FUNCTIONAL DIAGRAM Ventilation unit

(Select AHU layers 01-02)

Automation

ALARM DI / Modbus	
UNIT STATE DI / Modbus	
MEASUREMENT AI/Modbus	
CONTROL DO / Modbus	
CONTROL AO / Modbus	

2x0.5mm2 | 2x0.5mm2 | 2x0.5mm2 | 2x0.5mm2

AHU

230VAC 50Hz 10A	
UI	AO AI DI DO
IO1 / IO2*	
SEC/SEM IO3–IO4,AO4*	
SEC/SEM Modbus*	
SET	

Electrical cabinet

230VAC 50Hz 10A	

ALARM	
UNIT STATE	
MEASUREMENT	
CONTROL	
CONTROL AO	

* CONFIGURATION AT SITE
CONNECTION AT SITE
HARDWARE CONNECTION
PROGRAM FUNCTION

Ventilation Zone

(Select accessory layers 110-)

Internet Router Wifi	
Internet Router LAN	

230VAC 50Hz 10A	
UI	
IO1 / IO2	
SEC/SEM IO3–IO4,AO4	
SEC/SEM Modbus	
SET T9–T9	

ALARM	
UNIT STATE	
MEASUREMENT	
CONTROL	
CONTROL AO	

+

-

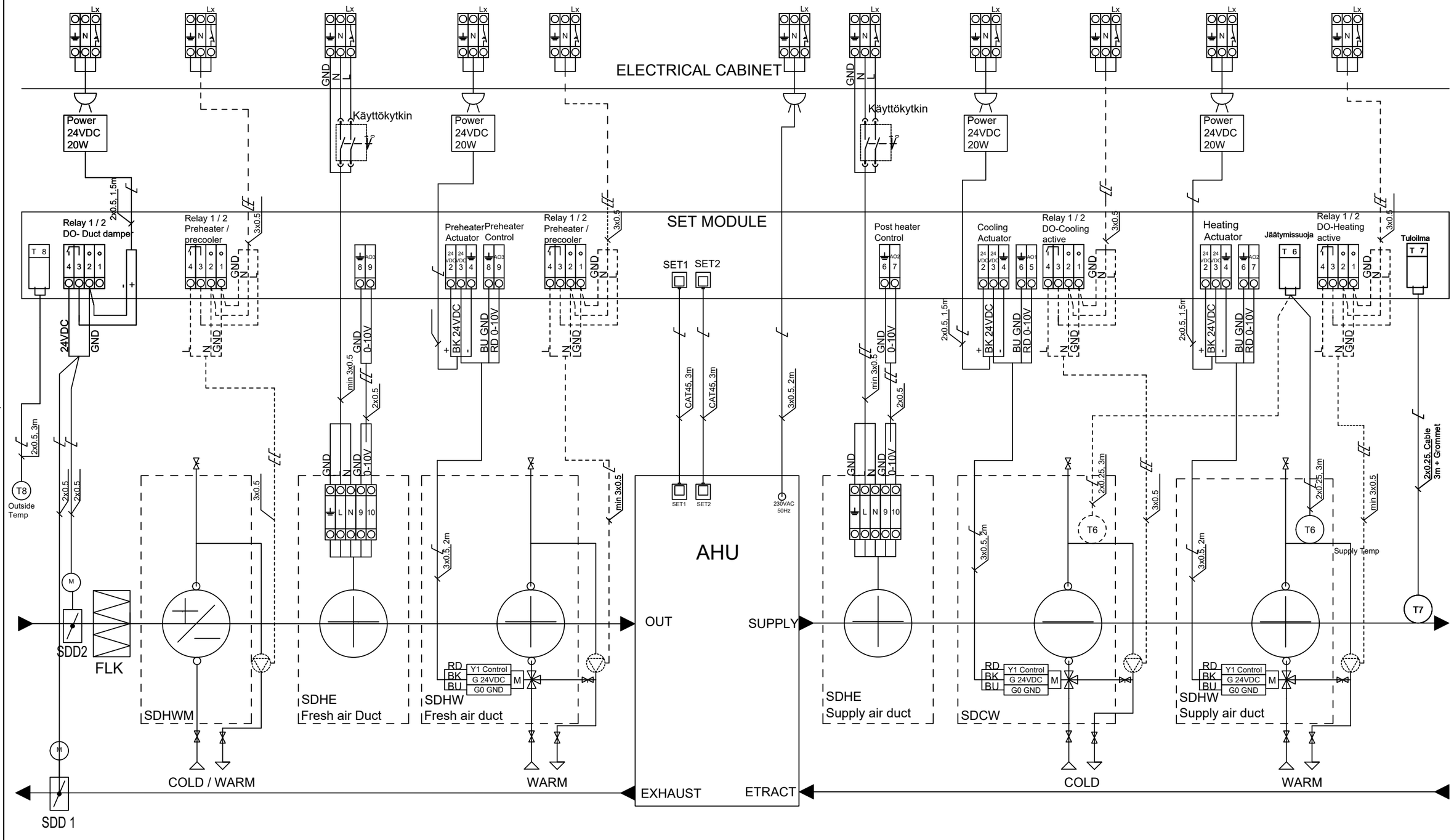
SUUNN. xx	VERSIO. 2.15	TOIMINTAKAAVIO SWEGON CASA Ilmanvaihtokone	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI MUUTOS
PVM. 19.5.2026			LEHTI / LEHDISTÄ 1 / 7 / TILAAJAN N:O
ALLEKIRJOITUS			

