

# CASA R3 Genius

Technical catalogue



## QUICK FACTS

- CASA Genius control system
- Moisture-recovering enthalpy heat exchanger
- Automatic indoor air humidity control
- Continuous ventilation without the need for frost protection
- Automatic summer function and passive cooling
- External coils for heating and cooling as an option
- Can be connected to the automated building management system (I/O/Modbus)
- Mounted on the wall or ceiling

## UNIT TECHNICAL CONTENT

Air flow range	HRV: 74-174 cfm   35-82 l/s ERV: 74-174 cfm   35-82 l/s
Dimensions, w x l x h	23.6 x 14.4 x 27,6 inch (599 x 369 x 700 mm)
Duct outlets	4 x Ø 5 inch (125 mm)
Energy calculations and acoustic data	<a href="http://procasa.swegon.com">procasa.swegon.com</a>
Connection power	853 BTU/hr (250 W)
Power connection	220-240 V, 50-60 Hz, MOP 10 A
Fans	230 W, EC
Filters	MERV13 filters for supply air and for extract air
Colour	Exterior White, RAL 9016 (corresponds to NCS S0502-G50Y)

# Content

<b>Technical description .....</b>	<b>3</b>
<b>CASA Genius control .....</b>	<b>6</b>
<b>Design data .....</b>	<b>8</b>
Air flows .....	10
Functional diagram .....	12
External connections .....	14
Electrical wiring diagram .....	15
<b>Installation.....</b>	<b>16</b>
<b>Dimensions and weight.....</b>	<b>17</b>
<b>Product codes .....</b>	<b>18</b>
<b>Performance Summary Sheet .....</b>	<b>19</b>

# Technical description

## Swegon CASA R3 Genius

Air handling unit with the market's lowest sound level. Air handling unit with rotary heat exchanger (23.6 x 14.4 x 27.6 inch, 5 Øinch) suitable installation in smaller homes (170 cfm, 1615 ft<sup>2</sup>). The market's most intelligent demand-controlled humidity function is standard. Developed, manufactured and tested for North American climate.



## Indoor environmental quality

### Ventilation control

The unit is controlled steplessly with automation functions to guarantee the best indoor environmental quality. The user can select five operating modes home, away, boost, travelling and home+ by using control panel or Swegon CASA app. Operation modes can be set by defining a weekly programs on CASA controller or CASA app.

### Temperature control

The supply air temperature is controlled with heat exchanger. Supply air temperature can be heated or cooled further using optional electric/hydronic heating coil or hydronic cooling coil.

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:

- HRV **R** (exhaust air right)
- ERV **R** (exhaust air right)

## Components

### Fans

CASA R3 is equipped with energy efficient EC fans.

### Filter

The ventilation unit is equipped with MERV13 filters for supply air and for extract air. The need of filter replacement is indicated on the control panel.

### Heat exchanger

The ventilation unit is equipped with a **speed controlled rotary heat exchanger**. Heat 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

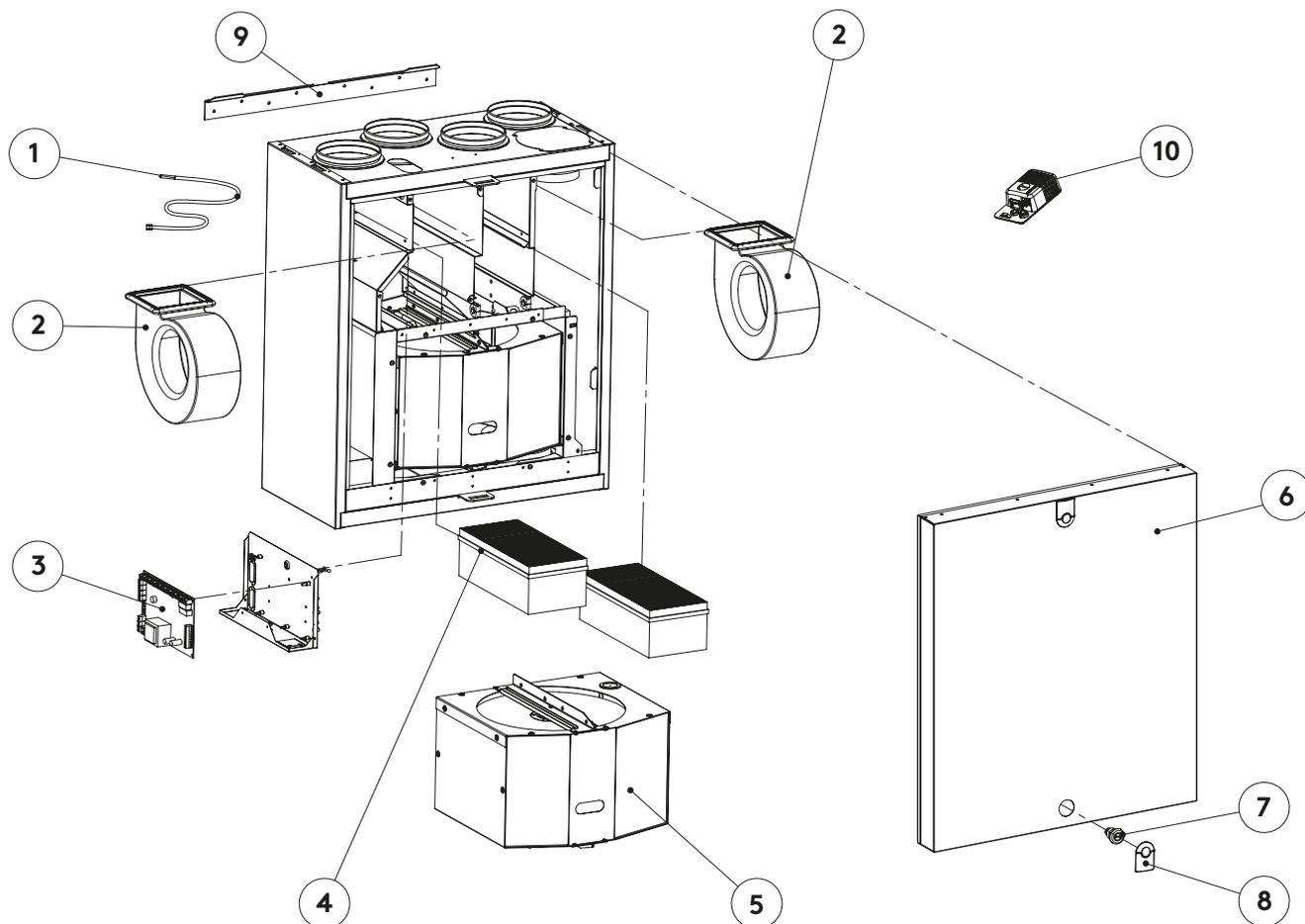
If a sensor fault is detected, an alarm is generated. If the faulted sensor is critical the ventilation unit is stopped. The ventilation unit returns to normal mode once the fault has been corrected.

