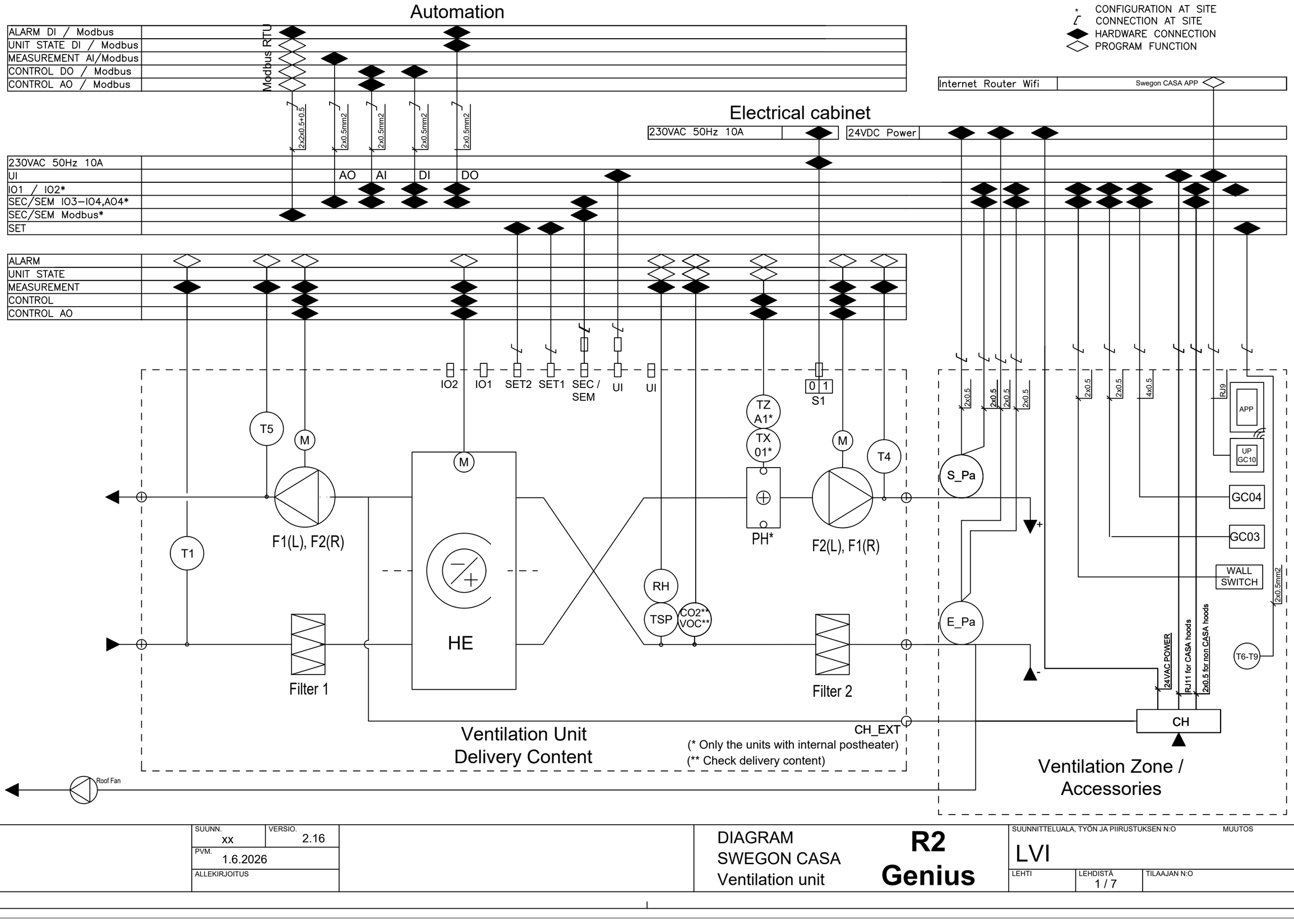
FUNCTIONAL DIAGRAM Ventilation unit



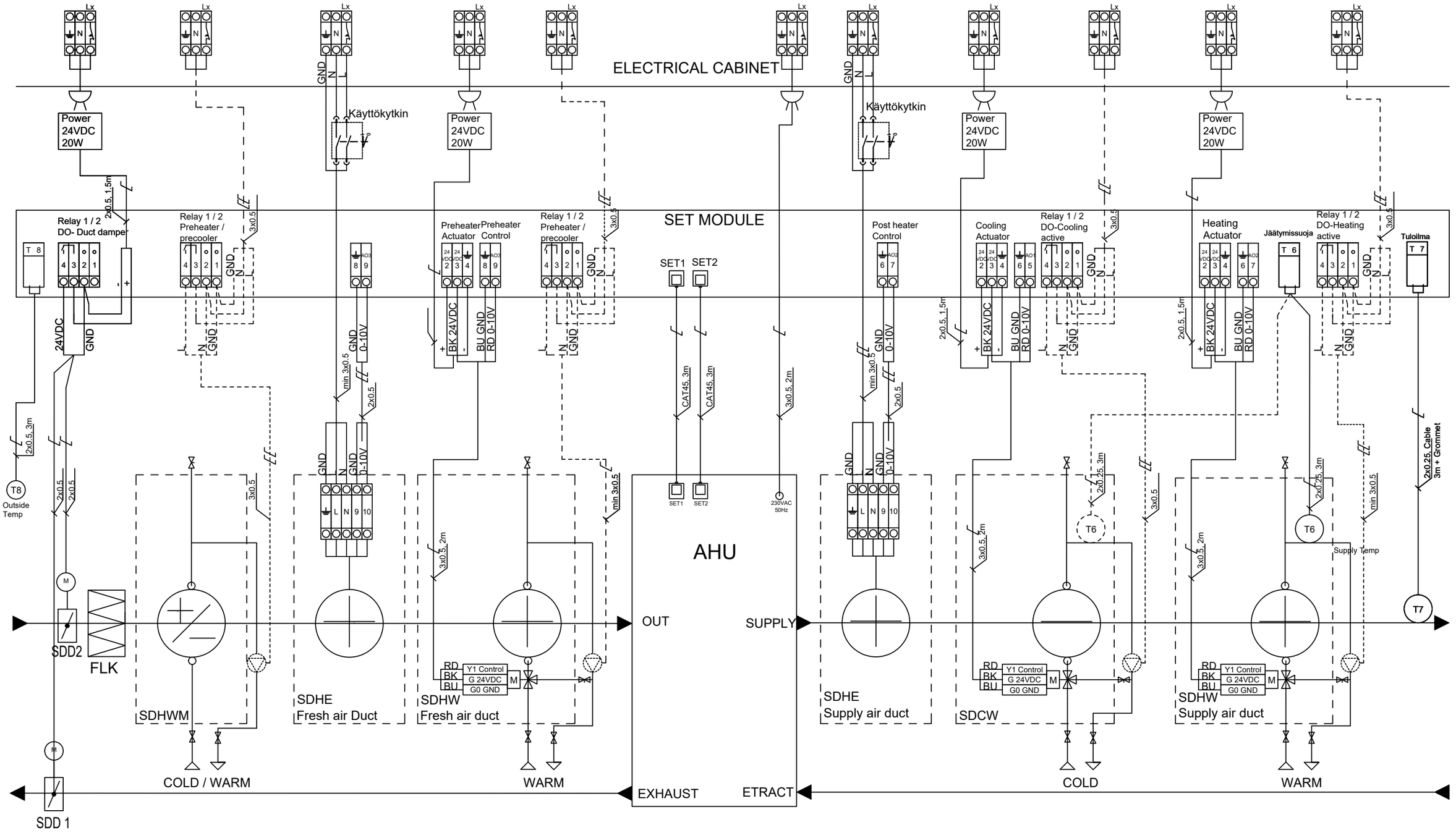
SUUNN. xx	VERSIO. 2.16	DIAGRAM SWEGON CASA Ventilation unit	**R2 Genius**
PVM. 1.6.2026			
ALLEKIRJOITUS			

SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O	MUUTOS
LVI	
LEHTI	LEHDISTÄ 1 / 7
	TILAAJAN N:O

FUNCTIONAL DIAGRAM Duct accessories

CONNECTION AT SITE, CABLES INCLUDED IN DELIVERY

CONNECTION AND CABLES AT SITE



SUUNN. xx	VERSIO. 2.16	DIAGRAM SWEGON CASA Duct Accessories	**R2 Genius**
PVM. 1.6.2026			
ALLEKIRJOITUS			

SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O — MUUTOS

LVI

LEHTI — LEHDISTÄ 2 / 7 — TILAAJAN N:O

DEVICE LIST Ventilation unit

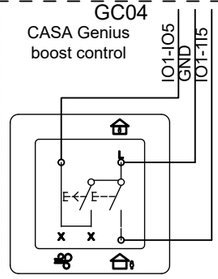
Identifier	Description	Modbus
T1	Temperature sensor Outdoor air	3x6201 (0,1°C)
TSP	Temperature sensor Extract air (Sensor package)	3x6204 (0,1°C)
T4	Temperature sensor Supply air	3x6203 (0,1°C)
T5	Temperature sensor Exhaust air	3x6205 (0,1°C)
RH	Humidity sensor Extract air. Function: RH Automation(standard)	3x6214 (%)
CO2	Carbon dioxide sensor, function: CO2 automation (Accessory)	3x6213(ppm)
VOC	VOC sensor, function: VOC automation (Accessory)	3x6217(ppm)