FUNCTIONAL DIAGRAM Duct accessories

(Select duct accessory layers 100-)

CONNECTION AT SITE, CABLES INCLUDED IN DELIVERY

CONNECTION AND CABLES AT SITE



SUUNN. xx	VERSIO. 2.15	TOIMINTAKAAVIO SWEGON CASA Kavavatoimilaitteet	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 19.5.2026			MUUTOS
ALLEKIRJOITUS			LEHTI / LEHDISTÄ 2 / 7 / TILAAJAN N:O

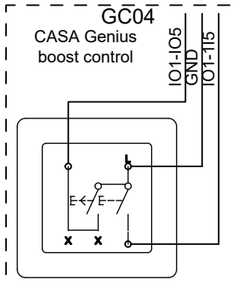
DEVICE LIST Ventilation unit

SUUNN. xx	VERSIO. 2.15	LAITELUETTELO SWEGON CASA Ilmanvaihtokone	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI		MUUTOS
PVM. 19.5.2026			LEHTI	LEHDISTÄ 3 / 7	TILAAJAN N:O
ALLEKIRJOITUS					

AHU External Connections

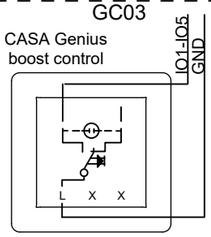
GC04

CASA Genius boost control

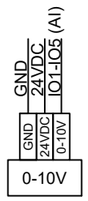


GC03

CASA Genius boost control

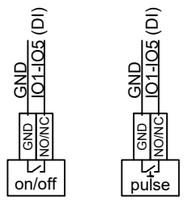


Analog Sensors



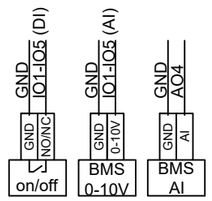
0-10V sensors (voltage range can be scaled)
- CO2
- RH
- VOC
- Temp
- Room Pressure
- Supply duct pressure
- Extract duct pressure

AHU State control



DI control (requires potential free connection NO / NC)
- Home
- Home +
- Away
- Boost
- Travelling
- Cooking mode
- Fire alarm
- External device alarms
- Boost (Pulse)
- Fireplace (Pulse)

BMS control

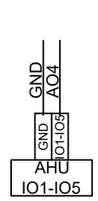


DI Control
- Emergency Stop
- Resettable Emergency Stop
- Ventilation Stop
- Fire alarm

0-10V Controls
- State control (Home/ Away / Boost) state selection with voltage signal.
- Supply temperature setpoint

0-10V output of AHU diagnostics
- State, Supply temperature setpoint.

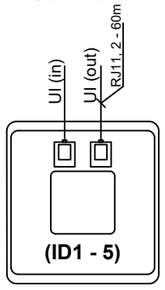
AHU interconnection



Connect Master unit AO4 output to interconnected unit IO1-5 input.

Select functions to State control or stepless control for Master unit AO functino and Interconnected unit input function.

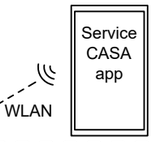
User Panel



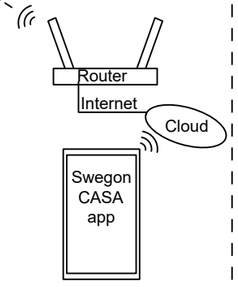
GC10 User Panel
Max 3 Panels.
Max cable lenght 60m

Note, UI- RJ connectors are paraller connectors and any of those can be used.

Service CASA APP

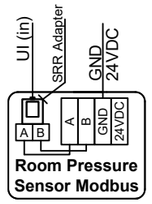


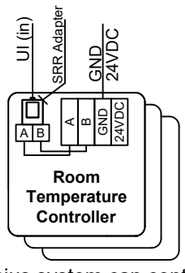
Swegon CASA APP



Note! User Panel is needed for APP connection

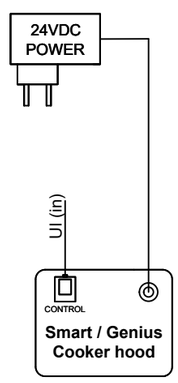
Modbus devices





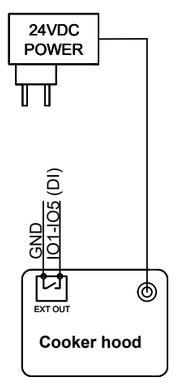
Genius system can control max 6 room temperature controller

