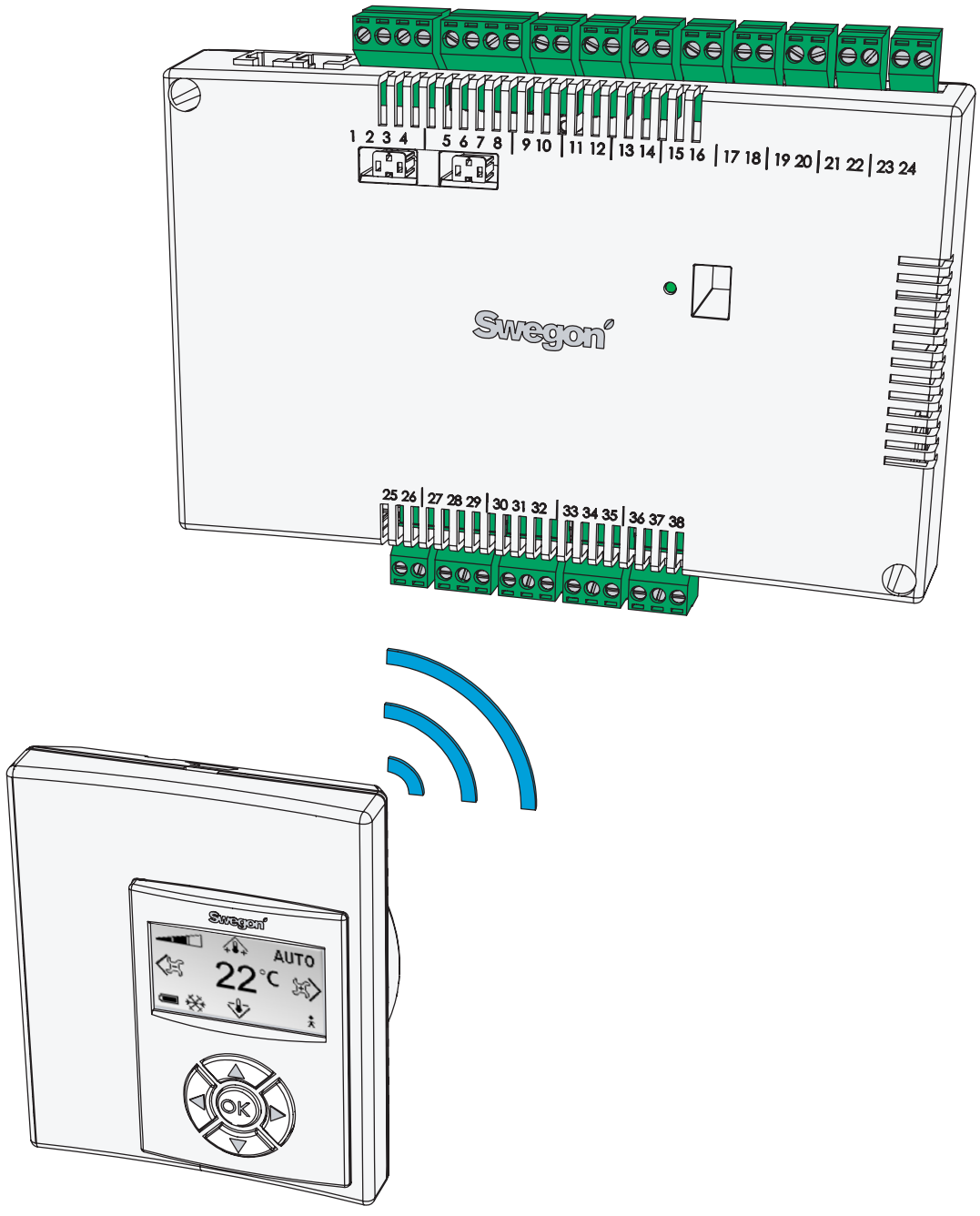
User manual
CONDUCTOR

LEVEL 3



Swegon

Contents

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About the CONDUCTOR

CONDUCTOR is a control system for individual control of room temperature and airflow, especially adapted for partitioned offices and hotel rooms. The control system consists of a controller and a room unit, both with built-in temperature sensors (the sensor in the controller is only used if room unit is not in the room). The controller is equipped with inputs for connection of a condensation sensor, window switch or other circuit-breaking contacts, and outputs for the connection of an actuator for valves and air dampers.

The instructions in this installation and operation manual are intended for you who are accountable for the local climate system (LEVEL 3) and they describe how you:

- connect, start up, and adjust the CONDUCTOR RE controller and the CONDUCTOR RU room unit,
- easily adjust the heating, cooling and airflow by means of the room unit, and
- configure the functions and settings of the system.

Applications

These instructions deal with two different applications: W1 and W3. W indicates that both the applications are applicable to waterborne climate systems.

A waterborne system provides the room with waterborne heating and cooling. The air-based systems which can be controlled in the W3 by means of connected damper actuators are only used to satisfy the demands on air quality, while the temperature of the supply air and extract air is kept constant.

Depending on the status of connected sensors, the controller adjusts the outputs from any of several possible operating conditions. The various operating conditions described here are based on occupancy in the room and the status of the window switch and condensation sensor.

W1

W1 is a standard solution for offices, mainly designed for partitioned offices, but which also can be used in large rooms, as with open-plan offices. The application is suitable for so called CAV systems (Constant Air Volume), which means that the airflow in the room is constant and that no damper actuators are needed. Only two outputs are used, one for actuators that control cooling and one for actuators that control heating. There is provision for connecting a condensation sensor and a temp sensor.

Table 1. Operating conditions for application W1

Condensation	Cooling	Heating
Yes	Off	Normal
No	Normal	Normal

W3

The W3-application can be used either for offices or for hotel rooms. It is well-suited for systems with variable airflow (VAV) with both supply air and extract air. Four outputs are used to control heating, cooling, supply and extract air. The damper motors are adjusted depending on the generated airflow and duct pressure in both the supply and extract air ducts. Three inputs are used; for condensation sensors, window switches and presence detectors. The principle is to use minimal, normal or high airflow, depending on occupancy and sensor status.

Table 3: Operating conditions for application W3

Occupancy	Win-dow	Conden-sation	Cooling	Heating	Supply air	Extract air
Yes	Yes	Yes	Off	Frost protec-tion	Min.	Min.
Yes	Yes	No	Off	Frost protec-tion	Min.	Min.
Yes	No	Yes	Off	Normal	Max.	Max.
Yes	No	No	Normal	Normal	Normal	Normal
No	Yes	Yes	Off	Frost protec-tion	Min.	Min.
No	Yes	No	Off	Frost protec-tion	Min.	Min.
No	No	Yes	Off	Nor-mal/ Energy saving	Min.	Min.
No	No	No	Normal	Nor-mal/ Energy saving	Min.	Min.

Operating modes

The controller has six operating modes. A manual mode, MAN, three automatic modes, AUTO, ECON and BOOST, plus a standby mode, STOP, and an emergency mode, EMERG.

Manual control

Whenever the CONDUCTOR registers occupancy in the room (in response to signals from a presence detector or a key card reader), the user can regulate the temperature and airflow rate by entering settings in the room unit. When the user enters a new desired setting, the controller switches over to the manual operating mode (MAN).

The standard temperature setting range is 10 - 32 °C for all applications, but the setting range can be adjusted to temperatures between 0–50 °C (see ***Application parameters*** i **Appendix**).For the W3 application, the airflow can be set manually to one of three different levels (see ***To set the desired airflow***, p. **15**). The controller controls the damper motors, which operate the supply air and extract air dampers by means of three different voltage levels, which open the dampers to different degrees conditional on the selection made (see ***Advanced airflow and temperature settings***, p. **15** and ***Application parameters*** in **Appendix**). W1 lacks adjusting facilities for airflow.

Automatic control

There are three different automatic modes: a normal mode, AUTO, an energy-save mode, ECON, and a boost mode, BOOST. The latter is specific for W3.