TZ01	Manual reset overheat protection 70 C. Activation of the overheat protection shuts down the heater and triggers an alarm.	TZ01 3x6117
TZA1	Automatic reset overheat protection 55 C. Activation of the overheat protection shuts down the heater and triggers an alarm.	TZA1 3x6117
Filter 1	Outdoor air filter ISO ePM1 50% (F7). Activate the service reminder to ensure the unit alerts when the filter needs replacement.	3x6129
Filter 2	Exhaust air filter ISO ePM1 50% (F7). Activate the service reminder to ensure the unit alerts when the filter needs replacement.	3x6129
F1	Extract fan(L) /Supply fan (R) equipped with internal overheat protection. See air flow direction	3x6304(%), 3x6306(rpm)
F2	Supply fan(L) /Extract fan (R) equipped with internal overheat protection. See air flow direction	3x6303(%), 3x6305(rpm)
PH	Post heater (400W / 700W), stepless and demand-controlled.	3x6317 (%)
HE	Rotating heat exchanger (Rotor)	
HE M	Heat exchanger motor with stepless speed control based on supply air temperature	3x6332 (0.1rpm)
S1	Service switch. Note! During maintenance work, the unit must be disconnected from power by unplugging the power cord.	
CH_EXT	Bypass duct for heat exchanger. Note! Do not connect general exhaust to this; connect the hood status signal to the ventilation unit. (Factory-sealed)	