Genius/Smart Cooker hood connections



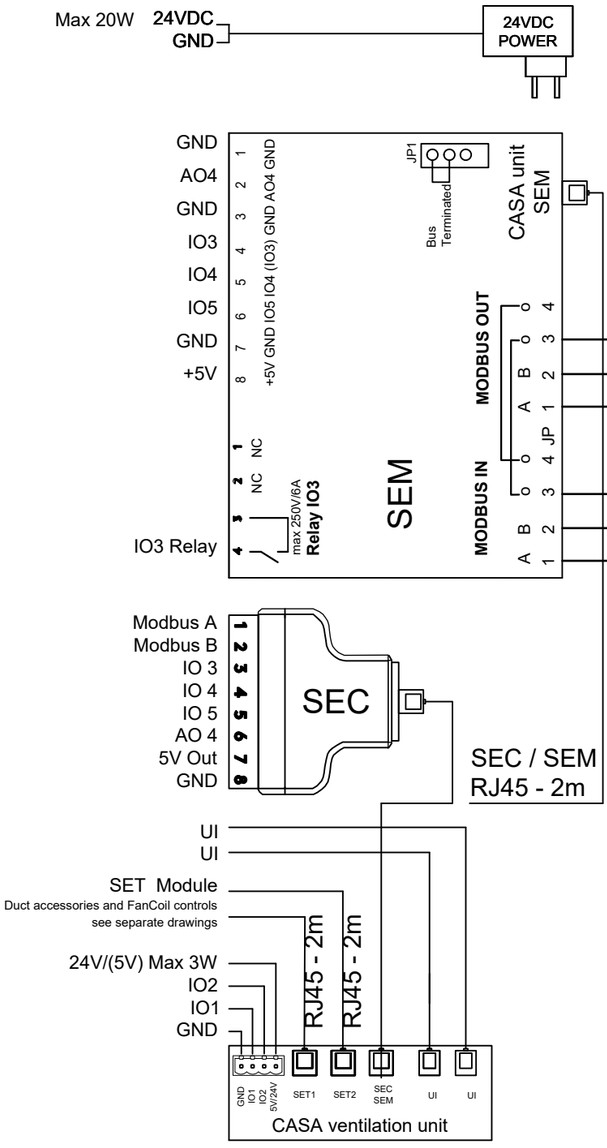
Cooking mode
- Activates autotically when hood damper is opened if cooking mode is selected into use from Fan Commissioning and fan control values are set.

Cooker hood control

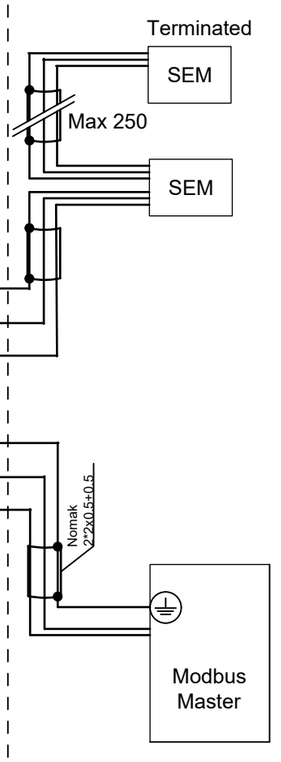


DI controls
- Cooking mode / Boost

AHU Connection interfaces



Modbus



Note! External connection must be configured by using the control panel or by modbus. Commissioning menu code is 1234 by default.

SUUNN. xx	VERSIO. 2.15	KYTKENNÄT SWEGON CASA Lisävarusteet	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 19.5.2026			MUUTOS
ALLEKIRJOITUS			LEHTI / LEHDISTÄ 4 / 7 / TILAAJAN N:O

CONFIGURATION

Menu
Connect to app
Control panel settings
Support
Filter replacement
Diagnostics
Settings
Commissioning

Default code: 1234

Settings
Manage functions
Mode settings
RH automation
CO2 automation
VOC automation
Summer mode boost
Week program
Fireplace function
Temperature management

Commissioning
Service
User level
Airflow adjustment
Duct coils
Connections
Controls
Supply air temperature
Room temperature control
Modbus

Service
Device information
Software update
Reset Settings

Diagnostics, Alarm history, Remote troubleshooting

User level
Password query Enabled
Change service password
User mode Basic
Basic user functions
App connection Enabled

The menu is available starting from HMI version 4.1.50. In earlier versions, navigate to Menu / Settings / User Settings.

Airflow adjustment
Commissioning wizard
Manual commissioning
Airflow control method

Duct coils
Electric post heater
Liquid post heater
Liquid post cooler
Electric preheater
Liquid preheater
Liquid preheater/precooler

SDHE Supply
SDHW
SDCW
SDHE Fresh

SDHWM

Connections
Switch inputs (DI)
Voltage inputs (AI)
Relay outputs (DO)
Voltage output (AO)
Temperature sensors (T)

Controls
CASA User panel
CASA Genius Boost/Home/Away control
CASA Genius Boost control
Fireplace function
Cooker hood control
CASA automation sensors

External room control
Room controller 1

Fan Coil
Room controller 1

Fan coil

Modbus	
Address	1
Baud rate	38400
Stop bits	1
Parity	None

Tempreraturemanagement
Room controller
Supply air temperature

Room controller
Room controller 1
Add controller

AIRFLOW ADJUSTMENT

Airflow commissioning Wizard

Home mode	
Supply airflow	47l/s
Extract airflow	48l/s

Select target airflows

– The unit sets initial fan control values

Home mode	
Supply fan control	65%
Extract fan control	61%

Measure and adjust terminal units.
Adjust fan controls so that the desired airflows are achieved.