When the user removes the key card from the card reader and leaves the room, the controller automatically decreases the supply air to a low rate of airflow and the system returns to the AUTO mode. The system also changes to AUTO a number of beforehand defined minutes after the user has made the latest room temperature or airflow adjustment (see ***Application parameters*** in **the Appendix**).

When the controller is set to automatic control, the valve actuator for chilled water or hot water and the supply air or extract air dampers are adjusted in response to occupancy in the room as well as the status of the window switch and the condensation sensor. See the operating conditions for each application (page **4**). (Boost function – running, is an exception from the operating condition tables.)

The automatic control system controls the airflow, cooling and heating until the user manually sets the airflow or temperature.

Under the assumption that the energy save function is enabled, the system automatically changes to the energy save mode (ECON) when the room temperature has been stabilised within pre-defined limits (see ***Application parameters*** in **the Appendix**) and no occupancy has been registered for a pre-defined number of minutes (see ***System parameters*** in **the Appendix**). The system returns to the AUTO mode when occupancy is registered again.

In the energy-save mode, the valve actuator is controlled for chilled water or hot water according to the status on other sensors in the room, but with a greater permissible difference between actual value and setpoint than in the AUTO mode.

The controller changes to the BOOST operating mode, when occupancy is registered in the room and the difference between actual and desired room temperature exceed a predefined level (see ***Application parameters*** i **Appendix**). , which normally implies that the airflow in the room increases in order to speed up the temperature adjustment. The system again returns to AUTO when no occupancy is registered, or when the room temperature again is within predefined limits.

The level of the power consumed by the supply air and the extract air dampers can be adjusted for each AUTO mode (see ***Advanced airflow and temperature settings***, p. **15** and ***Application parameters*** in **the Appendix**).

Standby and emergency level

The controller is set to the STOP position, when the system registers an input indicating that a window is open and the controller returns to AUTO when the window has been shut. The cooling function is switched off and the frost protection monitor is switched on, when the controller is in the STOP position. (See ***Application parameters*** in **the Appendix**.)

The EMERG operating mode can only be enabled and disabled by a main control system via Modbus. In the EMERG mode, cooling and heating are always switched off, supply air and extract air are **normally** switched off. (See ***System parameters*** and ***Application parameters*** in **the Appendix**.)

Functions

There are a variety of functions built into the CONDUCTOR. In this instruction, special emphasis is placed on seven of them, exercising of valves, the "first open" function, "night cool", frost protection, "change over" and timed setpoint resetting, which are related to all the applications, and timed boost which is specific for the W3 application.

Exercising of valves

If the valves are switched off during longer time periods, they may seize or even be completely stuck. Therefore they should be regularly exercised. The valve exercising function opens all the valve actuators connected to the controller to the max open setting for three minutes. (See ***System parameters*** in **the Appendix**.)

"First open" function

The water valve is of NO type, normally open, and the actuators are on delivery locked in the open position, making it easier to vent the system when you start it up. The "First open/open actuators" function should then be enabled via the room unit, in order to unlock the actuators and in this way ensure correct operation.

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"Night cool"

"Night cool" is used to cool the room in the night, to a pre-defined room temperature by means of cooler air (see ***Application parameters*** in **the Appendix**). The function can only be enabled and disabled by a main control system via Modbus.

Frost protection

The frost protection prevents the room temperature from dropping below a pre-defined value (see ***Application parameters*** in **the Appendix**). The controller transmits a signal to open the valves for the heating water when the temperature drops to this temperature level.

"Change over"

In a "Change over" system only one actuator is used, which controls both heating and cooling. Heating and cooling water is transported in the same pipe. In the wintertime when heating is required, the valve opens if the water in the pipe is hotter than the temperature setpoint, if it is colder the valve is not opened. In the summertime when the need for cooling is dominant, the valve only opens if the water in the pipe is colder than the setpoint. (See ***Application parameters*** in **the Appendix**.)

Timed setpoint resetting

Manually set temperature in LEVEL 1 (p. **15**) is normally in effect for eight hours after the controller has changed to the automatic operating mode. After that the room temperature returns to the established temperature setting (see ***Advanced airflow and temperature settings***, page **15**).

Timed boost

Under the assumption that the boost function is enabled and occupancy is registered in the room, the controller adjusts the air dampers to a pre-adjusted high flow setting in order to quickly reach the desired temperature. The boost mode runs for a pre-defined number of minutes or until the user enters a new setpoint. (See ***Application parameters*** in **the Appendix**.)

Overview

Controller

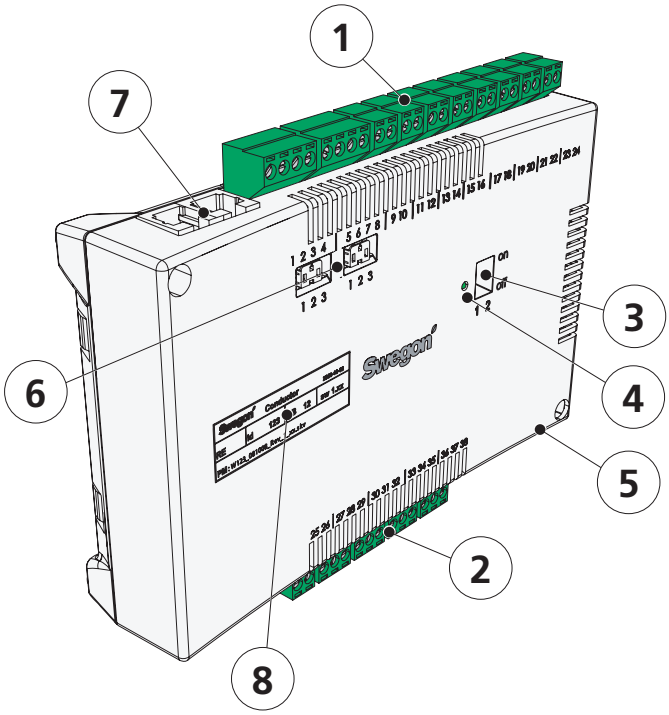


Figure 1: CONDUCTOR RE Controller

1 Inputs

Connection terminals for the connection of sensors.

2 Outputs

Connection terminals for the connection of valve and damper actuators.

3 DIP switch for ModBUS

1 (=on) boosts the controller to ModBUS address 1

2 (=on) access to ModBUS register via BMS system (requires a restart of the controller)

4 LED

Shows the status of the controller.

Flashing green LED	function ok
Quickly flashing green LED	saves parameter file after change
Flashing green/red LED	room unit not found, make new connection
Flashing red LED	alarm, see display
Steady green LED	requires a restart of the controller

5 In/output for signal to external relay

Enables unit to send and receive signals to/from external relay.

6 Termination resistance

1 The unit is the last node in the network

2 The unit is the first node in the network

3 The unit is situated between the first and last nodes

7 Modular connector

Is used for communication and voltage supply, when a wired room unit is used.

8 Product marking

Provides misc. details about the controller.

Room unit

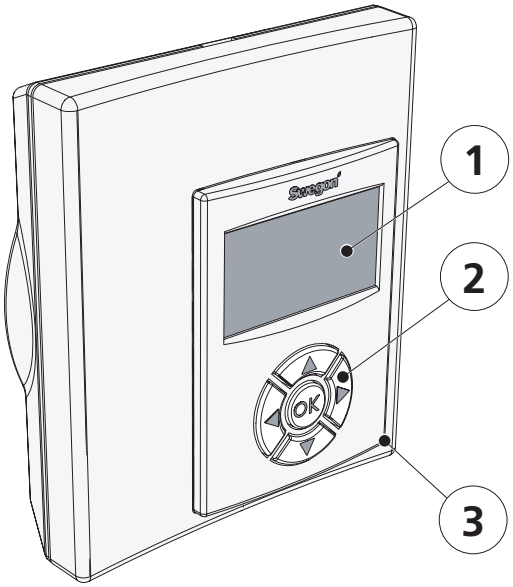


Figure 2: CONDUCTOR RU Room unit

1 Display

Presents information about the system and shows what the user is doing and can do.