SUUNN. xx	VERSIO. 2.16		DEVICE LIST SWEGON CASA Ventilation unit	**R2** **Genius**	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O MUUTOS LVI
PVM. 1.6.2026					LEHTI / LEHDISTÄ 3 / 7 / TILAAJAN N:O
ALLEKIRJOITUS					

AHU External Connections

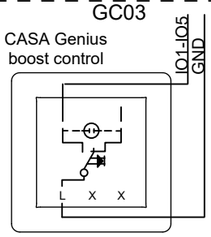
GC04

CASA Genius boost control

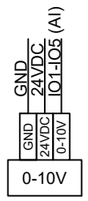


GC03

CASA Genius boost control

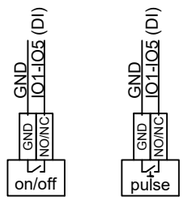


Analog Sensors



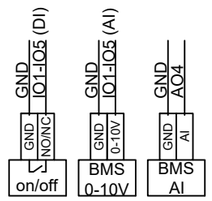
0-10V sensors (voltage range can be scaled)
- CO2
- RH
- VOC
- Temp
- Room Pressure
- Supply duct pressure
- Extract duct pressure

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

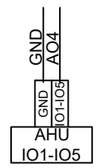


DI Control
- Emergency Stop
- Resettable Emergency Stop
- Ventilation Stop
- Fire alarm

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.

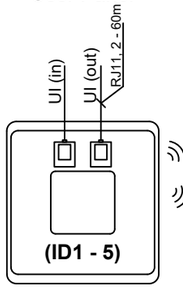
AHU interconnection



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.

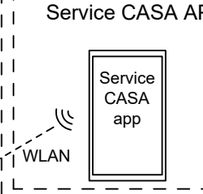
User Panel



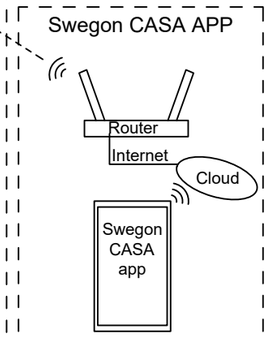
GC10 User Panel
Max 3 Panels.
Max cable lenght 60m

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

Service CASA APP

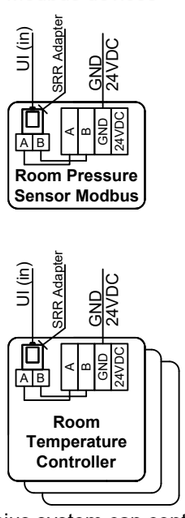


Swegon CASA APP



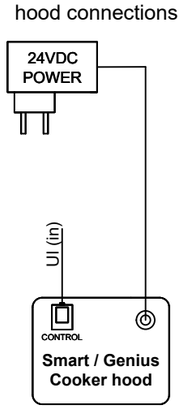
Note! User Panel is needed for APP connection