### The delivery includes

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

### Standard connections

- Power cord with earthed plug (6,6 ft | 2 m)
- Modular cable with RJ9 connector (4,9 ft | 1.5 m)
- Freely configurable I/O contacts for connection of accessories (2 pcs.)



1. Temperature sensors
2. Fan (left + right)
3. Genius control board
4. MERV13 filters for supply air and for extract air
5. Heat exchanger package
6. Door
7. Lock
8. Cover plate of the lock
9. Wall mounting bracket
10. Sensor package

## Swegon CASA Genius

# Intelligent control of the ventilation

Using the Swegon CASA Genius control system, residents can monitor the quality of the indoor air (RH, CO<sub>2</sub>, VOC, °F, °C), control the ventilation according to need or allow the intelligent control to regulate the ventilation automatically.

### Swegon CASA control panel



Wall-mounted touch screen for external or flush mounting. From the touch screen, it is possible to monitor ventilation, change the ventilation's operating mode, change the equipment's settings and commission the ventilation unit. The screen can be connected to the home's WLAN network, enabling the ventilation to be controlled remotely from a mobile app.

### The Swegon CASA app



Using this app, the home owner can use all the functions in the control panel remotely from their own smartphone. With the aid of the app, the user has access to more information about their home's air quality as well as valuable instructions and advice about the ventilation (needs Swegon Genius control panel).

### The CASA Service app

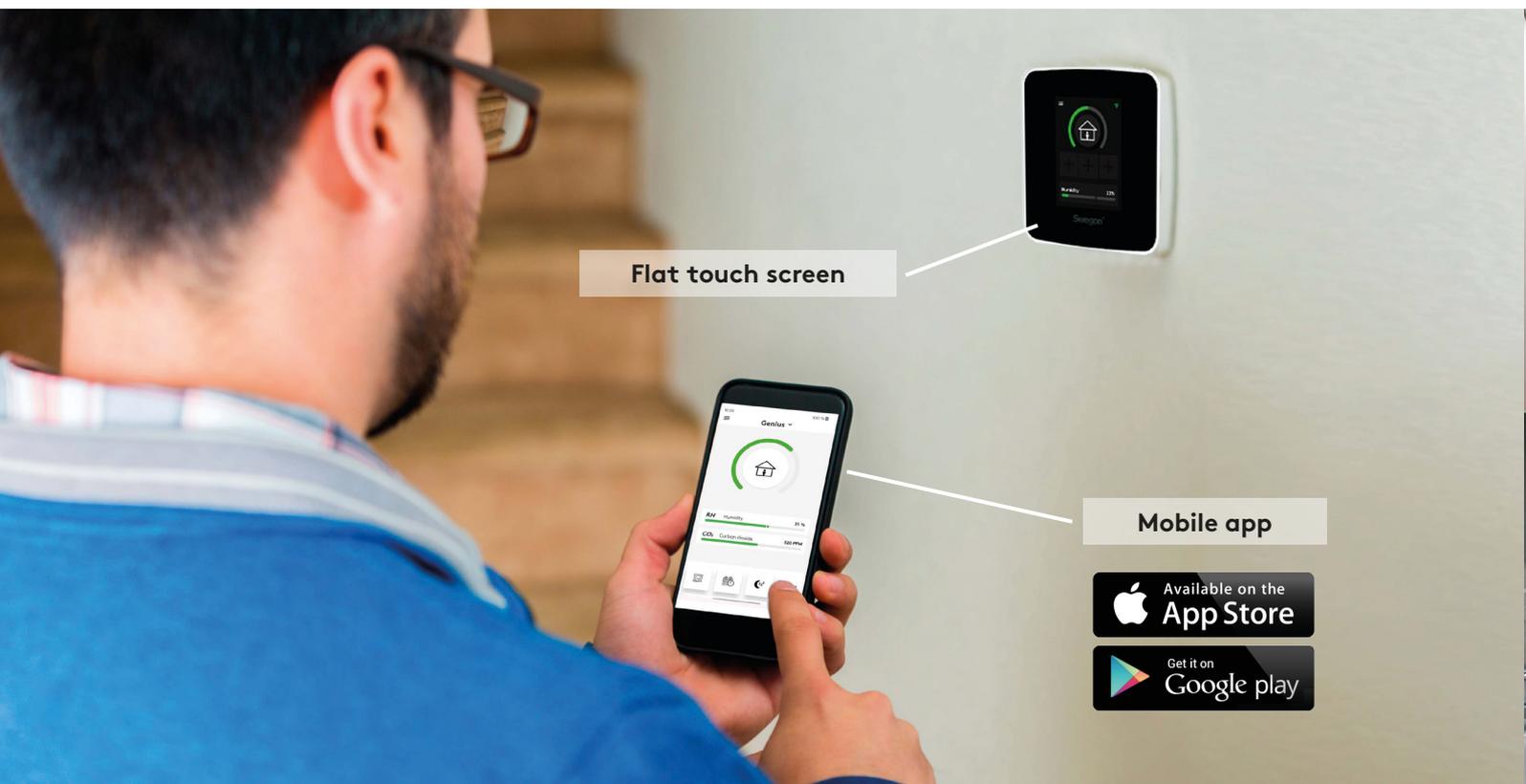


App for installation engineers/service engineers, which provides assistance when commissioning the ventilation unit. The app works locally together with the ventilation unit and does not require connection to a network. For example, the app defines the I/O connections, presets the percentage values for the fan speeds that correspond to specified air volumes, as well as automatically setting air volumes for home and boost mode. Finished settings can be saved in the app and copied to the next home (needs Swegon Genius control panel).