2 Keypad

The navigation keys are used for navigating the system and for changing the values.

3 Temperature sensor

Placed inside the enclosure.

Installation

The installation instructions refer to the CONDUCTOR RE controller and the CONDUCTOR RU room unit. The installation can either be made in connection with the new installation of a comfort module, or as an addition for a previously fitted module.

For a new installation, both the controller and the room unit should be supplied together with the comfort module.

Preparations

Before installing the CONDUCTOR, see to the following:

- that the comfort module, with pre-fitted valve actuators for cooling and heating water, are mounted in the ceiling;
- that required sensor (e.g. presence detector, window switch and condensation sensor) are installed in the room;
- that required damper actuators are installed, in both the supply and the extract air ducts for application W3; and
- that cables from all the peripheral units are marked and run up to the comfort module, or alternative location for the controller.

You should have the following tools close at hand for installing the equipment:

- Ordinary screwdriver or electric screwdriver
- Electric drill

Product marking

The product marking affixed to the front of the controller, indicates rated data, the ID-number, which you will need when you install the CONDUCTOR.

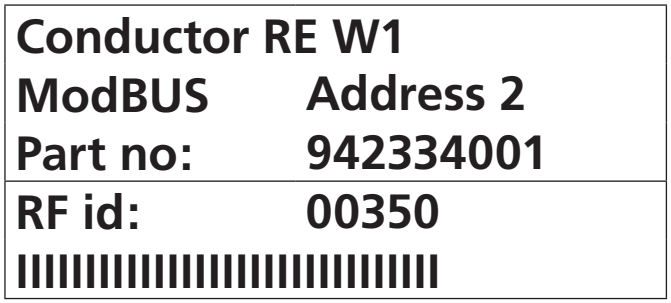


Figure 3. The product identification marking of the controller.

1 **Product name and type of unit**

2 **ModBUS address**

3 **Part number**

4 **ID number**

Step 1: Mount the controller

If a DIN rail is mounted on the comfort module or at another suitable location, the controller should be fastened to this rail.

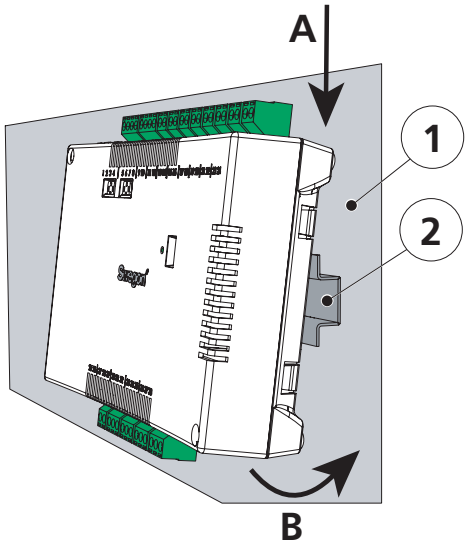


Figure 4. To mount the controller on a DIN rail.

1. Supporting surface, e.g. comfort module

2. DIN rail

A Hitch on

Fasten the two plastic hooks on the backside of the controller in gripping edge of the DIN rail (on top).

B Press to fasten

Press to fasten the snap-on locking devices on the backside of the controller against the gripping edge of the DIN rail (at the bottom).

If a DIN rail is not available premounted or is not at hand, the controller can be appropriately mounted above near the ceiling (**not** to the module) with two appropriate screws, in the fastening holes at the the upper left and lower right corners of the controller enclosure.

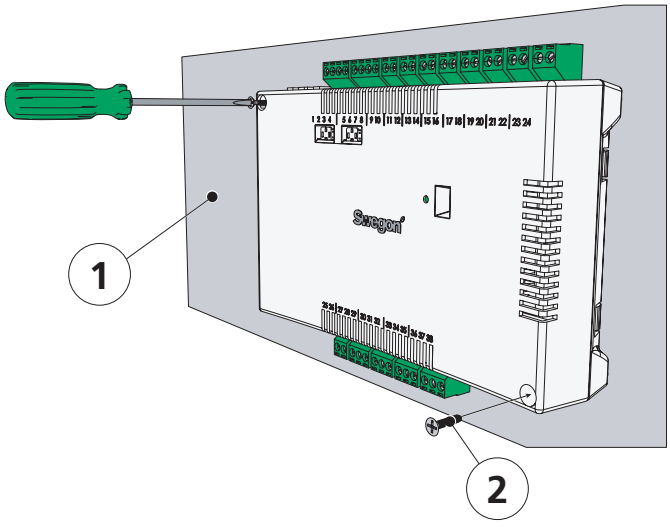


Figure 5. Optional mounting of the controller.

*1. Supporting surface (**not** the comfort module)*

2. Appropriate screw for the supporting surface

Step 2: Connect peripheral units

Transformer, sensors and actuators are to be connected to the controller's detachable wiring terminals. These are in turn connected to the controller's interconnection card.

Table 4. Indicates units accessible for each application.

	Units that can be installed							
Application	A	B	C	D	E	F	G	H
W1	Yes	Yes	Yes	Yes	Yes	Yes	No	No
W3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

A Transformer

Connect the transformer with the cables of the secondary side to controller terminal no. 23 (black cable) and 24 (black and white cable) respectively.

N.B.! Do not connect the transformer's primary section to the mains power supply first until you have vented the piping system.

B Condensation sensor

Connect the condensation sensor to controller terminal no. 17 (brown cable) and terminal no. 18 (black cable) respectively.

C Window switch

Connect normally closed (or normally open) window switch to controller terminal no. 10 and terminal no. 25 (both black cables) respectively.

D Presence detector

Connect a normally closed contact from the key card holder or other presence detector to terminal no. 12 or terminal no. 26 on the controller (both black cables).

E Valve actuator for cooling water

Connect actuator for cooling water to controller terminal no. 27 (blue cable) or terminal no. 29 (brown cable).

F Valve actuator for heating water

Connect the valve actuator for heating water to controller terminal no. 30 (blue cable) ore terminal no. 32 (brown cable).

G Damper motor for supply air (W3)

Connect the motor for the supply air damper to controller terminal no. 33, GO (blue cable), terminal no. 34, 0-10V signal (red cable) and terminal no. 35, 24V (brown cable) respectively.

H Damper motor for extract air (W3)

Connect the motor for the extract air damper to controller terminal no. 36, GO (blue cable), terminal no. 37, 0-10V signal (red cable) and terminal no. 38, 24V (brown cable) respectively.