Modbus devices



Genius system can control max 6 room temperature controller

Genius/Smart Cooker hood connections

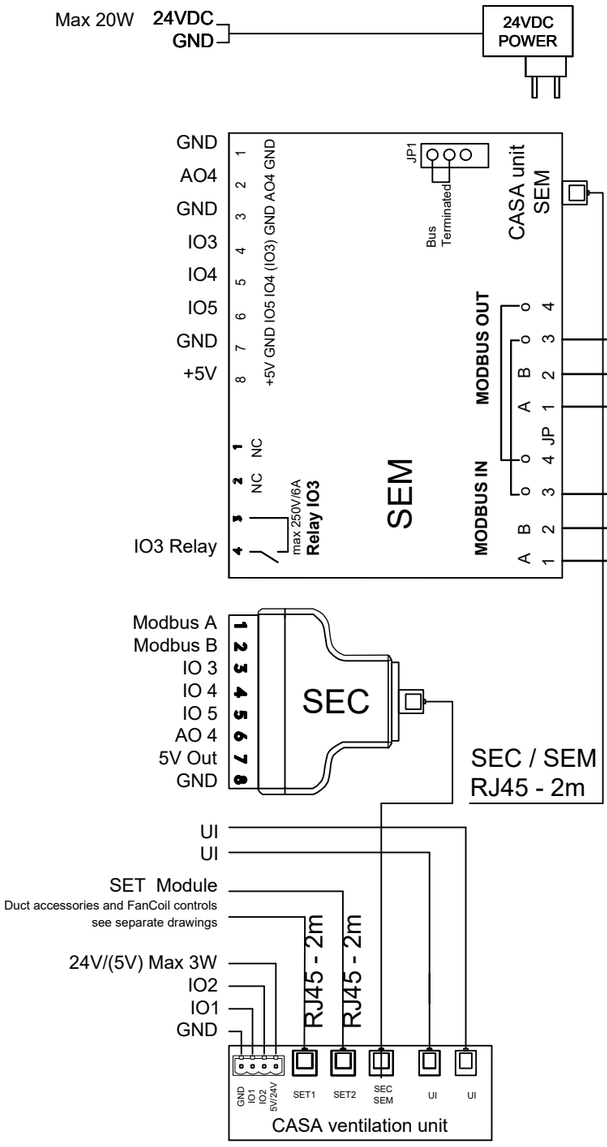


Cooking mode
- Activates autotically when hood damper is opened if cooking mode is selected into use from Fan Commissioning and fan control values are set.

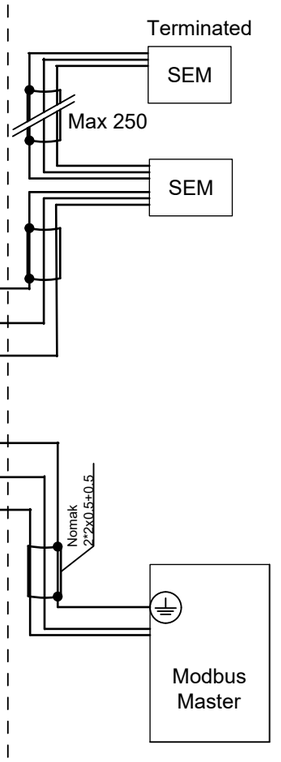
Cooker hood control

DI controls
- Cooking mode / Boost

AHU Connection interfaces



Modbus RTU



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

SUUNN. xx	VERSIO. 2.16	CONNECTIONS SWEGON CASA Accesories	**R2 Genius**
PVM. 1.6.2026			
ALLEKIRJOITUS			

SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O — MUUTOS

LVI

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

CO2
VOC

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

Tempreature management
Room controller
Supply air temperature

Room controller
Room controller 1
Add controller

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)

Room Temperature Sensors

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

GC10
GC04
GC03

Cooking mode control with input

External room control
Room controller 1

Fan Coil
Room controller 1

Fan coil

Modbus	
Address	1
Baud rate	38400
Stop bits	1
Parity	None

Modbus

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	IO1 - DI
IO2	IO2 - DI
IO3	IO3 - DI
IO4	IO4 - DI
IO5	IO5 - DI

SET Relay1
SET Relay2

SUUNN.	VERSIO.
xx	2.16
PVM. 1.6.2026	
ALLEKIRJOITUS	

CONFIGURATION
SWEGON CASA

R2 Genius

SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O — MUUTOS

LVI

LEHTI	LEHDISTÄ	TILAAJAN N:O
	5 / 7	

FUNCTIONAL DESCRIPTION GENIUS CONTROL SYSTEM

CONTROL:

The ventilation unit's operating modes can be controlled via the Genius control panel, Swegon CASA cooker hood, Swegon CASA APP (iOS, Android), external switches, weekly timer, or CO□ automation.
Operating modes can also be controlled via building automation using the Modbus RTU bus or voltage / digital input control signals.
The basic operating modes are Away / Home / Boost. Additionally, the control panel or automation can be used to select Travelling, Home+, or Stop modes.
For the Travelling and Home+ modes, the user can define the desired ventilation power levels.

Fan control:

The fans are controlled either by fixed-speed control or by duct pressure*, according to the operating modes adjusted during commissioning.
When the fans are controlled automatically with smooth transitions between different modes, the fan control signals are scaled based on the adjusted modes, ensuring balanced airflow throughout the entire operating range.

Temperature control:

The ventilation unit is equipped with a steplessly controlled rotary heat exchanger. The supply air temperature can be adjusted by controlling the rotation speed of the heat exchanger. The setpoint for the supply air temperature can be selected from the control panel (default: +17 C). In summer mode, the unit uses a dedicated supply air temperature setpoint (default: +15 C).
Summer mode is activated automatically based on temperature conditions or can be manually enabled or disabled from the control panel.
If a cooling coil* is installed in the supply air duct, the cooling valve is controlled steplessly. The cooling mode's supply air setpoint can be selected from the control panel. Note that cooling mode can only be activated when summer mode is active.
In winter mode, bypassing the heat exchanger is not allowed, and the unit maintains the set supply air temperature by controlling the reheater. An outdoor temperature limit (default: +8 C) can be defined for the internal electric reheater.
If a water-based reheating coil is installed in the supply duct, it is prioritized, and the internal heater is used only if the water coil's power is insufficient.
Winter mode is activated based on outdoor temperature or when the heat exchanger is unable to maintain a sufficiently high supply air temperature. If the reheaters cannot maintain the supply temperature (temperature difference to setpoint exceeds -2 C), the total airflow is reduced.
The supply air setpoint can be adjusted from the control panel, by automatic summer mode logic, or via building automation. In winter mode, the setpoint can be lowered in Away and Vacation modes to save energy. These modes can be scheduled using the weekly timer. Alternatively, the supply air temperature can be controlled based on room air temperature. In this case, the desired room temperature and supply air limits are set. When summer mode is active, the supply air temperature setpoint switches to a fixed summer setpoint.