– The unit sets target airflow rates for away mode (-30% from home mode) and determines corresponding fan controls.

Away mode	
Supply airflow	37l/s
Supply fan control	57%
Extract airflow	38l/s
Extract fan control	54%

Adjust target airflows if necessary.
Measure airflows when they have stabilized.
Adjust fan controls if necessary.

– The unit sets target airflow rates for boost mode (+30% from home mode) and determines corresponding fan controls.

Boost mode	
Supply airflow	61l/s
Supply fan control	72%
Extract airflow	62l/s
Extract fan control	70%

Adjust target airflows if necessary.
Measure airflows when they have stabilized.
Adjust fan controls if necessary.

Cooking mode	
Cooker hood connection	
Supply fan control	70%
Extract fan control	65%

Select cooker hood type. The unit selects default fan control values based on the hood type.

Measure airflows and adjust fan control values during cooker hood operation so that airflows remain balanced during use.

Fan control manual adjustment

Airflow adjustment	
Home Supply fan	50%
Home Extract fan	50%
Away Supply fan	40%
Away Extract fan	40%
Boost Supply fan	65%
Boost Extract fan	65%
Cooking mode Supply fan	70%
Cooking mode Extract fan	65%

IO CONNECTIONS

Select IO
IO1
IO2
IO3
IO4
IO5

SET Relay1
SET Relay2

SUUNN. xx	VERSIO. 2.15	KYTKENNÄT SWEGON CASA Konfigurointi	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 19.5.2026			LEHTI / LEHDISTÄ 5 / 7
ALLEKIRJOITUS			TILAAJAN N:O

MUUTOS

FUNCTIONAL DESCRIPTION GENIUS CONTROL SYSTEM

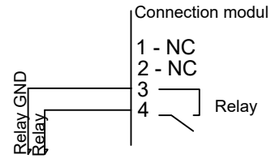
SUUNN. xx	VERSIO. 2.15	TOIMINTASELOSTUS SWEGON CASA	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O MUUTOS LVI
PVM. 19.5.2026			LEHTI / LEHDISTÄ 6 / 7 / TILAAJAN N:O
ALLEKIRJOITUS			

DEVICE LIST Accessories

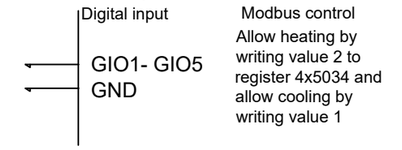
Device ID	Description
CO2	Carbon dioxide sensor, function: CO2 automation
VOC	VOC sensor, function: VOC automation
T6-T9	Temperature sensor. Connection to SET module. The sensor must be defined in the control panel.
SEM	Modbus extension module (includes 2 m RJ-45 cable)
SEC	IO extension module (includes 2 m RJ-45 cable)
SET	Connection module for duct heater actuators and temperature sensors (includes 2 × 3 m RJ-45 cables)
SDCW	Cooling coil for the supply air duct (includes SET, Power24VDC20W, three-way valve + actuator, duct coil, sensors)
SDHE	Electric heating coil for outdoor/supply air duct (includes SET, duct coil, sensors) Note! A duct filter (FLK) is required for the preheater.
SDHW	Heating coil for the supply air duct (includes SET, Power24VDC20W, three-way valve + actuator, duct coil, sensors)
SDHWM	Ground source duct coil for preheating/cooling in the outdoor air duct (includes SET, duct coil, sensor)
FLK	Duct filter for use with the electric preheater (SDHE)
SD1, SD2	Duct damper for outdoor air / exhaust air duct
S_PA,E_PA	Constant duct pressure control for supply / exhaust air duct. Note Power24VDC20W must supplied separately.
GC10	Genius control panel, which can be connected via Wi-Fi to the Swegon CASA app.
GC04	Control switch for selecting boost, home, and away modes.
GC03	Control switch for selecting boost modes.
CH	Cooker hood. The CASA hood is connected to the ventilation unit with a modular cable. Other cooker hoods can control the cooker hood function via a switch input defined for this function.
SWITCH	Control switch, occupancy sensor, fireplace switch, and pressure switch for controlling various functions (Away, Boost, Fireplace, Stop functions)