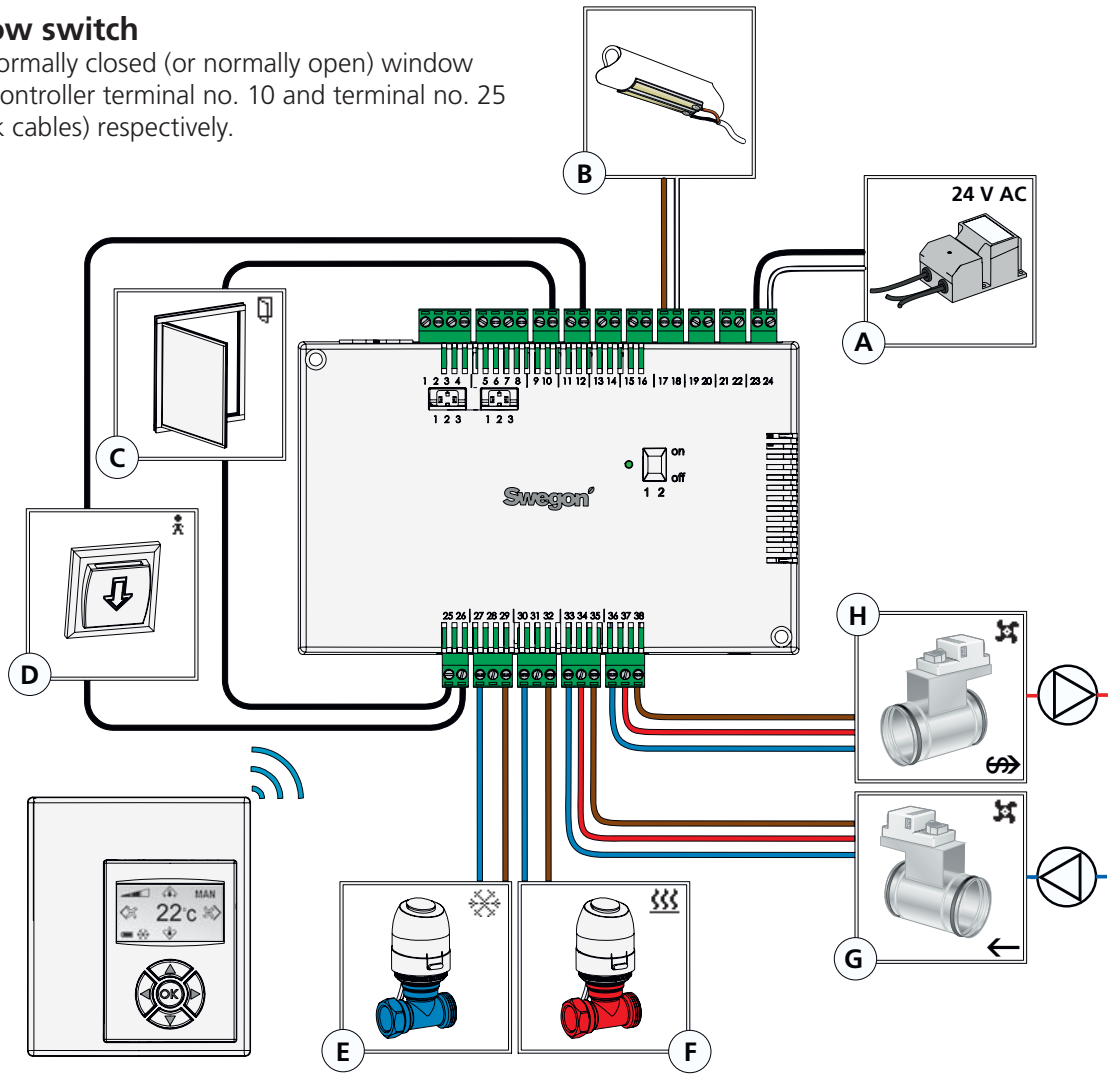


Figure 6. Peripheral units.

Step 3: To start up

After all the required units for the current application have been connected to the controller and the system has been vented, the CONDUCTOR should be started as follows:

1 Connect the mains power supply cable

Connect the transformer's main power supply cable to an electric outlet.

2 Put batteries into the room unit

The room unit is normally supplied with current from four size AAA batteries.

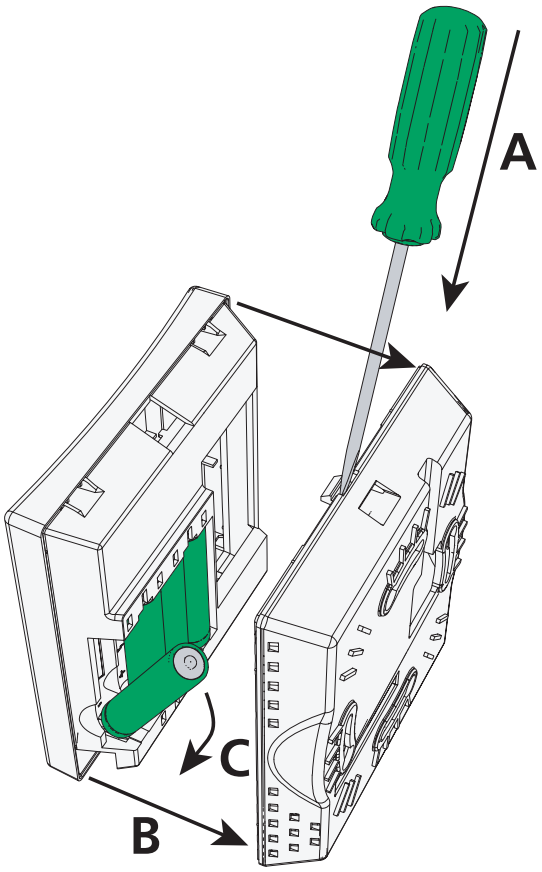


Figure 7. To change the batteries.

A To open the snap lock

Open the snap lock by pressing a screw driver in the notch between the front and back of the room unit.

B Remove the back

Maintain the pressure on the snap lock and remove the back

C Place batteries in the battery compartment

Insert the batteries with the poles turned according to the relief markings in the battery compartment.

As alternative to batteries, the room unit can be energised from the controller, via a 6-pole cable with RJ12 modular connector (see ***Overview***, p. **7**).

N.B.! If the room unit is energised via a cable the unit must be connected at this point.

3 Booting

The system boots as quickly as the controller and the room unit are energised.

The following image (the main image) shows that the system has finished booting.

Figure 8. The display after start up.

The controller is always set to the AUTO operating mode, when the system has finished booting.

4 Select language

On delivery, the room unit has factory-preset English language settings.

In order to change the language of the texts that appear in the images, see ***Language settings***, p. **16**.

5 Check the factory settings

You can check the system's settings in **the info image** (see ***System information***, page **16**).

Make sure that the current application setting (upper row) is in agreement with units connected to the controller (compare with ***Step 2: Connect peripheral units***, page **9**).

6 Connect up the units

In order for the communication between the room unit and the controller to function properly, they must be connected up to one another. You do it with help of the function: **Connect up units** (see p. **16**).

For the address note the ID- or serial number of the controller, which is on the label (see ***Product identification marking***, p. **8**) and **the Info image respectively** (see ***System information***, p. **16**). The three-digit number should be preceded by two zeros (00).

N.B.! If the room unit is energised via cable, you need not carry out the "Connect units" step.

Step 4: Mount the room unit

The room unit contains a temperature sensor used for measuring the current room temperature. A correct measurement of the temperature is decisive for enabling the controller to control the room temperature to meet the desired temperature. It is therefore important that the room unit is placed at a location that is representative for the room.

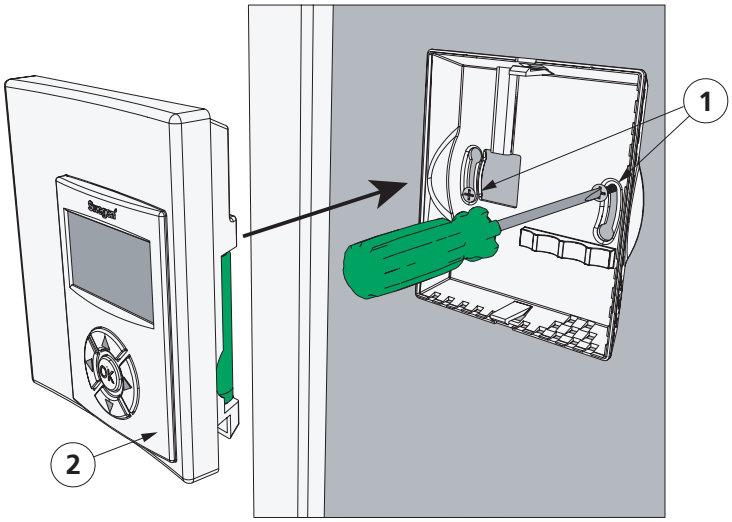


Figure 9. Mounting the room unit.

1. Appropriate screw for the supporting surface

2. The front of the room unit

When mounting the room unit on a wall, first remove the back piece of the unit (see ***Step 3: Start up***, p. **10**). Then tighten the backing piece with two countersinked screws, appropriate for the supporting surface.