Summer mode boost:

When summer mode is active, stepless ventilation boost is allowed. The boost level is determined based on the cooling demand and the supply air temperature. This function is enabled by default but can be disabled from the control panel or set to Auto+ mode, which maximizes airflow to enable night cooling.

Cooking mode:

For cooking mode, the supply and extract fan speeds can be adjusted separately, allowing the ventilation to be balanced during cooker hood use. The function is activated automatically when a Swegon CASA cooker hood is connected to the unit or when the hood's status signal is connected to the unit's IO input. Airflows can be adjusted in the commissioning mode.

Fireplace function:

The intelligent fireplace function makes it easier to light a fire by creating a temporary overpressure in the building. After that, the function aims to enable clean combustion by supplying additional compensation air.
Note: It is always necessary to ensure sufficient compensation air for the fireplace. More information available at casaemanual.com

RH automation:

The unit comes equipped with standard RH automation, which boosts ventilation steplessly according to the normal humidity load caused by human activity. The function is fully automatic and adapts to the environment, so no manual adjustment is required. The response level of the function can be modified if necessary. More information is available at casaemanual.com

CO2 automation:

The function adjusts the ventilation level steplessly based on CO□ levels. If necessary, the function switches the unit to away mode, allowing, for example, a lower supply air temperature. The function must be configured according to the operating mode by setting CO2 threshold values for both away and home modes. More information is available at casaemanual.com

VOC automation:

The function boosts ventilation steplessly based on indoor air quality (VOC). The function is automatic, and its response level can be adjusted if necessary. More information is available at casaemanual.com

*Assessory

COMPONENT INTERNAL PROTECTION FUNCTIONS

Electrical heaters:

Electrical heaters are equipped with automatic and manual resettable overheating protection. Manual resettable protection can be reset by pressing reset button.

Fans:

Fans are equipped with internal automatic overheating protection.

Software-based protection functions

Filters:

The service reminder indicates the need to replace the filter on the control panel, Swegon CASA cooker hood, as a DO status signal, or via the Modbus communication bus. The service reminder interval is adjustable and can be reset from the user interface.

Water coils

Water coils are equipped with a frost protection sensor. If the water temperature drops below the alarm limit, a freezing risk alarm is activated, and heating is set to maximum. If the unit includes an electric reheater, it will be set to full power. If the temperature continues to drop below the shutdown limit despite protection measures, the unit is switched to stop mode.
Note: A ventilation unit with a water coil must always be equipped with an external outdoor air duct damper. When the unit is in stop mode, external dampers are closed.
Note: If water is used in the cooling coil, a frost protection sensor must be installed and activated.

Heat Exchanger:

The unit features a defrosting function based on temperature and humidity. Defrosting is carried out by temporarily limiting airflow, allowing warm extract air to melt the frost in a controlled manner. Continuous ventilation in all conditions can be ensured by using a correctly sized duct-mounted preheater, available as an accessory.

Supply air temperature

If the supply air becomes too cold due to a fault, the unit is switched to stop mode.
The unit restarts automatically once the temperature has risen to a safe level.

Electrical heaters:

The heating elements are equipped with diagnostics that monitor their operation.
If the overheat protection trips repeatedly or does not reset, the heating is disabled, and power to the elements is cut off via the built-in relay.

ALARMS

Any faults in the operation of the ventilation unit are indicated as alarms. Alarms are displayed on the control panel, in the Swegon CASA APP, as a DO status signal, and via the Modbus communication bus.
Critical faults are also indicated on the CASA cooker hood. Once the fault is cleared, no manual reset is required, but the event is stored in the unit's alarm log.

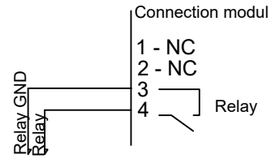
SUUNN. xx	VERSIO. 2.16	DESCRIPTION SWEGON CASA Ventilation unit	R2 Genius	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI	MUUTOS
PVM. 1.6.2026				LEHTI	LEHDISTÄ 6 / 7
ALLEKIRJOITUS				TILAAJAN N:O	

DEVICE LIST Accessories

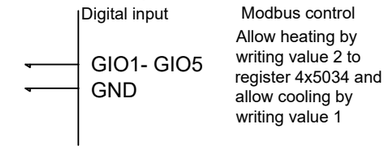
Device ID	Description
CO2	Carbon dioxide sensor, function: CO2 automation
VOC	VOC sensor, function: VOC automation
T6-T9	Temperature sensor. Connection to SET module. The sensor must be defined in the control panel.
SEM	Modbus extension module (includes 2 m RJ-45 cable)
SEC	IO extension module (includes 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