### 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).



Flat touch screen

Mobile app





## 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.



RH Humidity 35%



### 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.



CO<sub>2</sub> Carbon dioxide 520 PPM



### Automatic CO<sub>2</sub> 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.



VOC Air quality 950 PPM

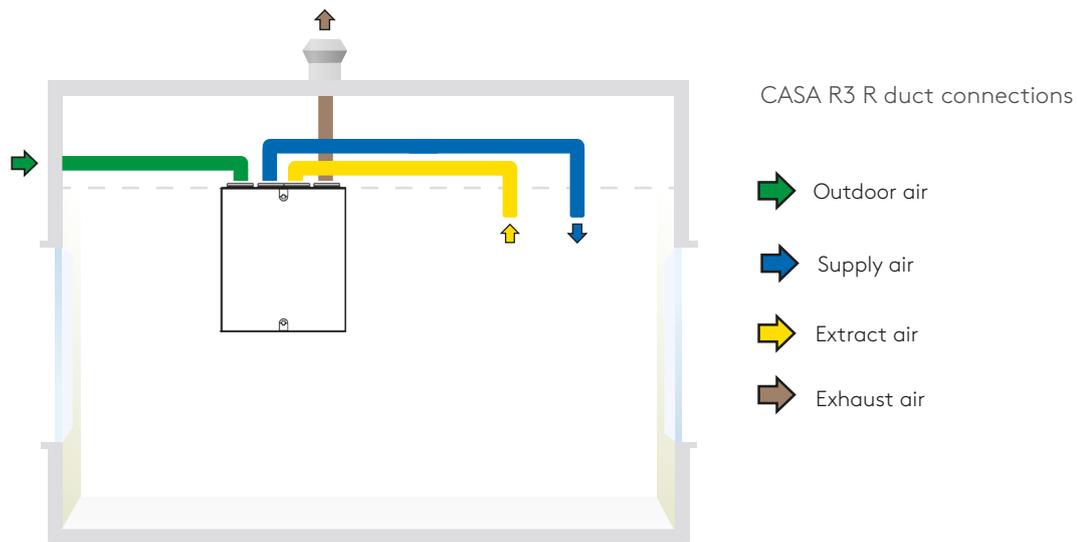


### Automatic VOC system as optional equipment

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



# Design data



# ProCASA®

Energy calculation, functional diagram and acoustic data on ProCASA.

procasa.swegon.com



### Energy calculator

Select area: CAN - Ottawa

Source: ASHRAE Fundamentals 2021

cool, temperate climate  
CERTIFIED COMPONENT  
Passive House Institute

Energy calculation and dimensions

Project: \_\_\_\_\_  
Customer: \_\_\_\_\_  
Designed by: \_\_\_\_\_  
Location: \_\_\_\_\_

Default values: Imperial / cfm

Air flow: Supply air 127 cfm, Extract air 127 cfm  
Duct pressure: 0.32 in. w.g.  
Cooker hood airflow: 0 cfm  
usage time per day: 0 h/d  
Indoor temperature 70°F  
Minimum supply air temperature (+50°F...+70°F): +50 +51 +52 +53 +54 +55 +56 +57 +58 +59 +60 +61 +62 +63 +64 +65 +66 +67 +68 +69 +70

Max airflow rate: 500 cfm  
Sound power level: 44 dB(A)

#### Fan power and energy use EN13141-7

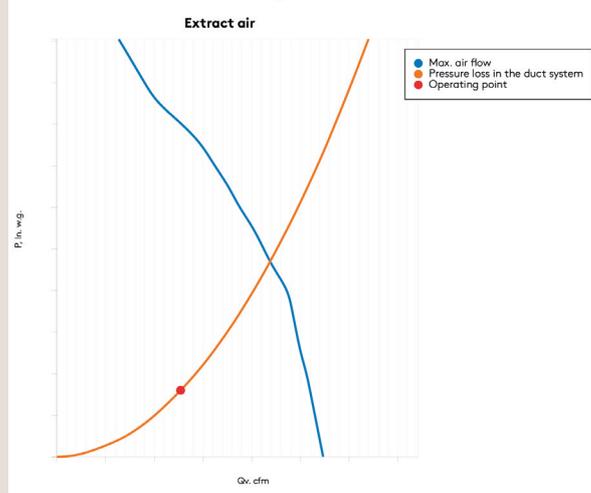
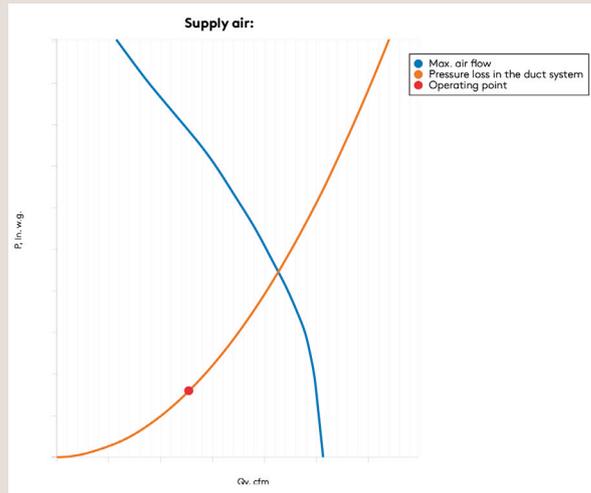
Supply air	23 W
Extract air	0.34 W/cfm
SFP	0.34 W/cfm
SFP	0.34 W/cfm
Annual energy use of fans	1,375 kBtu

#### Energy used to heat the air EN13141-7

Reheating 63 °F	1,380 kBtu	422W peak load
Energy used without heat recovery	28,730 kBtu	
Annual energy efficiency for AHU (63 °F)	95 %	
Temperature efficiency of heat exchanger	85 %	
Temperature efficiency of air handling unit	80 %	