N.B.! Use the right and left fastening holes only.

Basic handling

This section describes the basics on how to use the room unit.

User levels and access protection

CONDUCTOR applies a system with three different user levels (LEVEL 1, LEVEL 2 and LEVEL 3), each adapted to any of three user roles, daily users (office workers or hotel guests), caretakers and staff trained by Swegon.

LEVEL 2 and LEVEL 3 are access-protected levels. In order to access the sections of the system with limited access, which are intended for your user role, you must enter an access code. This is done in **the Code entering image** (p. **13**).

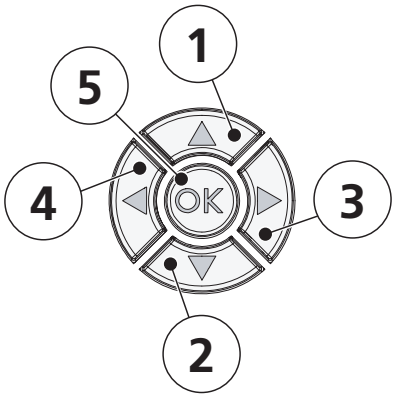


Figure 10. The keypad.

	Designation	Navigating	Change
1	▲ UP	Go upward	Increase value
2	▼ DOWN	Go downward	Decrease value
3	▶ RIGHT	Go forward / Select	(Increase the airflow)
4	◀ LEFT	Go backward	(Decrease the airflow)
5	**OK** CONFIRM	Select / Go forward	Confirm

Navigating in the system

You configure and adjust the functions and settings available for your user level in the images you can reach via a number of menus.

You can advance from one menu to the next and other images by pressing the navigation keys on the room unit. In order to advance in sequences of images you press on ▶ RIGHT, or **OK** CONFIRM. If you want to return to the previous image, press ◀ LEFT.

You can navigate in menus by pressing ▲ UP in order to move upward and ▼ DOWN in order to move downward. In order to select a marked alternative press **OK** CONFIRM or ▶ RIGHT. If you want to return to the previous image, press ◀ LEFT.

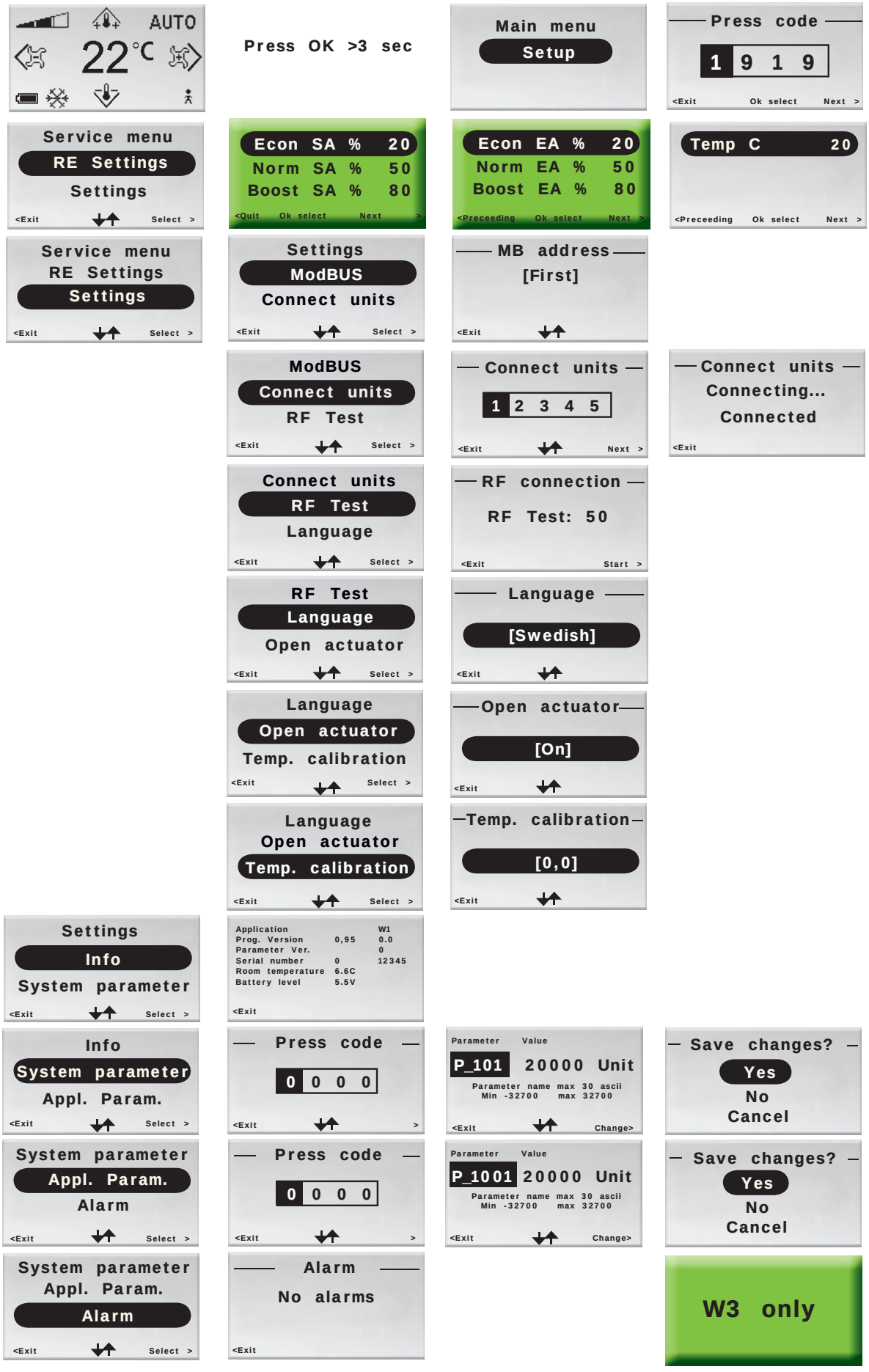
Change of values

In order to change a value, you normally use the ▲ UP and ▼ DOWNkeys, press ▲ UP to increase the value and ▼ DOWN to decrease the value (the only exception is adjustment of airflow, p. **15**).

Each time you press the key, the value is changed one step. By holding the key pressed down, you can alter the value several steps at a time. The rate of change increases after you have held down the key for ca 5 seconds. This makes it easier for you to make larger changes or to skimming through the parameter list.

To confirm a change, press on **OK** CONFIRM. If you do not want to confirm a change, press on ◀ LEFT (not possible if you are adjusting temperatures and airflows, p. 15**).**

Menu survey



Menu overview

You can reach all the room unit's adjustable settings from any of the unit's menus or from the **Main image**. In addition to the Main image and the other menus, this section also describes how you can enter the access code for the system's access-protected sections.

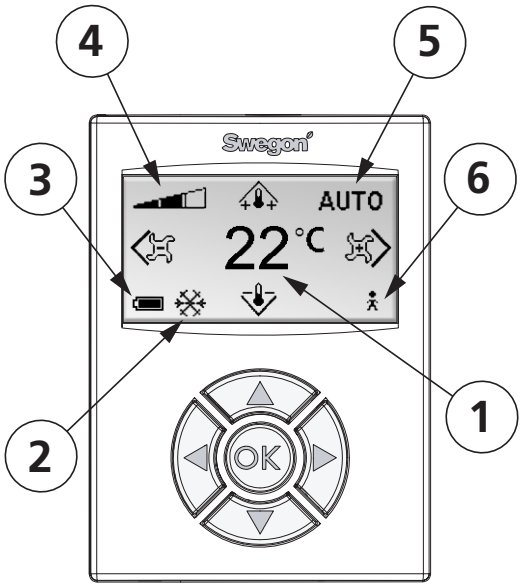


Figure 11. The Main image.

1 Current temperature

The field shows present temperature setting. Specified in ˚C.