Functional diagram Room temperature control
Fan Coil 2-Pipe system

24VAC Relay connection to SET and SEC/SEM module



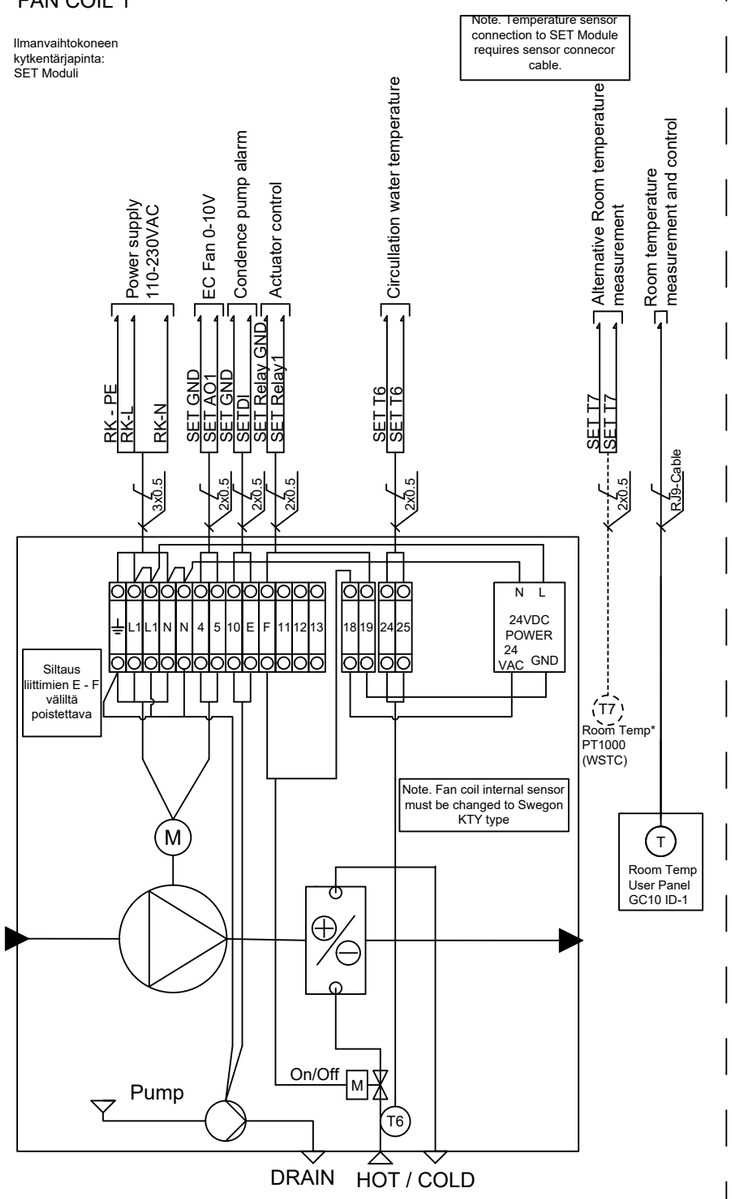
Season selection with external system



FAN COIL 1

Ilmanvaihtokoneen kytkentärjapinta: SET Moduli

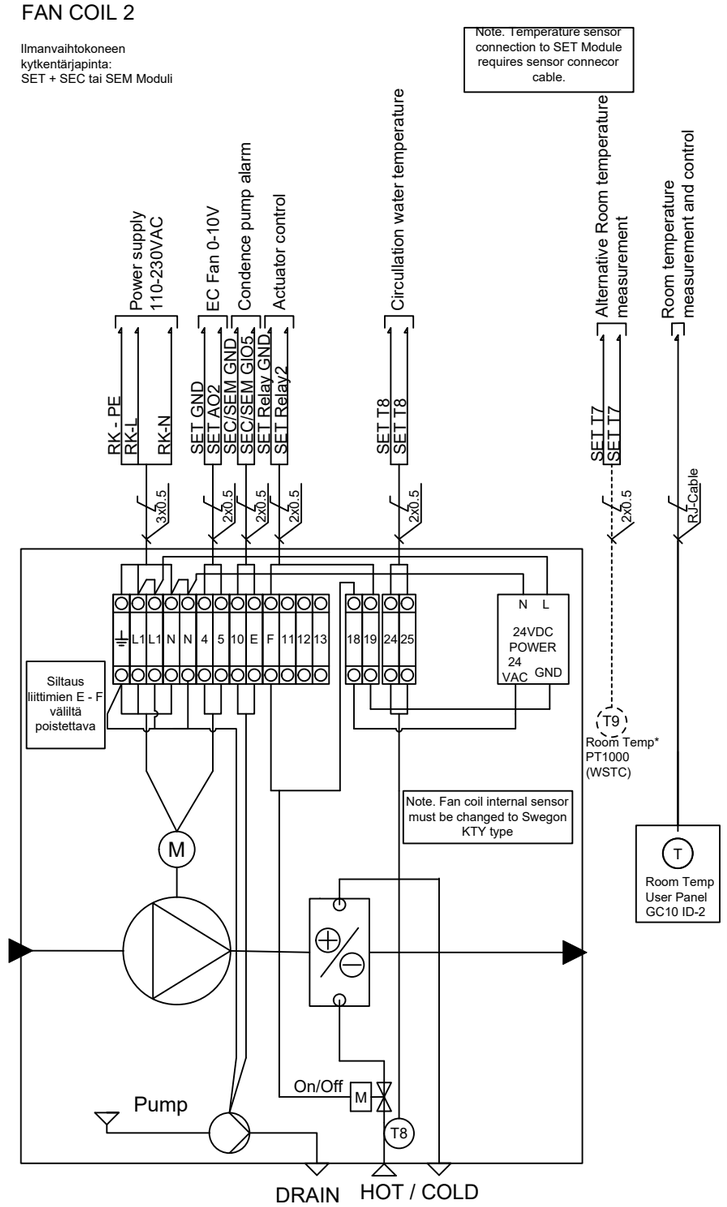
Note. Temperature sensor connection to SET Module requires sensor connecor cable.