#### Acoustic data

Octave band (Hz)	63	125	250	500	1k	2k	4k	8k	L <sub>w</sub>		
	L <sub>w</sub>	dB(A)									
supply air duct	70	71	57	52	46	41	24	16	57		
extract air duct	64	68	60	42	36	27	18	14	55		
outdoor air duct	65	69	61	44	40	33	23	15	56		
exhaust air duct	69	71	61	55	49	47	32	25	59		
surroundings	49	51	43	34	27	24	24	26	40		
surroundings at -4dB sound attenuation										L <sub>pA</sub> dB(A)	36



## 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

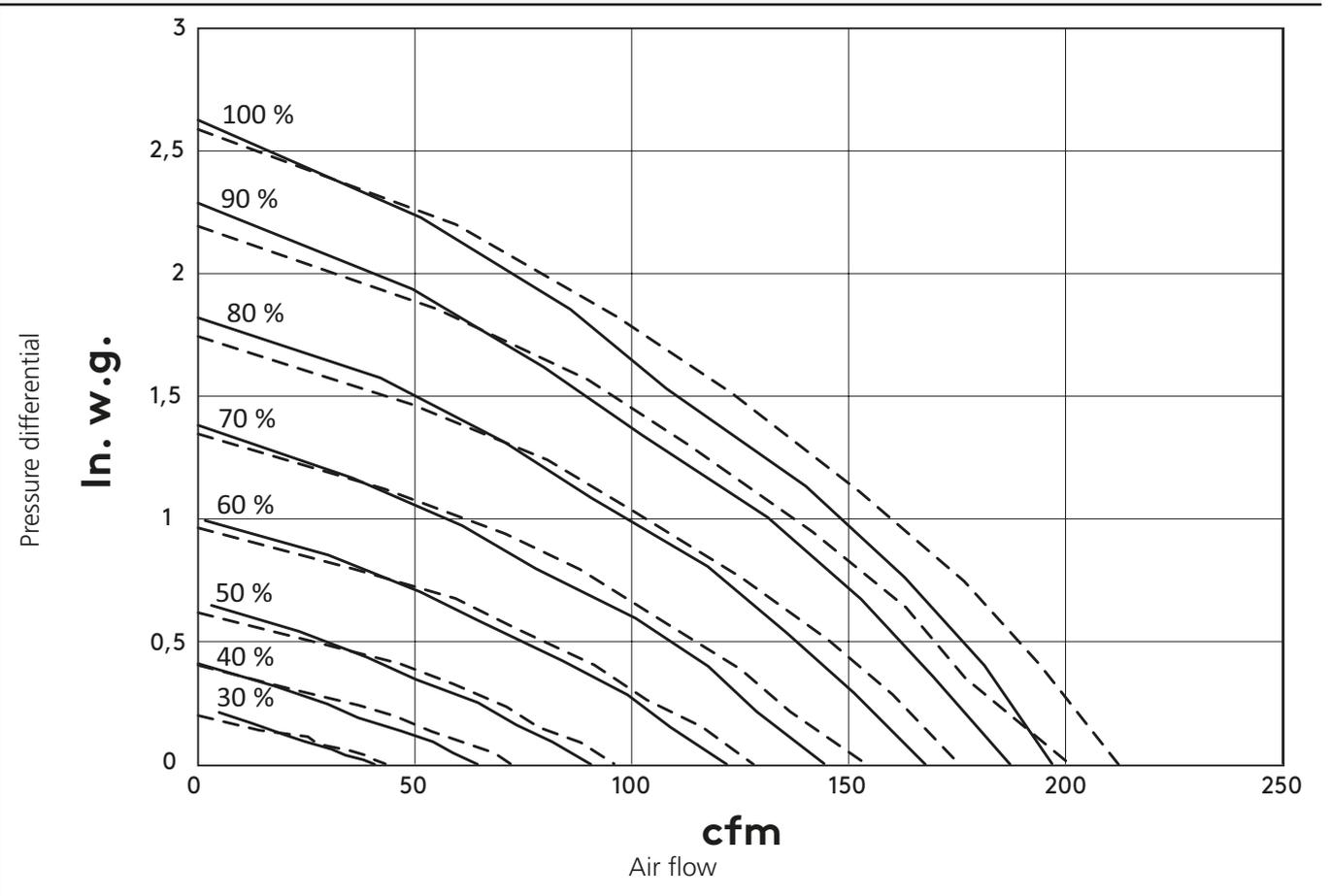


# Air flows

Air flows EN 13141-4

## R3

- Supply airflow
- - - Extract airflow



### Considerable in dimensioning

The boost margin must be at least 30%

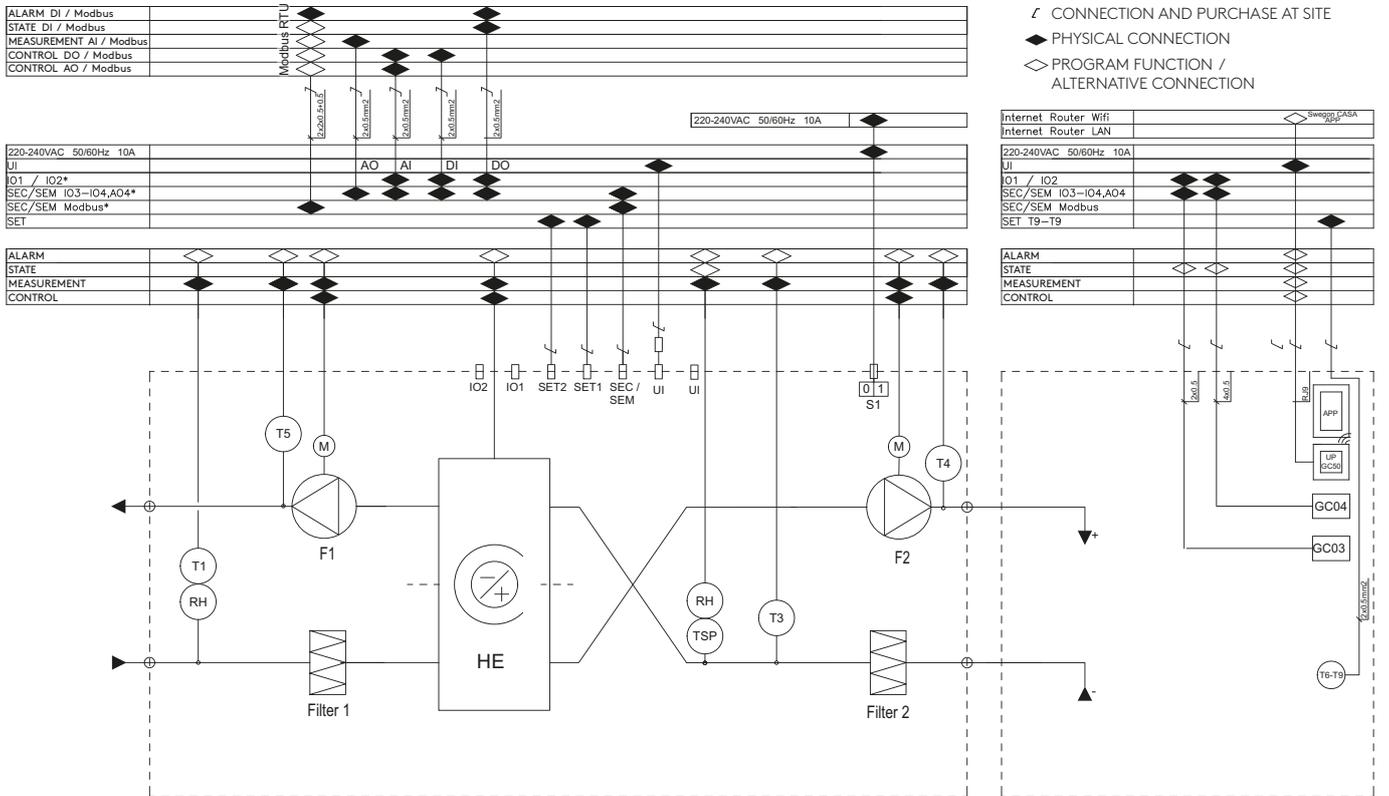




# Functional diagram

## Functional diagram

### R3



- CONFIGURATION AT SITE
- ◊ CONNECTION AND PURCHASE AT SITE
- ◆ PHYSICAL CONNECTION
- ◇ PROGRAM FUNCTION / ALTERNATIVE CONNECTION

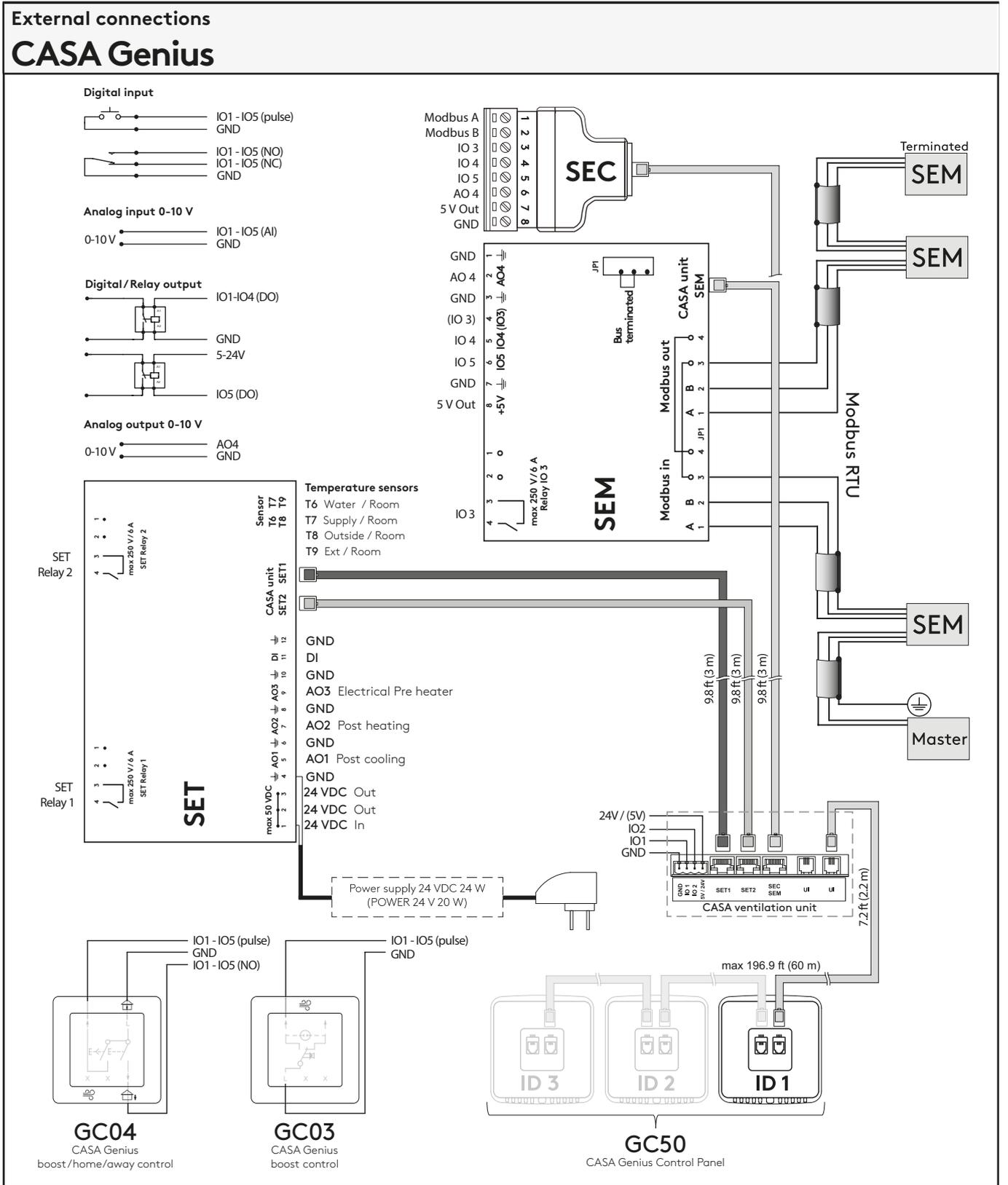
Device	Description	Modbus registers
T1	Temperature sensor, outdoor air	3x6201
T2	Temperature sensor, extract air	3x6204
T4	Temperature sensor, supply air	3x6203
T5	Temperature sensor, exhaust air	3x6205
Filter 1	Fresh air fine filter MERV13	Service reminder info 3x6129
Filter 2	Extract air fine filter MERV13	Service reminder info 3x6129
F1	Extract fan including internal overheat protection.	Control 3x6304(%), RPM 3x6306
F2	Supply fan including internal overheat protection.	Control 3x6303(%), RPM 3x6305
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
TSP	Extract air temperature sensor for humidity measurement	
UI	Connectors for the control panel. One connection point is wired outside the unit.	
SEC/SEM	Connector for connecting the SEC or SEM module.	
SET 1&2	Connectors for connecting the SET module.	
5V/24V	24V voltage output, which can be changed to 5V output with a jumper on the circuit board. (IO max 125 mA/3W)	
IO 1&2	Two general-purpose IO connectors. Connectors must be configured for the desired functions.	
GND	Ground for IO connections.	