2 Heating/cooling

The field shows whether the climate system is heating or cooling.

- Heating
- Cooling

3 Battery level/window status

The field shows the battery level. If a window is open in the room this will be visible on the screen.

- Good battery status.
- Medium good battery status
- Bad battery status. Change battery!
- Open window.

4 Current airflow

The indicator shows the present airflow setting.

- Low airflow
- Normal airflow
- High airflow

5 Operating mode

The field shows current operating mode of the climate system.

N.B.! The field is empty in manual mode.

AUTO	Automatic
ECON	Economy
STOP	Standby
EMERG	Emergency

Main image

The main image shows the current status of the climate system and the temperature and airflow settings.

The image consists of several fields each of which show the status of the climate system in text or

Main menu

You will come to **the Main menu** from the main image by pressing and holding down **OK** CONFIRM for approx. 3 seconds.

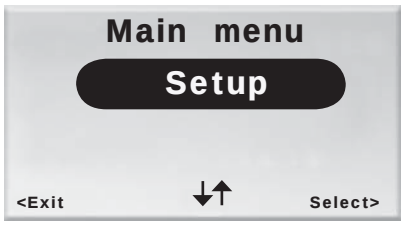


Figure 12. The Main menu.

From **the Main menu** if you have access to LEVEL 2 you can move on to **the service menu** (via **the code entering image**) by selecting "Setup"..

Entering codes

The code entering image is the gateway to LEVEL 2 and LEVEL 3. In order to have access to these levels an authority code must be entered, you do it from this image. You will automatically come to **the code entering image** by selecting "Setup" in **the Main menu**, or "System parameter" and "Application parameter" in **Settings**.

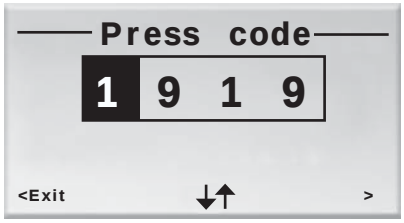


Figure 13. The code entering image.

The access code consists of four digits and must be keyed in on the keyset.

From the last digit position, you press **OK** CONFIRM or ▶ RIGHT when desired password has been entered, if the combination is correct, you will move on to **the Service menu**or to selected parameter setting function. If the wrong code has been entered you will automatically return to the **Main menu** or to the menu **Settings**. You can return to the preceeding menu from own selection by marking the first digit position and press on ◀ LEFT.

Service menu

You will come to **the Service menu** by selecting "Setup" in **the Main menu**.. Before you will have access you must confirm your authorisation by entering a unique access code (see above).

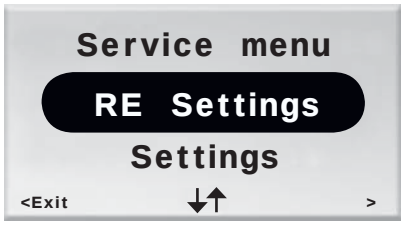


Figure 14. Service menu. More selections can be displayed with by pressing the ▼ key.

The following functions and settings can be configured and displayed from **the Service menu**.

Designation in the menu	Function
RE Settings	Regulate supply and extract air, and room temperature respectivly
Info	Show information about the system
System parameter	Configure parameters independent of any application
Appl. Param.	Configure parameters specific for selected application
Alarm	Show information about current alarms

The selection "Settings" will take you further to **Settings**.

Settings

You will come to the menu **Settings** by selecting "Settings" in **the Service Menu**.

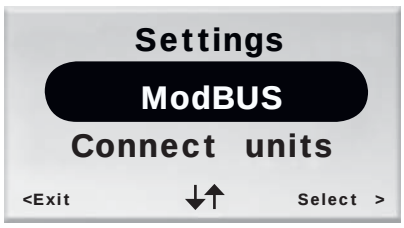


Figure 15. The Settings menu. More selections can be displayed by pressing the ▼ key.

The following settings can be configured from the menu **Settings.**

Designation in the menu	Function
ModBUS	Change ModBUS address
Connect units	Connect the room unit and the controller
RF Test	Test the quality of the radio connection
Language	Change the language in the images
Open actuator	Enable and disable the "first open" function
Temp. Calibration	To correct the measured temperature.

Function handling

This section provides information and describes the settings, which to the daily user (LEVEL 1) and the caretaker (LEVEL 1 and LEVEL 2) and by Swegon trained personnel (LEVEL 1, LEVEL 2 and LEVEL 3) can be displayed and performed respectively.

Each digit indicates a section in a sequence of instructions, a small letter indicates that there are several selection options within a section.

LEVEL 1

Here settings that the daily user, an office worker or hotel guest, is authorized to carry out are described here. It is basic settings of:

- room temperature, and
- airflow (not W1).

To set the desired room temperature

1. From the **Main image** you can change to desired room temperature with the ▲ UP and ▼ DOWN keys.

   The first press of the key takes the user to the temperature setting image, but does not affect the temperature setting.

Figure 16. The temperature adjustment image, LEVEL 1.

2. Press on **OK** CONFIRM to confirm performed setting and return to **the Main menu**.

To set the desired airflow

If application W3 is run in the controller, the user can adjust the airflow in three steps. If W1 is operating, airflow adjustment is not available.

1. From the **Main image** you change to desired room temperature with the ▶ RIGHT and ◀ LEFT keys.

   The first press of the key will take the user to the **Airflow adjustment image**, without changing the desired airflow.

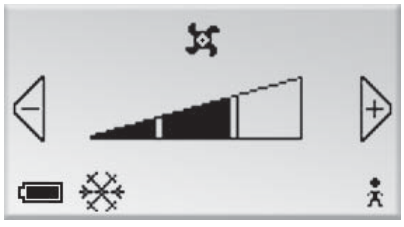


Figure 17. The airflow adjustment image, LEVEL 1.

   Depending on the comfort needs, one of three different levels can be selected: low, normal or high.

   Low airflow

   Normal airflow

   High airflow

   Low airflow corresponds to the automatic level ECON, normal airflow corresponds to AUTO and high airflow corresponds to BOOST (see ***Operating modes***, p. **5** and ***Advanced airflow and temperature settings***, below).

2. Press on **OK** CONFIRM to confirm performed setting and return to **the Main menu**.

LEVEL 2

You who maintain the ventilation system, in addition to entering the daily adjustments that the daily user is authorized to enter, can also do the following:

- enter advanced supply and extract airflow and room temperature settings,
- show information about the system,
- show active alarms,
- change the unit's ModBUS adress,
- connect units to one another,
- test the quality of the radio connection,
- change the language of the text in the images,
- enable and disable the "first open" function and
- calibrate the temperature sensor.

Advanced airflow and temperature settings

Under "RE settings" in the **Service menu** you can adjust the degree of aperture of the supply air dampers(the first sub menu) by ECON, AUTO and BOOST; the opening degree of the extract air dampers (the second sub menu) by ECON, AUTO and BOOST and the existing room temperature (the third sub menu).

N.B.! The degree of aperture of the supply air dampers is only accessible for adjustment if the application W3 is run in the controller. The degree of aperture of the extract air dampers is only accessible when operating in application W3.

System information

Below "Info" in **the Service menu** you will find information about the room unit and the controller.

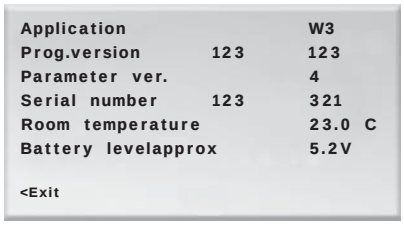


Figure 18. The Info Image.

The following information about the system is displayed in **the Info image**.

Application	Current application
Prog. version	The version number of each software
Parameter ver.	Current version of the parameter list
Serial number	The serial number of each of the units
Room temperature	Current room temperature
Battery level	The battery level of the room unit (when the unit is powered by batteries).

Current data which is specific for the room unit is displayed in the left column. Controller data is displayed in the column to the right.

