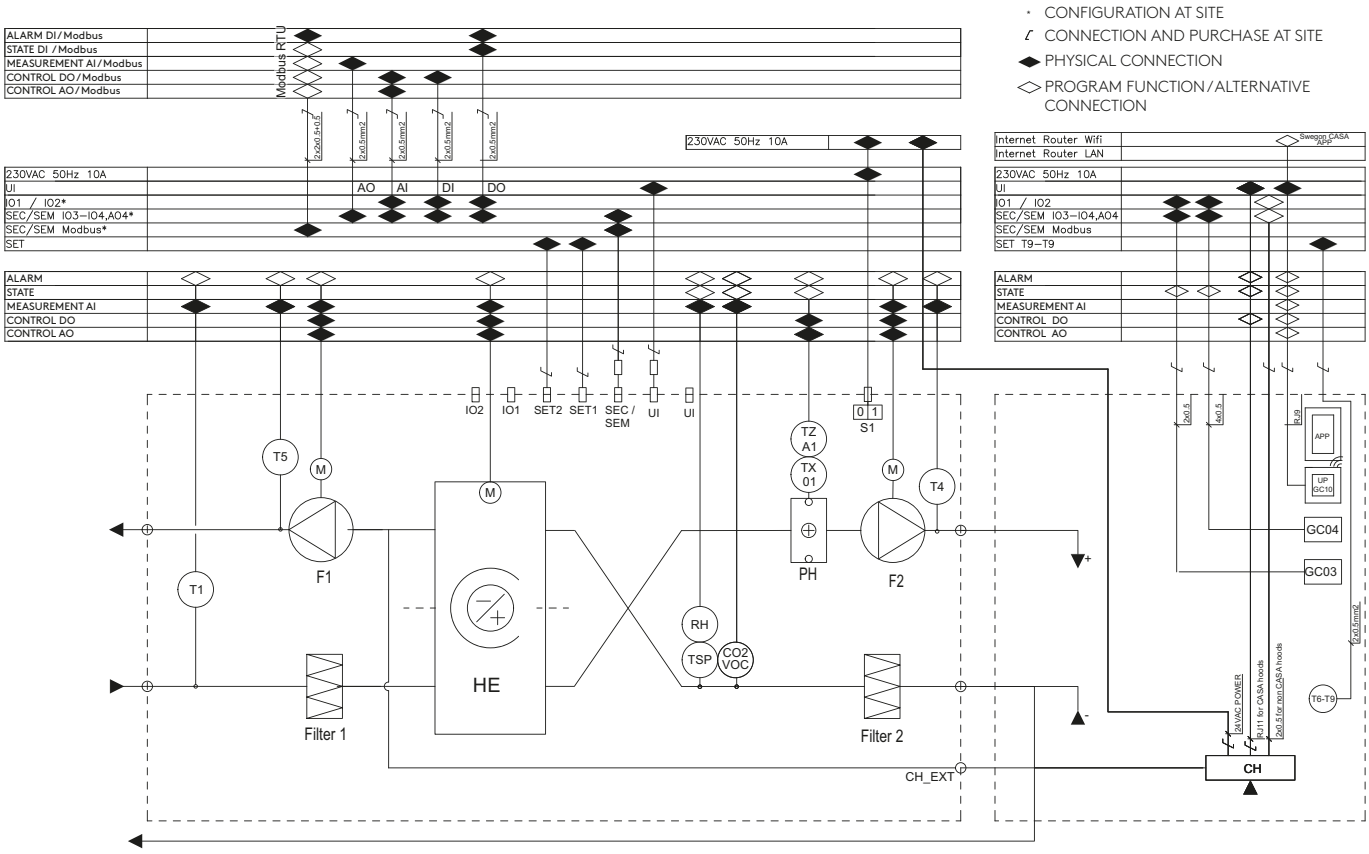




1. Supply air
2. Extract air
3. Outdoor air
4. Exhaust air

Functional diagram

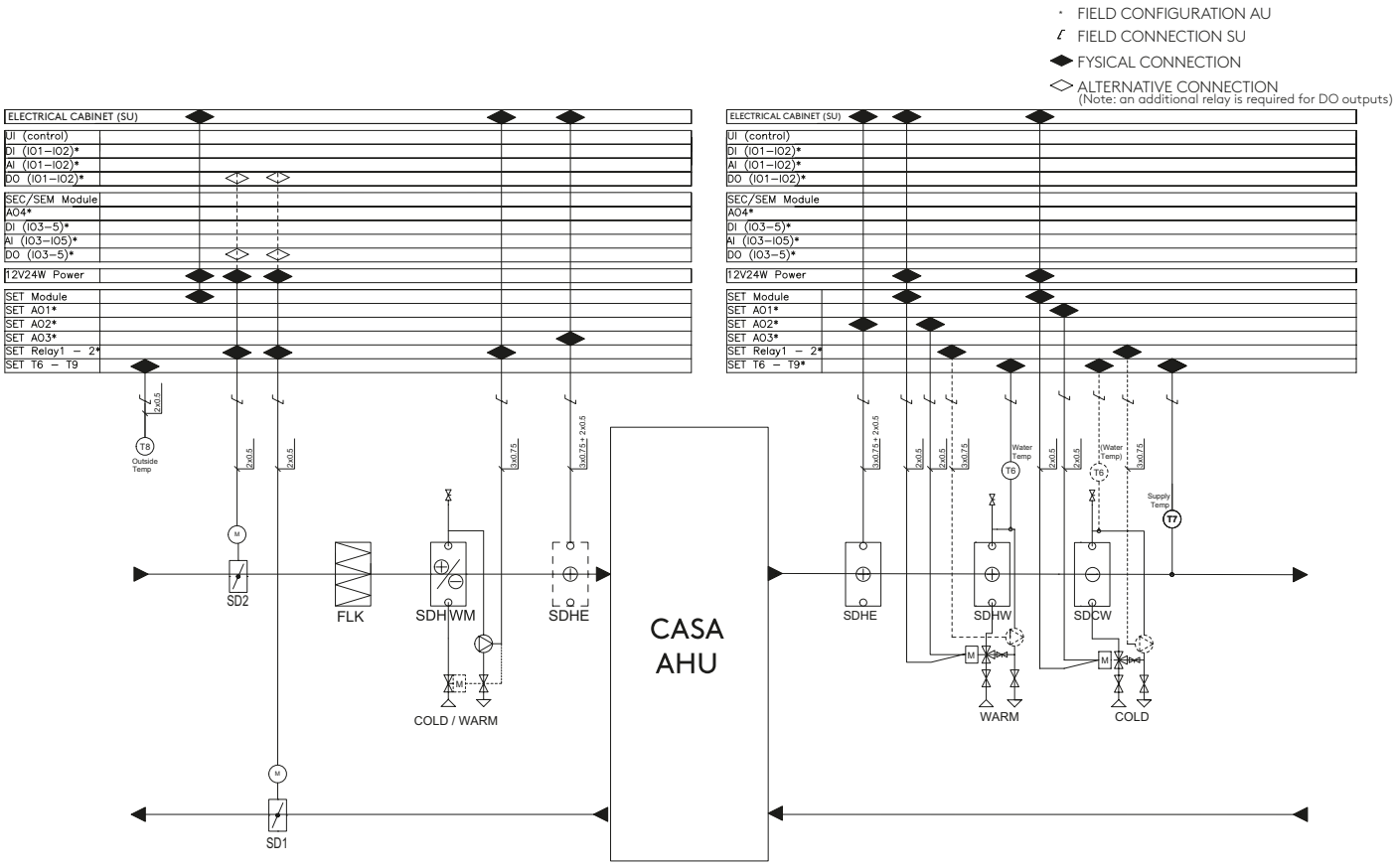
Functional diagram
R2



Device	Description	Modbus register
T1	Temperature sensor, outdoor air	3x6201 (0,1°C)
TSP	Temperature sensor, extract air	3x6204 (0,1°C)
T4	Temperature sensor, supply air	3x6203 (0,1°C)
T5	Temperature sensor, exhaust air	3x6205 (0,1°C)
TZ01	Manual overheat protection 60°C post heater	Alarm 3x6117
TZA1	Automatic overheat protection 50°C post heater	Alarm 3x6117
Filter 1	Fine filter ISO ePM1 55% (F7)	Service reminder info 3x6129
Filter 2	Fine filter ISO ePM1 55% (F7)	Service reminder info 3x6129
F1	**R:** Extract fan, **L:** Supply fan, including internal overheat protection.	Control 3x6304(%), RPM 3x6306
F2	**R:** Supply fan, **L:** Extract fan, including internal overheat protection.	Control 3x6303(%), RPM 3x6305
PH	Post heater (500W/700W), controlled steplessly according to demand (optional)	Control 3x6317 (%)
HE	Rotating heat exchanger (Rotor)	
HE M	A heat exchanger motor which speed is steplessly controlled based on the temperature and humidity of the supply air	Control 3x6332 (0.1xRPM)
S1	Use Switch. Note! power off the unit by removing the socket from the Mains when Service	
RH	Humidity sensor for RH automation	RH 3x6214
CH_EXT	Extra duct connection for the cooker hood. Duct bypasses the heat exchanger. Note! Do not connect the general ventilation of the kitchen here. Connect the hood status information to the ventilation unit. (If cooker hood is not installed below the unit, ensure that duct plug and insulation plates (accessory: R000040) are installed in the bottom of the unit.)	