Accessories	
CO2	CO2 sensor for CO2 automation
VOC	VOC sensor for VOC automation
SEM	Modbus module (Inc. 2m RJ-45 cable)
SEC	IO extension module
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 (GC50) to operate.
UP GC50	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.

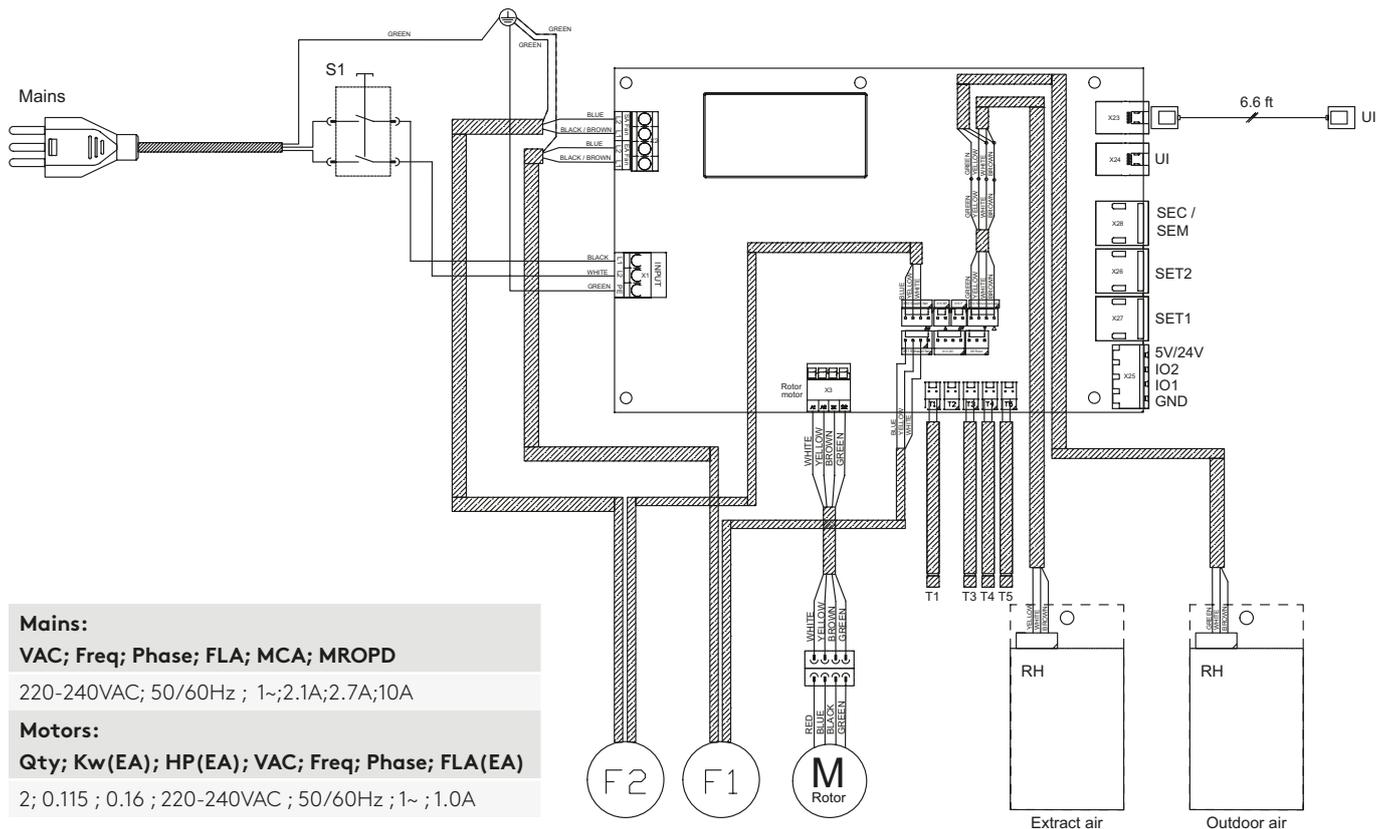


# External connections



- 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



**Mains:**  
**VAC; Freq; Phase; FLA; MCA; MROPD**  
 220-240VAC; 50/60Hz ; 1~; 2.1A; 2.7A; 10A

**Motors:**  
**Qty; Kw(EA); HP(EA); VAC; Freq; Phase; FLA(EA)**  
 2; 0.115 ; 0.16 ; 220-240VAC ; 50/60Hz ; 1~ ; 1.0A

Device	Description
T1	Temp. sensor, outdoor air
T3	Temp. sensor, return air
T4	Temperature sensor, supply air
T5	Temperature sensor, exhaust air
F1	Extract fan
F2	Supply fan
M Rotor	Rotor's motor
RH	Sensor package RH
UI	Connectors for control panel/cooker hood

# Installation options

## Installation site

The temperature of the operating area of the ventilation unit must be at least  $-4\text{ }^{\circ}\text{F} / -20\text{ }^{\circ}\text{C}$ .