FAN COIL 2

Ilmanvaihtokoneen kytkentärjapinta: SET + SEC tai SEM Moduli

Note. Temperature sensor connection to SET Module requires sensor connecor cable.

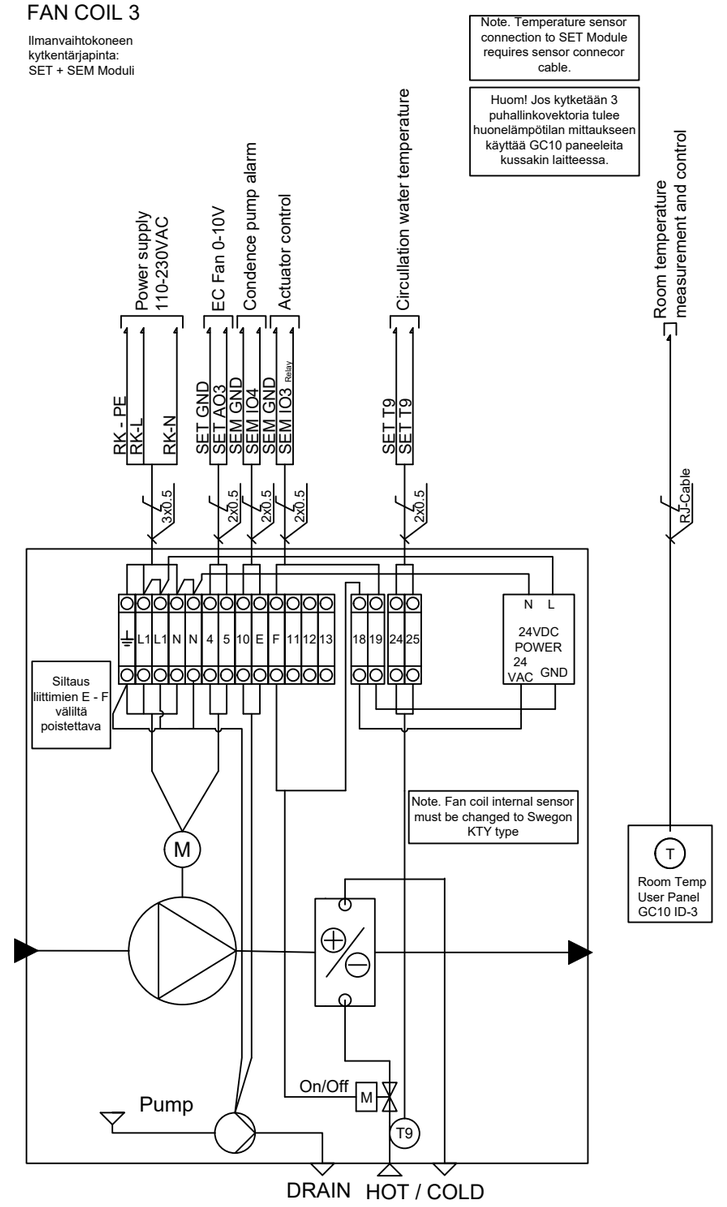


FAN COIL 3

Ilmanvaihtokoneen kytkentärjapinta: SET + SEM Moduli

Note. Temperature sensor connection to SET Module requires sensor connecor cable.

Huom! Jos kytketään 3 puhallinkovektoria tulee huonelämpötilan mittaukseen käyttää GC10 paneeleita kussakin laitteessa.

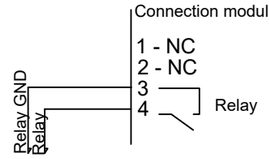


SUUNN. xx	VERSIO. 2.15	TOIMINTAKAAVIO SWEGON CASA FAN COIL	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 19.5.2026			MUUTOS
ALLEKIRJOITUS			LEHTI / LEHDISTÄ 1 / 3 / TILAAJAN N:O

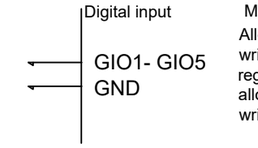
Functional diagram Room temperature control