Functional diagram

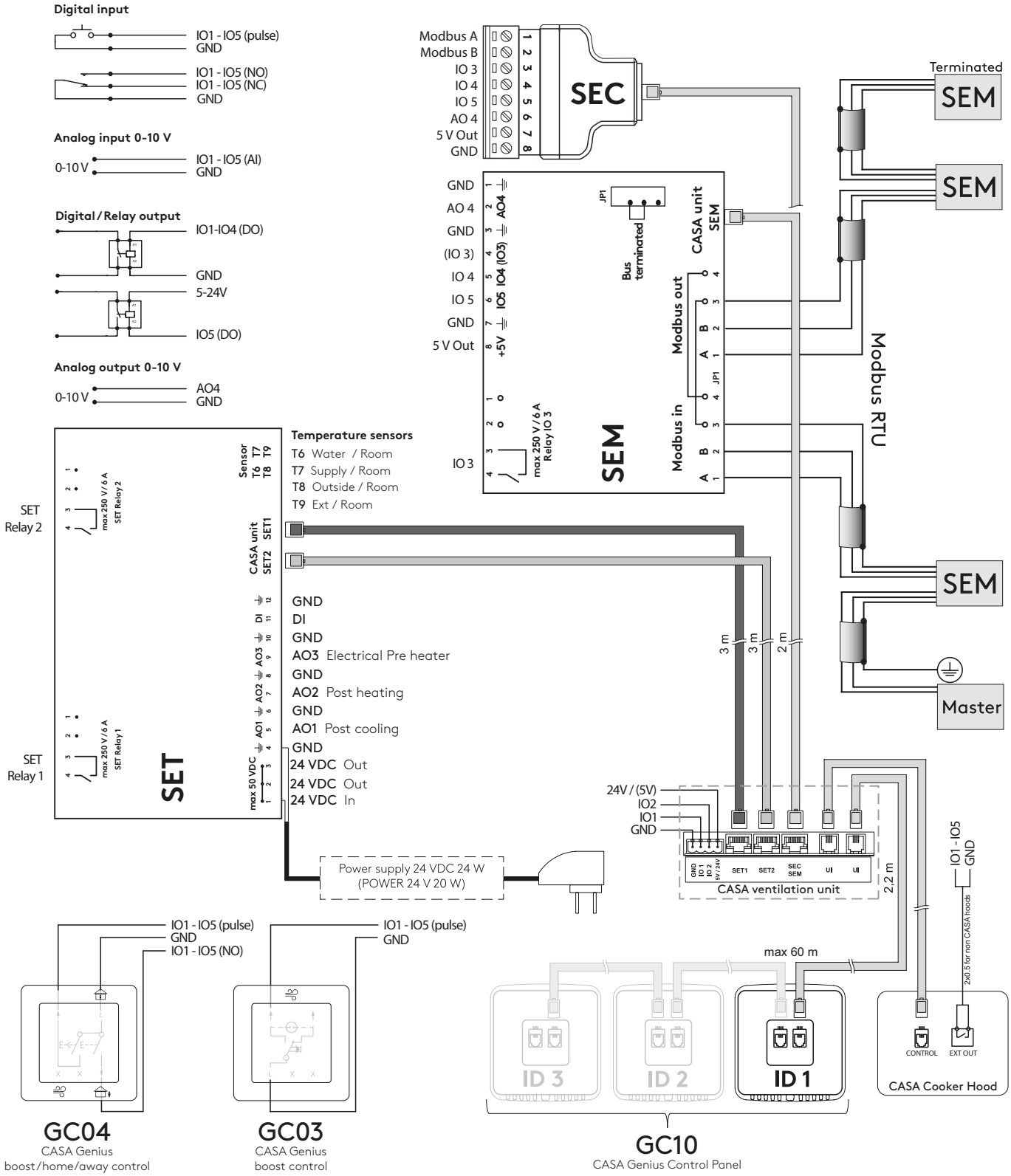
Duct actuators



Device	Description
T6-T9	Temperature sensor. Connection to the SET module. The sensor must be defined on the control panel.
SD1, SD2	Duct Plate for Outdoor / Exhaust duct.
FLK	Duct filter in combination with an electric pre heater (SDHE)
SDHWM	Ground Liquid preheating/cooling coil for outdoor air duct. (Inc SET, heating/cooling coil, sensor)
SDHE	Electrical duct heater for Supply / Outdoor air duct (Inc. SET, duct heater and sensors) Note! A duct filter (FLK) is required for the preheater.
SDHW	Heating coil for supply air duct (Inc. SET, three-way valve + actuator, heating coil, sensors).
SDCW	Cooling coil for supply air duct (Inc. SET, three-way valve + actuator, cooling coil, sensors).
CO2	CO2 sensor for CO2 automation
VOC	VOC sensor for VOC automation
SEM	Modbus module (Inc. 2m RJ-45 cable)
SEC	IO extension module (Inc. 2m RJ-45 cable)
SET	Connection module for duct batteries and temperature sensors. (Inc. 2 x 3m RJ-45 cable)
APP	Swegon CASA mobile application for ventilation control and monitoring. Requires a Genius control panel (GC10) to operate.
UP GC10	Genius control panel that can be connected to Swegon CASA application via WiFi.
GC04	Control switch to select boost, home and away mode.
GC03	Control switch to select boost mode.
CH	Cooker hood. The CASA hood is connected to the ventilation unit with a modular cable. With other hoods, you can control the cooking function with a switch input that is determined for the function.