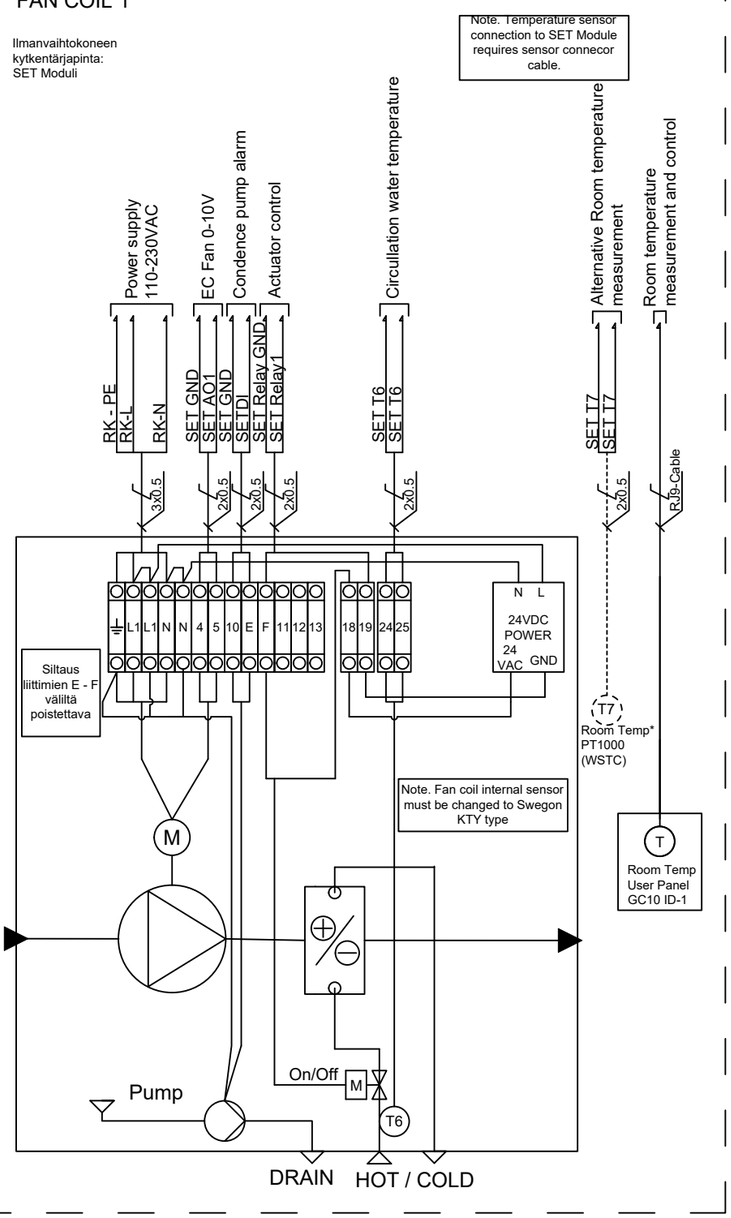
Season selection with external system



FAN COIL 1

Ilmanvaihtokoneen kytkentärjapinta: SET Moduli

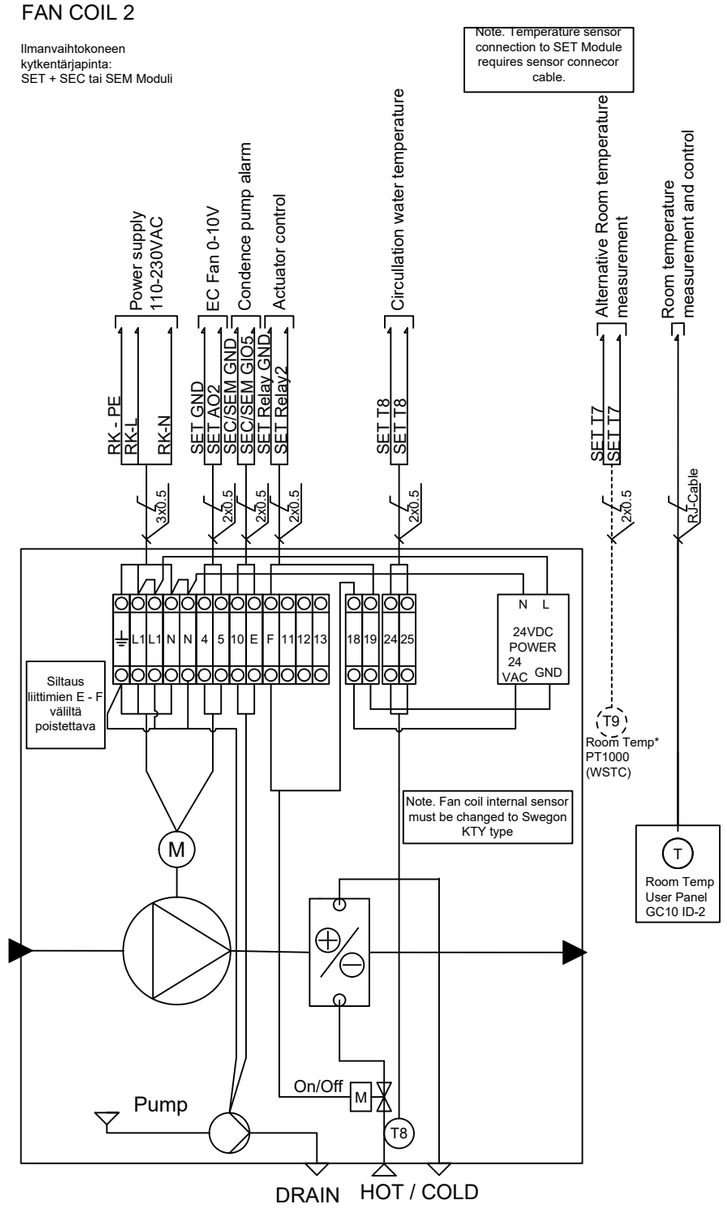
Note. Temperature sensor connection to SET Module requires sensor connecor cable.