Alarm

Below "Alarm" in **the Service menu** all active alarms are displayed.

Figure 19. The Alarm image. Example of an alarm, "Setting not acheived".

Change ModBUS address

The unit must be assigned an adress in order for it to be connected to ModBUS, when the room unit is connected via cable. You can change the ModBUS adress of the unit below "ModBUS" in **Settings**.

Figure 20. The MB address image. Example of connection to Address 101.

Select "First" if the unit is the first room unit in the room, select "Second" if the unit is the second room unit, select "System manager" if you desire to connect and adjust parameters in a system manager.

Connect units

In order for you to control the controller with the hand-held terminal, the units must first be connected. You can do this below "Connect units" in Settings. in **Settings**.

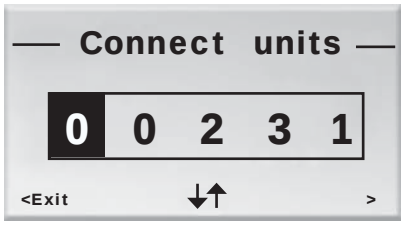


Figure 21. The Connect units image. Example of connection with Serial number 231.

The address consists of five digits and is displayed by means of the keyset.

Testing the radio connection

If no cable is connected between the controller and the room unit, the two will communicate with one another via radio signals. You can test the connection quality between the room unit and the controller below "RF Test" in **Settings**.

During the test, 100 messages are sent between the controller and the room unit. The room unit calculates the number of successful transmissions and displays them in the image.

Language setting

Below "Language" in **Settings** adjust the language to be displayed in the images.

Figure 22. The Language image.

The "First open" function

Below "Open actuators" in **Settings** you can enable and disable the "First open" function (see ***"First open" function***, p. **5**).

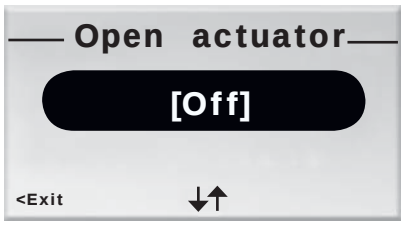


Figure 23. "First Open" image.

Temperature calibration

In order to adjust the measured temperature so it will represent the actual temperature of the room better, select "Temp. Calibration in" **Settings**.

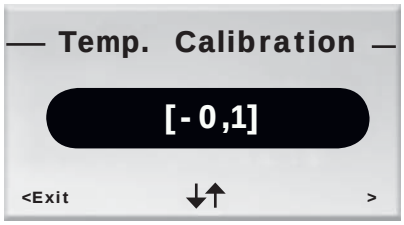


Figure 24. The Temperature calibration image. Example of calibration with -0.1 °C. °C.

LEVEL 3

You who are specially trained by Swegon have access to one more level besides LEVEL 2. You can of course do all that can be made on the two lower levels, but besides that you can also configure the following:

- general parameters, and
- application-specific parameters.

Configure parameters

In order to have access to the parameter setting functions you must confirm your authorisation by entering an authorisation code. There is a unique code for each of the both parameter setting alternatives. (See ***User levels and access protection***, p. **12** and ***Code feeding***, p. **13**.)

You select which kind of parameters you like to configure in the **Service menu**. Select:

a) "System parameter" in order to configure basic parameters which are independant of any application (see ***System parameters*** in the **Appendix**).

b) "Application parameter" in order to configure parameters which are specific for current application (see ***Application parameters*** in the **Appendix**).

The new values of the parameters are not saved in the memory of the controller until after you have confirmed your changes.

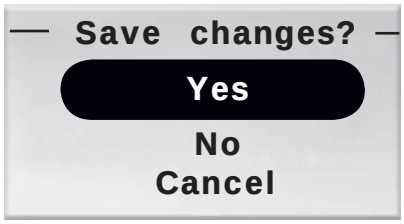


Figure 25. The Save changes image.

Appendix

System parameters (100 serial)

System parameters are basic parameters which are independent of any specific application.

Parameter number	Factory-preset value	Description of the function of the parameter. (Ev. additional commentaries)
	Parameter text	
Min. value	Max. value	
P_101	2 ID	Displays the ModBUS address of the controller.
	ModBUS Address	
Min 1	Max 79	
P_102	3	Displays the transferring speed for connection to a Building Management System (BMS). (1=9,6k, 2=19,2k, 3=38,4k)
	BMS Baudrate, 9.6 19.2 38.4	
Min 1	Max 3	
P_103	2	Parity setting for connection to BMS. (0=Uneven, 1=Even, 2=None)
	BMS Parity 0=Od. 1=Ev. 2=None	
Min 0	Max 2	
P_104	1	Number of stop bits for connection to BMS. (1=1, 2=2)
	BMS Stop bits	
Min 1	Max 2	
P_105	3	Displays the current type of controller.
	Component type	
Min 3	Max 3	
P_106	2	Displays which application the controller is set to run. (1=W3, 2=W1
	Application type	
Min 1	Max 2	
P_107	1	Displays the status of the relay for the EMERG mode. (0=Open, 1=Closed, 2=No measure)
	Relay at emer. 0=Op. 1=Cl. 2=No act.	
Min 0	Max 2	
P_108	48 hour	Displays how often the valves should be exercised (the time interval between two exercise runs). (0=No exercising)
	Valve exercise 0=Not used	
Min 0	Max 96	
P_109	20 min.	Displays after how long time with no person in the room, that the controller should switch from AUTO to ECON.
	Motion timer	
Min 0	Max 60	
P_110	30 min.	General delay before the controller can alarm after starting up.
	Warning delay from start-up	
Min 0	Max 60	
P_111	10 min.	Time before alarm for + or – 100% outsignal..
	Warning delay, PI-overload	
Min 0	Max 60	

P_112	30 min.
Warning delay, Setpoint	
Min 0	Max 60

Displays after how long time the system should initiate an alarm, if the setpoint for temperature, flow or pressure has not been reached.

P_113	30 min.
Warning delay, pressure sensor	
Min 0	Max 60

If the application needs pressure or if the flow sensor initiates an alarm after a given time, if any of these units is missing.

P_114	0
Room Number (optional)	
Min 0	Max 32000

Displays the room number.

Application parameters

Aplication parameter is parameter-specific for selected application.

W3 (1000 serial)

Parameters which are specific for the application W3 are included in the 1000 serial.

P_1001	4
System1=He2=Co3=ChOv4=He-Co	
Min 1	Max 4

Displays how the climate system works when heating and cooling.

(1=Only heating, 2=Only cooling, 3=Change over, 4=Heating/Cooling)

P_1002	1
1 or 2 room units	
Min 0	Max 2

Displays whether one or two room units are used.

(0=the temp sensor of the controller is used, 1=1 unit, 2=2 units. Cable must be used between RU and RE for 2.)

P_1003	10 °C
Frost guard temp.	
Min 5	Max 12

Displays at which temperature the frost protection should switch in.

P_1004	4 °C
Economy neutral zone	
Min 0	Max 10

Displays the temperature interval around the setpoint within which the present value should be in order for the controller to switch from AUTO to ECON.

(Ex. 4= ±2 °C)

P_1005	22 °C
Room temperature Setpoint	
Min 10	Max 32

Displays existing setting of room temperature.

P_1008	90 %
Boost flow SA	
Min 0	Max 100

Displays the supply airflow for BOOST.

P_1009	90 %
Timer flow SA	
Min 0	Max 100

Displays the extract airflow for time adjusted forcing.

P_1010	0
Emergency func SA mode	
Min 0	Max 1

Displays if the damper in the extract air duct should be open or closed for the EMERG mode.

(0=Closed, 1=Open)

P_1011	10 %
Stand-by flow SA	
Min 0	Max 100

Displays the extract airflow for STOP.