Connections

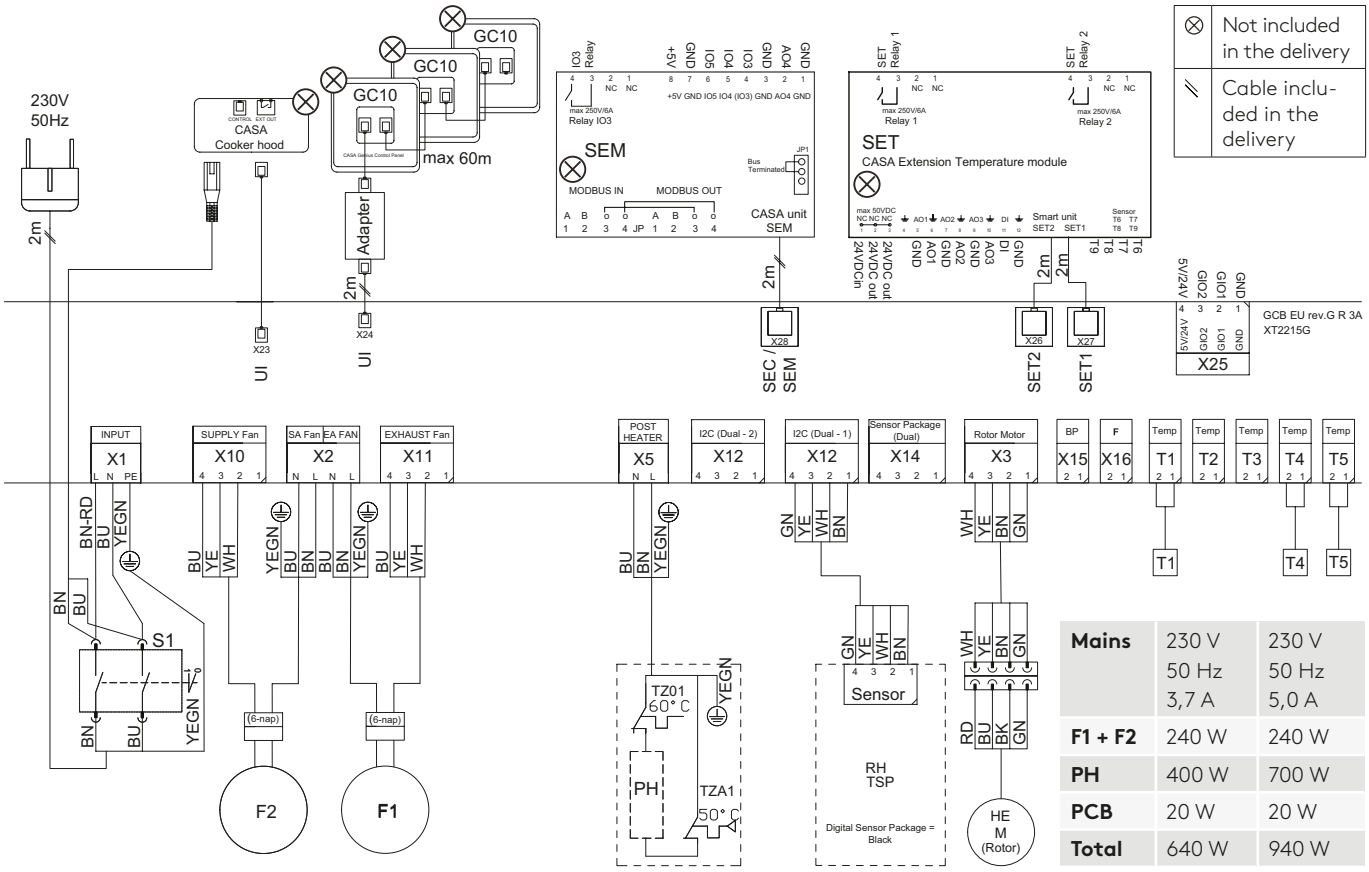
External connections
CASA Genius



SEC IO extension cable with Modbus RTU
SEM IO extension module with relay and Modbus RTU (input and output connections)
SET IO extension module for control of external accessories

Electrical wiring diagram

R2



Mains	230 V 50 Hz 3,7 A	230 V 50 Hz 5,0 A
F1 + F2	240 W	240 W
PH	400 W	700 W
PCB	20 W	20 W
Total	640 W	940 W

Device	Description
T1	Temperature sensor, outdoor air
T4	Temperature sensor, supply air
T5	Temperature sensor, exhaust air
PH	Air heater, post heating
TZ01	Manual overheat protection
TZA1	Automatic overheat protection
F1	**L:** Supply fan **R:** Extract fan
F2	**L:** Extract fan **R:** Supply fan
HE M	Rotor's motor