FAN COIL 2

Ilmanvaihtokoneen kytkentärjapinta: SET + SEC tai SEM Moduli

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

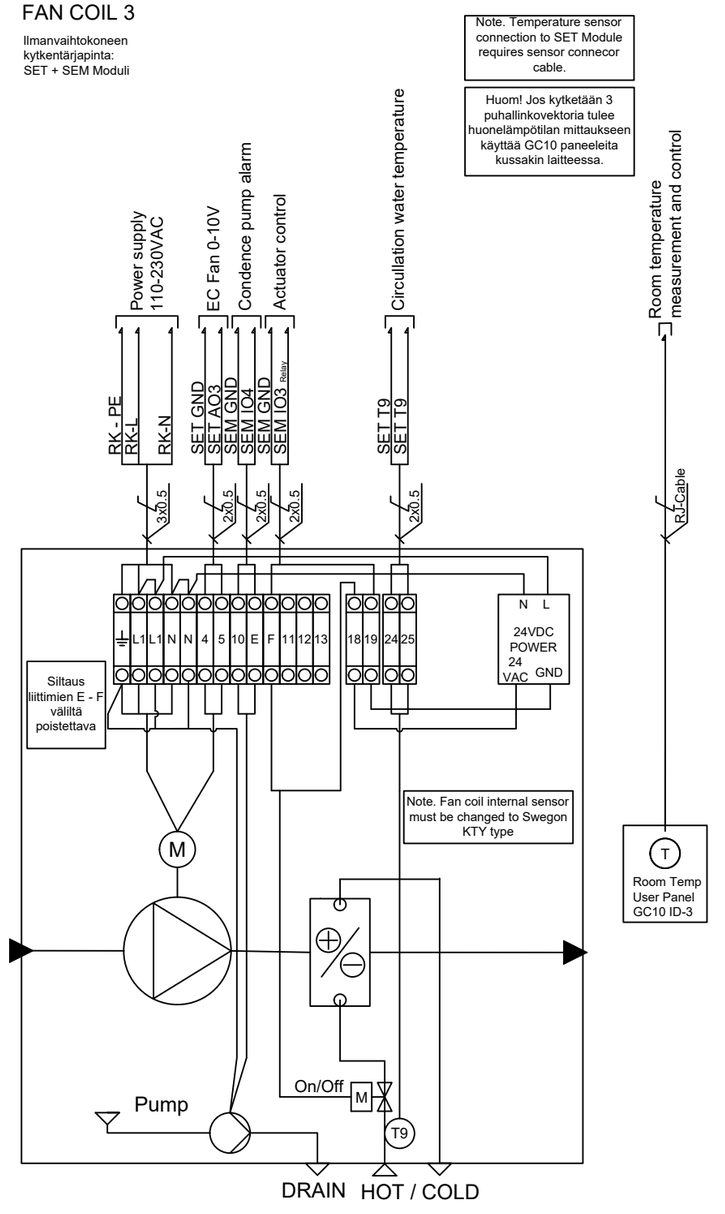


FAN COIL 3

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.

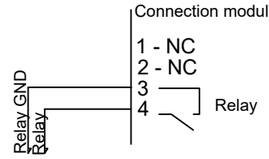


SUUNN. xx	VERSIO. 2.16	DIAGRAM SWEGON CASA FAN COIL	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 1.6.2026			MUUTOS
ALLEKIRJOITUS			LEHTI LEHDISTÄ 1 / 3 TILAAJAN N:O

Functional diagram Room temperature control

Fan Coil 4-Pipe system

24VAC Relay connection to SET and SEC/SEM module



Season selection with external system

Season state signal from heating system

Digital input

GIO1- GIO5

GND

Modbus control

Allow heating by writing value 2 to register 4x5034 and allow cooling by writing value 1