Fan Coil 4-Pipe system

24VAC Relay connection to SET and SEC/SEM module



Season selection with external system

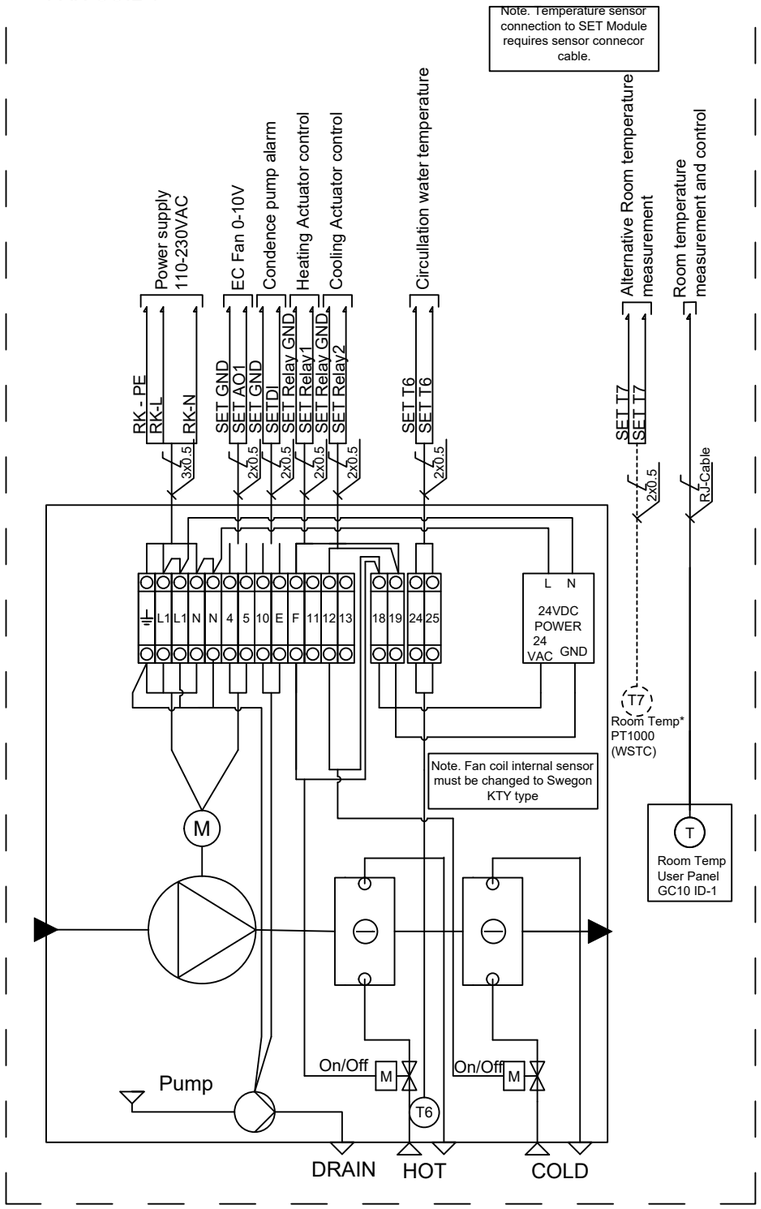


Connection at site

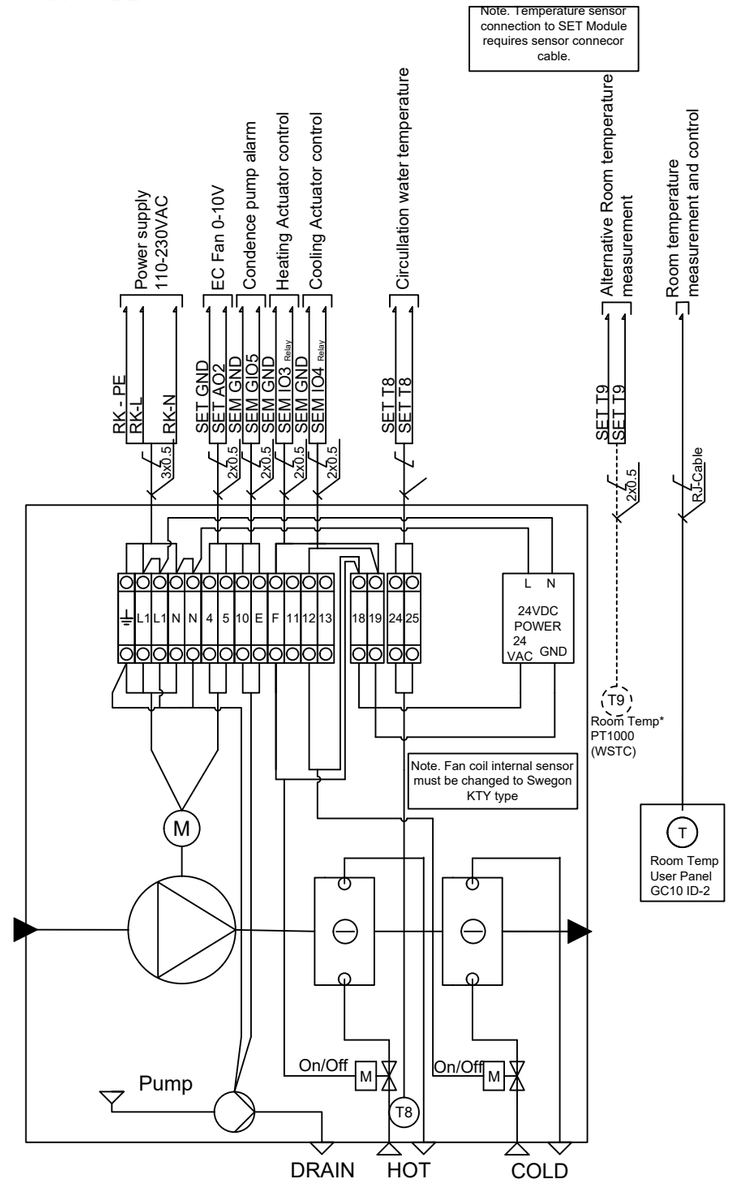
Cable changes at site

* Alternative temperature measurement

FAN COIL 1



FAN COIL 2



FAN COIL 3

Not enough IO Points

SUUNN. xx	VERSIO. 2.15	TOIMINTAKAAVIO SWEGON CASA FAN COIL	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 19.5.2026			LEHTI / LEHDISTÄ 2 / 3
ALLEKIRJOITUS			TILAAJAN N:O / MUUTOS