S1	Use Switch
RH, TSP	Humidity sensor + Extract air temperature sensor
UI	Connectors for control panel / cooker hood
SEC/SEM	Connector for connecting the SEC or SEM module
SET 1&2	Connectors for connecting the SET module
5V/24V	24V voltage output (IO max 125 mA/3W)
IO 1&2	Two general-purpose IO connectors

Installation options

Ventilation unit installation site

The ambient temperature where the ventilation unit will be installed must be between +10 - (+50) °C. Due to the risk of disruptive noise, the ventilation unit should not be installed on the wall towards the living room or bedroom.

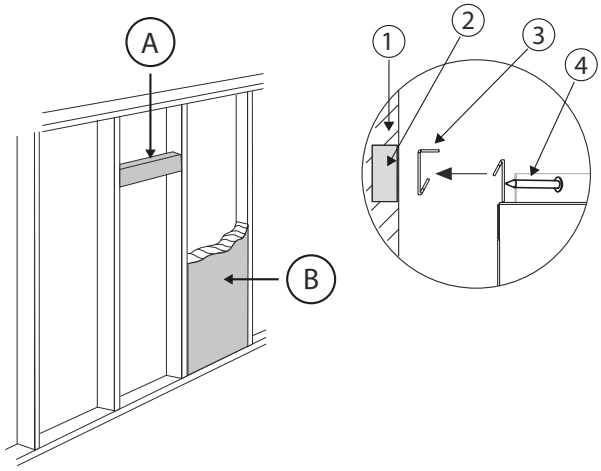
Wall mounting

A wall mountin bracket is supplied together with the ventilation unit.