The temperature in the space where the unit will be installed must be more than  $+50\text{ }^{\circ}\text{F} (+10\text{ }^{\circ}\text{C})$ .

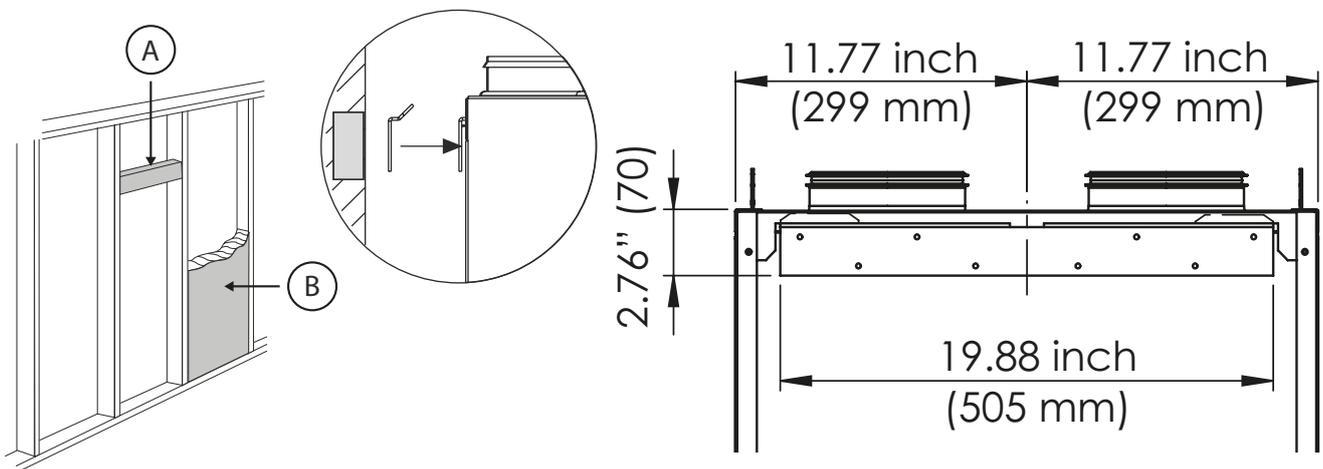
Due to the risk of disruptive noise, the ventilation unit should not be installed on the wall towards the living room or bedroom.

## Wall mounting

A wall mounting 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 mount firmly in 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 so that the ears on the bracket engage in the corresponding notches at the top on the backside of the unit.



## Ceiling mounting

The ventilation unit can also be mounted in a ceiling mounting frame (available as an accessory) on the ceiling.

The ceiling mounting frame must not be used as part of a support structure for the ducts, the duct support must be sufficient even without the support effect provided by the ceiling mounting frame.

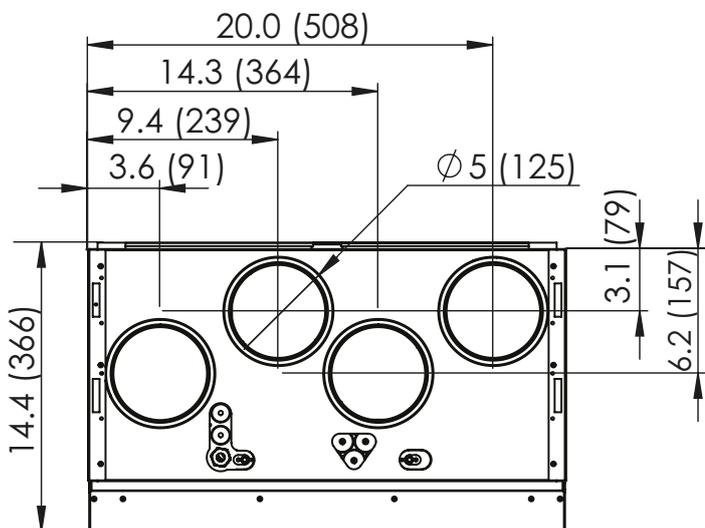
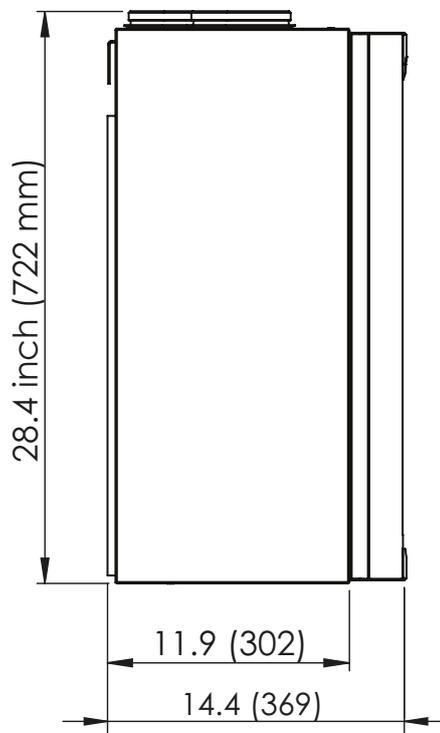
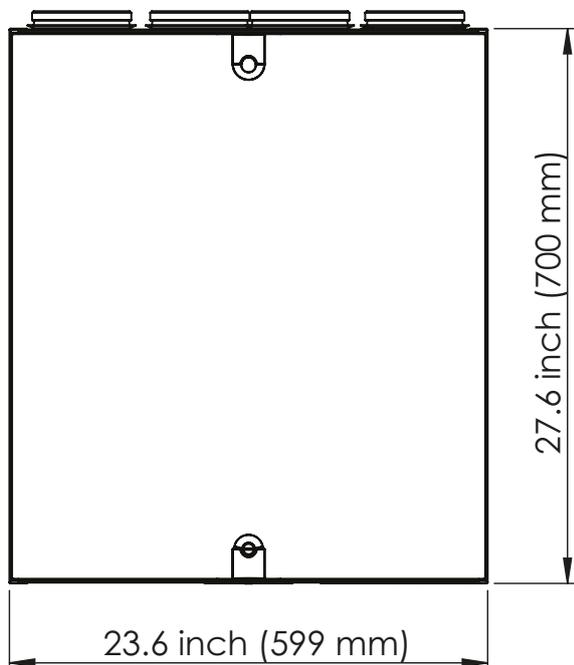
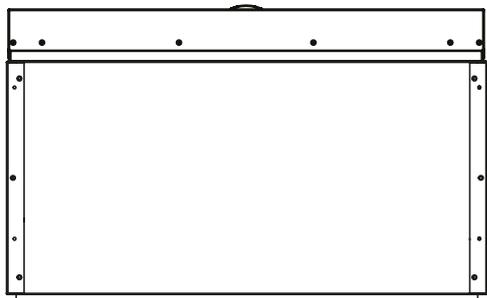