Functional description room temperature controller

General

The room temperature control function of the air handling unit can control up to three room temperature controllers. The temperature controllers are independent of each other except for some common functions. The room temperature controller can control cooling, heating, or both, and additionally control the fan to boost cooling or heating as needed. Room temperature is measured using the CASA Genius control panel. The control panel can be set to room temperature controller mode, where only the setpoint, measured temperature, and related settings are visible. The panel can be locked into this mode with a password so the user cannot access other settings. During cooling season, temperature increase can be selected, and during heating season, temperature decrease can be selected when the air handling unit is in away mode. This helps save energy by changing the unit's mode as needed. This can also be automated, for example, with the CO□ function.

Connection interface of the air handling unit

For room temperature control, a maximum of 4 pcs 0–10 V outputs, 2+5 pcs relay outputs, and 1+5 pcs digital inputs are available. Note that 5 of the outputs/inputs are configurable, so the number depends on configuration. The connection diagrams show examples, but each I/O must be defined during commissioning, where their location can also be changed.

Actuators of the room temperature controller

The room temperature controller controls a heating/cooling actuator. The actuator can be ON/OFF or PWM type, in which case control is via an intermediate relay. (Note: when using PWM control, observe the maximum switching frequency of the relay.) The actuator can also be controlled with a 0–10 V control signal (min and max voltages adjustable).
The actuator can control heating, cooling, or both in 2-pipe systems. Alternatively, it can control both heating and cooling in 4-pipe systems, in which case two actuators are controlled.
By default, the system measures circulation water temperature, allowing heating or cooling when the water temperature exceeds/falls below the heating and cooling set limits (adjustable). Note: in 4-pipe systems only the hot water circulation temperature is measured, so the cooling limit must be set high enough to activate cooling regardless of hot water temperature.

Fan control

Fan control is via a 0–10 V control signal. Min and max voltages can be set, as well as a neutral-state control voltage when neither heating nor cooling is active.
When heating or cooling is active, fan speed is boosted according to the room temperature controller's demand. A boost threshold can be set, defining when the fan starts boosting. For example, with a threshold of 20%, the controller operates the actuator 0–20% with the fan at minimum speed. When the output exceeds 20%, the fan starts boosting so that when the controller output reaches 100%, the fan also runs at set maximum speed.
The user can influence fan speed by selecting a silent mode, limiting fan speed to minimum. This is available only for a limited time (max. 6h). The user can also select a boost mode (active 2h), in which case the fan runs at maximum speed regardless of temperatures – useful for passive cooling/ventilation.

Cooling / Heating season selection

Season selection can be made automatically by measuring circulation water temperature. After detecting heating or cooling demand, the valve is fully opened, and then the system waits until the water temperature exceeds/falls below the set threshold. If insufficient, the valve closes and a 2h delay occurs before repeating the test.
If no water temperature measurement is available, the selection can be made via an I/O input or controlled via Modbus RTU.
Season selecion can also be made from the control panel, allowing manual activation of heating or cooling.

Room temperature controller

Room temperature is regulated by a PI controller, measuring with the CASA Genius panel, a separate wall-mounted PT1000 sensor, or an internal Swegon PTC sensor.
The setpoint can be selected from the panel. The user-selectable range can be limited at commissioning (+18 C … +25 C). Setpoint adjustment can also be limited when the unit is in Away or Travel modes by defining an increase/decrease offset (default 0 °C). Controller response can be tuned in the commissioning menu (P-gain and I-time).

Diagnostics

The controller operation can be monitored via the panel's diagnostics menu or Swegon CASA APP, where room temperature trend data is visible.

Alarms

Condensation alarm (cooling coils only): A digital input can be assigned to condensation function. When activated, cooling is stopped. If active for 2h, a condensation risk alarm is shown on the panel.

Circulation water temperature alarm: When the sensor is in use, an alarm is triggered if water temperature is insufficient within 5min.

Switching the control panel to room control mode

The control panel can be switched to room control mode after commissioning. Note: the control panel installed in the room must be connected and assigned a unique ID in the panel settings. During commissioning, select the panel defined as the room temperature measurement source.

To enable room control mode, the panel user level must be set to "Extended" (modifiable in commissioning menu). Room control mode can then be selected from the main view. One of up to three room controllers or ventilation can be chosen. Once selected, the visible functions can be configured for the user. These can then be locked via the commissioning menu by switching the user level to "Basic".

SUUNN. xx	VERSIO. 2.15	TOIMINTASELOSTUS SWEGON CASA Puhallinkonvektori	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 19.5.2026			MUUTOS
ALLEKIRJOITUS			LEHTI / LEHDISTÄ 3 / 3 / TILAAJAN N:O