If it is a question of a light partition wall, the wall must be reinforced with horizontal studs **(A)** that support the weight of the ventilation unit. In addition, Swegon also recommends that the wall be insulated with mineral wool or similar insulation **(B)** for preventing sound from propagating to other rooms.

Screw the wall mounting bracket firmly in a horizontal position onto the wall where a wall stud will support the weight of the unit. Lift up the ventilation unit onto the wall mounting bracket. Secure installation with locking screw.

The space between the unit and the wall/ceiling must be insulated to prevent the transmission of sound coming from the rear wall and top of the unit to the room. The sound from top of the unit and from the duct connections must be isolated from the room space.



1	Insulated wall
2	Horizontal stud
3	Wall mounting bracket
4	Locking screw

Product codes

R2

Product	Product code	GTIN
CASA R2 Genius L 400W RH	R02VL04G00H	6430080090068
CASA R2 Genius L 700W RH	R02VL07G00H	6430080090075
CASA R2 Genius L 700W RH+CO2	R02VL07G00C	6430080090082
CASA R2 Genius R 400W RH	R02VR04G00H	6430080090099
CASA R2 Genius R 700W RH	R02VR07G00H	6430080090105
CASA R2 Genius R 700W RH+CO2	R02VR07G00C	6430080090112

Accessories

Product	Product code	GTIN
Cooker hood duct plug and insulation plates	R000040	
R02 Extension piece towards the ceiling, white	R02EPW	
R02 Extension piece towards the ceiling, stainless steel	R02EPS	
Cover panel Sound insulated White	TB00015	
Cover panel Sound insulated Stainless steel	TB00018	
Cover panel Sound insulated Black	TB00015S	
Kitchen door installation kit, magnet	TB00316	
Filter set ISO ePM1 55% (F7) 2kpl	R02FS	6415879071947

CASA – Accessories

Control accessories	Part no.	GTIN
GC10 CASA Genius control panel and WiFi	GC10	6430080090846
GC10 control panel + 10 m long cable	GC14	6430080090853
GC10 control panel + 10 m long cable + frame	GC15	6430080090860
GC10 control panel + frame	GC16	6430080090877
Frame for control panel GC10	102SAK	6415879066752
CASA Genius boost/home/away control button	GC04	6430080090013

Building automation	Part no.	GTIN
Modbus connection module	SEM	6415879067346
Connection cable (configurable I/O) for Genius ventilation units	SEC	6415879067353
Room temperature sensor, total package with connection unit for ventilation units. The sensor is installed on the wall or in a recessed junction box (60 mm between holes).	WSTC	6415879069395

Automatic functions	Part no.	GTIN
RH + CO2 automation	GRHCO2	6430080091454
RH + CO2 + VOC automation	GRHCV	6430080091461

Waterborne air coolers	Part no.	GTIN
Cooling coil package Ø 160	SDCW160	6415879068053

Waterborne air heaters	Part no.	GTIN
Heating coil package Ø 125	SDHW125	6415879068039

Brine air heater/cooler for ground source heat pump	Part no.	GTIN
Heating/cooling coil Ø250, G4	SDHW250F	6415879068084

Electric air heater	Part no.	GTIN
Electric heater Ø 125	SDHE125-1T	6415879067230
Prefilter box Ø 125 mm, G4	FLK12	6415879067452

Duct mounted shut-off dampers	Part no.	GTIN
Damper Ø 125 mm	SDD125	6415879069890

Other accessories	Part no.	GTIN
Connection module for control of the duct mounted air heater/cooler / control of shut-off dampers	SET	6415879067339
SET / power source for actuators	POWER24V20W	6415879068404
PTH Regulation for constant duct pressure	PTH	6415879067285
Shaped condensation insulation for the ducts, straight section, Ø125 mm, L1000	9000476	6415879070049
Shaped condensation insulation for the ducts, elbow 90, Ø125	9000480	6415879070056
Splicing tape	9000483	6415879070070

Feel good **inside**

Swegon