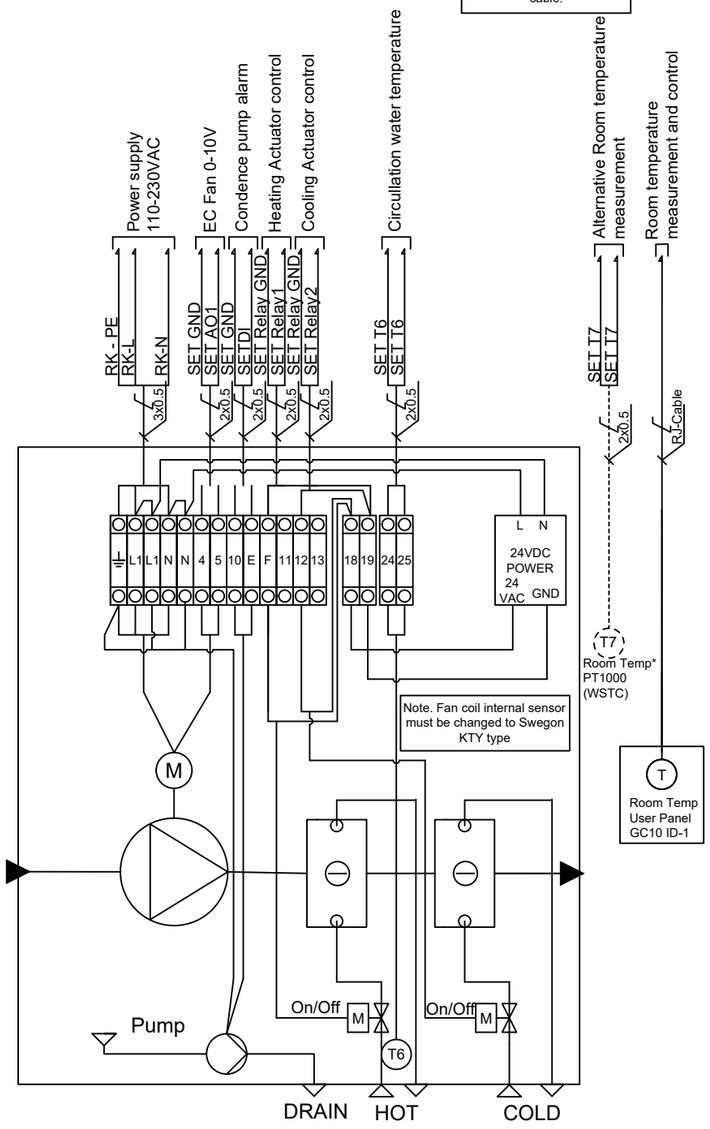
Connection at site

Cable changes at site

* Alternative temperature measurement

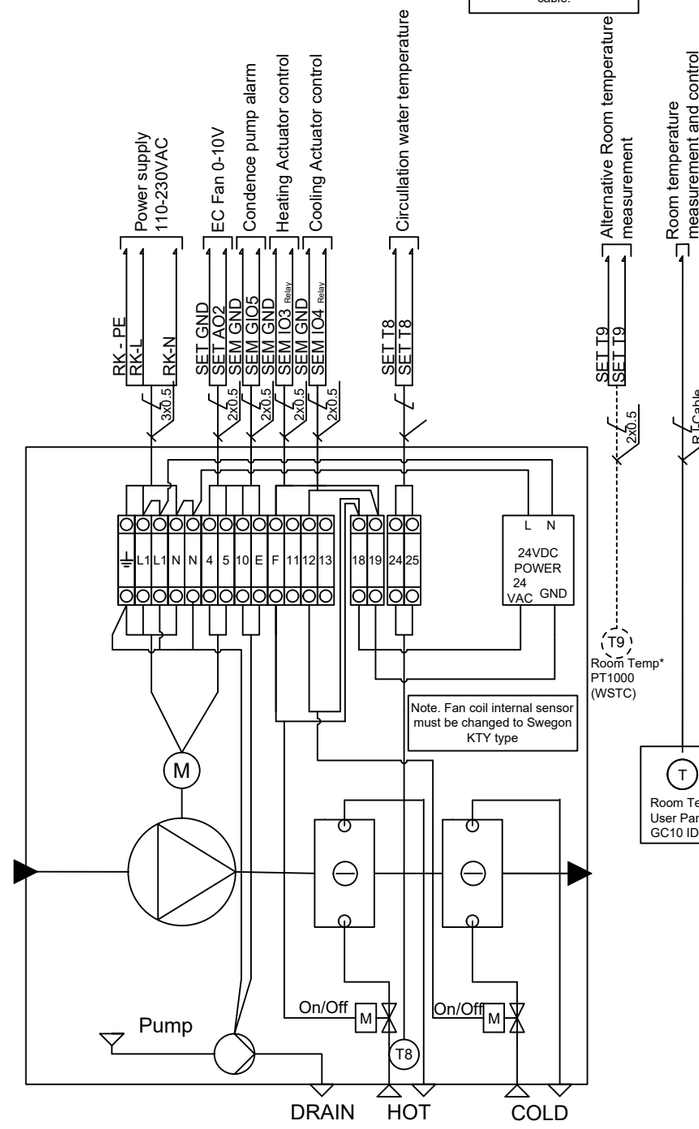
FAN COIL 1

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



FAN COIL 2

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



FAN COIL 3

Not enough IO Points

SUUNN. xx	VERSIO. 2.16	DIAGRAM SWEGON CASA FAN COIL	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O LVI
PVM. 1.6.2026			MUUTOS
ALLEKIRJOITUS			LEHTI / LEHDISTÄ 2 / 3 / TILAAJAN N:O

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. 2.16	DESCRIPTION SWEGON CASA FAN COIL	SUUNNITTELUALA, TYÖN JA PIIRUSTUKSEN N:O / MUUTOS LVI
PVM. 1.6.2026			LEHTI / LEHDISTÄ 3 / 3 / TILAAJAN N:O
ALLEKIRJOITUS			