# Dimensions and weight

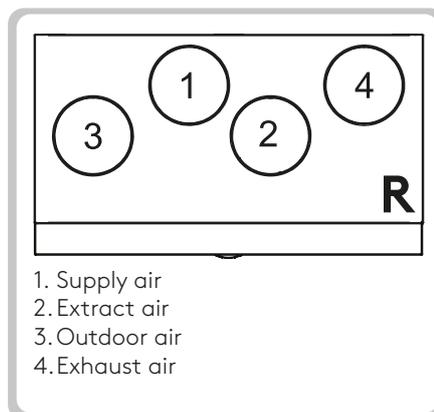
## Dimensions

### R3

Weight of the unit: **119 lbs (54 kg)**



R3 R



# Product codes

## R3

Product	Product code
CASA R3 Genius R ex.el RH FD NA (HRV)	R03VR00G0NHF
CASA R3 Genius R ex.el RH FD NA Sorption (ERV)	R03VR00G0NHFS

# Accessories

Control accessories	Part no.
GC50 Control panel NA	GC50
Mounting frame control panel	102SAK
Modular cable 10m white	PMK10
Modular cable 20m black	PMK20

Building automation	Part no.
Building automation, Modbus	SEM
I/O connection	SEC
CASA ext. Module control NA	SETNA

Installation accessories	Part no.
Ceiling mounting frame R	PR085RKA

# CASA R3 GENIUS - Performance Summary

Certified by the Home Ventilating Institute (HVI) in accordance with CSA C439 under Publication 920.



## General Information

Item	Value
Testing Agency	Element
Manufacturer	Swegon North America Inc.
Model	CASA R3 GENIUS
Options installed	Integrated controller
Filter Type	MERV 13
Duct Size	5 in
Electrical Requirements	240 V

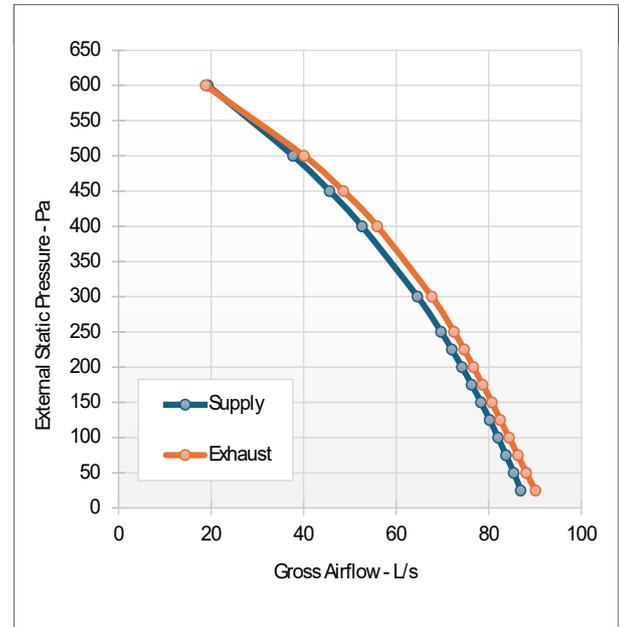
## Certified Ventilation Ratings

Parameter	Value
Max Net Outdoor Airflow @ 0°C	75.1 L/s
Max Net Outdoor Airflow @ -25°C	40.5 L/s
LTIF	0.72
LTVR @ -25°C	0.0 %
Max Unbalanced Airflow @ -25°C	31.9 L/s
Standby Power	11.71 W
Exhaust Air Transfer Ratio	0.0113

## Airflow Performance (High Speed)

External Static Pressure (Pa)	Net Supply (L/s)	Net Exhaust (L/s)	Power (W)
25	86,9	90,1	245,2
50	85,4	88,1	244,5
75	83,7	86,3	244,6
100	82	84,4	244,3
125	80,2	82,5	244,6
150	78,3	80,7	244,6
175	76,3	78,7	244,6
200	74,2	76,7	244,8
225	72	74,7	244,3
250	69,7	72,5	245
300	64,6	67,7	244,5
400	52,6	55,9	226,6
450	45,6	48,6	213,5
500	37,7	40,1	198,7
600	19,3	18,8	167

## Fan Curve Data



## Energy Performance – Heating

Supply Temp	Net OA Airflow	Avg Power	Sensible Recovery	Adjusted Sensible Recovery	Apparent Effectiveness	Net Moisture Transfer
0°C	36.1 L/s	51.0 W	75.3 %	80.0 %	83.8 %	0.80
0°C	49.8 L/s	78.8 W	73.7 %	78.9 %	81.8 %	0.74
0°C	75.1 L/s	184.6 W	69.2 %	77.0 %	78.9 %	0.65
-25°C	40.5 L/s	62.4 W	57.5 %	59.7 %	89.5 %	0.65

## Energy Performance – Cooling

Supply Temp	Net OA Airflow	Avg Power	Sensible Recovery	Adjusted Sensible Recovery	Apparent Effectiveness	Net Moisture Transfer
35°C	50.3 L/s	92.8 W	56.3 %	67.2 %	70.2 %	0.61

Feel good **inside**



**Swegon** 