P_1012	90 %	Displays the extract airflow for BOOST.
	Boost flow EA	
	Min 0 Max 100	
P_1013	90 %	Displays the extract airflow for time adjusted forcing.
	Timer func flow EA	
	Min 0 Max 100	
P_1014	0	Displays whether the damper in the extract air duct should be open or closed in the EMERG mode. (0=Closed, 1=Open)
	Emergency func exhaust mode	
	Min 0 Max 1	
P_1015	10 %	Displays the extract airflow for STOP.
	Stand-by flow EA	
	Min 0 Max 100	
P_1016	50 %	Displays the supply airflow for AUTO.
	Normal flow SA	
	Min 0 Max 100	
P_1017	50 %	Displays the extract airflow for AUTO.
	Normal flow EA	
	Min 0 Max 100	
P_1018	0 mV	Offset voltage for 0% supply airflow. (Dissolution=50mV)
	SA 0% value	
	Min 0 Max 5000	
P_1019	10000 mV	Offset voltage for 100% supply airflow. (Dissolution=50mV)
	SA 100% value	
	Min 5000 Max 10000	
P_1020	0 mV	Offset voltage for 0% extract airflow. (Dissolution=50mV)
	EA 0% value	
	Min 0 Max 5000	
P_1021	10000 mV	Offset voltage for 100% extract airflow. (Dissolution=50mV)
	EA 100% value	
	Min 5000 Max 10000	
P_1022	1	Displays if the ECON mode is accessible. (0=No, 1=Yes)
	Economy mode available?	
	Min 0 Max 1	
P_1023	1	Displays which sort of valve actuator for cooling water is used. (1=24VAC, 2=0-10V)
	Actuator Cool 1=24VAC,2=0-10V	
	Min 1 Max 2	
P_1024	1	Displays which sort of valve actuator for heat water is used. (1=24VAC, 2=0-10V)
	Actuator Heat 1=24VAC, 2=0-10V	
	Min 1 Max 2	

P_1025	0 Window 0=NP,1=NC,2=NO Min 0 Max 2
Displays whether the window switch is connected and how. (0=Is not used, 1=NC, 2=NO)	
P_1026	1 Occupancy 0=NP,1=NC,2=NO Min 0 Max 2
Displays whether presence sensor is connected and how. (0=Is not used, 1=NC, 2=NO)	
P_1027	5000 P term Change over, Scale 1:100 Min 1000 Max 10000
P value. Larger value quicker regulation, smaller value slower regulation.	
P_1028	5 I term Change over, Scale 1:100 Min 1 Max 50
I value. Larger value quicker regulation, smaller value slower regulation.	
P_1029	2 °C Boost temp. positive hysteresis Min 1 Max 10
Displays by how much the room temperature actual value should rise above the setpoint in order for the controller to switch from AUTO to BOOST.	
P_1034	1 Timer function available? Min 0 Max 1
Displays whether time-adjusted flow boost is accessible. (0=No, 1=Yes)	
P_1035	5 min. Timer function time Min 1 Max 300
Displays how long the time-adjusted flow boost should be on ON when occupancy is activated.	
P_1038	10 °C Room unit's min setpoint Min 0 Max 20
The lowest possible room temperature setpoint for the MAN operating mode.	
P_1039	32 °C Room unit's max setpoint Min 25 Max 50
The highest possible room temperature setpoint for the MAN operating mode.	
P_1040	10 % Room unit's min air flow Min 5 Max 50
The lowest possible airflow setpoint for the MAN operating mode.	
P_1041	100 % Room unit's max airflow Min 50 Max 100
The highest possible airflow setpoint for the MAN operating mode.	
P_1042	1 °C Boost temp. negative hysteresis Min 0 Max 10
Displays how much the current room temperature should differ from the setpoint in order for the controller to switch from BOOST to AUTO.	
P_1043	30 % Economy flow SA Min 0 Max 100
Displays the supply airflow for ECON.	

P_1044	30 %	Displays the extract airflow for ECON.
	Economy flow EA	
	Min 0 Max 100	
P_1045	480 min.	Displays how long time after the latest manual adjustment of room temperature or airflow that the controller should return to AUTO. (0=Is not used)
	RU back to auto state	
	Min 0 Max 1200	
P_1046	15 °C	Displays the setpoint temperature for “night cool”.
	Night cool temp setpoint	
	Min 10 Max 20	
P_1047	80 %	Displays the supply airflow for “night cool”.
	Night cool flow SA	
	Min 50 Max 100	
P_1048	80 %	Displays the extract airflow for “night cool”.
	Night cool flow EA	
	Min 50 Max 100	
P_1049	7000	P value. Larger value quicker regulation, smaller value slower regulation.
	P term Cooling Scale 1:100	
	Min 1000 Max 10000	
P_1050	3	I value. Larger value quicker regulation, smaller value slower regulation.
	I term Cooling Scale 1=100	
	Min 1 Max 50	
P_1051	4500	P value. Larger value quicker regulation, smaller value slower regulation.
	P term Heating Scale 1:100	
	Min 1000 Max 10000	
P_1052	3	I value. Larger value quicker regulation, smaller value slower regulation.
	I term Heating Scale 1:100	
	Min 1 Max 50	

W1(1100 serial)

Parameters which are specific for the application W1 are included in the 1100 serial.

P_1101	4	Displays how the climate system works when heating and cooling. (1=Only heating, 2=Only cooling, 3=Change over, 4=Heating/Cooling)
	System1=He2=Co3=ChOv4=He-Co	
	Min 1 Max 4	
P_1102	1	Displays whether one or two room units are used. (0=the temp sensor of the controller is used, 1=1 unit, 2=2 units.) for 2, cable between RE and RU.
	1 or 2 room units	
	Min 0 Max 2	
P_1103	10 °C	Displays at which temperature the frost protection should switch in.
	Frost guard temp.	
	Min 5 Max 12	
P_1104	4 °C	Displays the temperature interval around the setpoint within which the present value should be in order for the controller to switch from AUTO to ECON.
	Economy neutral zone	
	Min 0 Max 10	
P_1105	22 °C	Displays the existing room temperature setting.
	Room temperature Setpoint	
	Min 10 Max 32	
P_1108	0	Displays whether the ECON mode is accessible. (0=No, 1=Yes)
	Economy mode available	
	Min 0 Max 1	
P_1109	1	Displays which sort of valve actuator for cooling water is being used. (1=24VAC PWM, 2=0-10V)
	Actuator Cool 1=24VAC,2=0-10V	
	Min 1 Max 2	
P_1110	1	Displays which sort of valve actuator for heat water is being used. (1=24VAC PWM, 2=0-10V)
	Actuator Heat 1=24VAC, 2=0-10V	
	Min 1 Max 2	
P_1111	0	Displays whether the window switch is connected and how. (0=Is not used, 1=NC, 2=NO)
	Window 0=NP,1=NC,2=NO	
	Min 0 Max 2	
P_1112	0	Displays whether the presence sensor is connected and how. (0=Is not used, 1=NC, 2=NO)
	Occupancy 0=NP,1=NC,2=NO	
	Min 0 Max 2	
P_1113	5000	P value. Larger value quicker regulation, smaller value slower regulation.
	P term change over	
	Min 1000 Max 10000	
P_1114	3	I value. Larger value quicker regulation, smaller value slower regulation.
	P term change over	
	Min 1 Max 50	
P_1119	10 °C	The lowest possible room temperature setpoint for the MAN operating mode.
	Room unit's min temperature	
	Min 0 Max 20	

P_1120	32 °C	The highest possible room temperature setpoint for the MAN operating mode.
	Room unit's max temperature	
	Min 25 Max 50	
P_1121	15 °C	Displays the temperature setpoint for "night cool".
	Night cool temp setpoint	
	Min 10 Max 20	
P_1122	0 min.	Displays how long after the latest manual adjustment of room temperature or airflow that the controller should return to AUTO. 0=Is not used
	RU back to auto state	
	Min 0 Max 1200	
P_1123	7000	P value. Larger value quicker regulation, smaller value slower regulation.
	P term Cooling Scale 1:100	
	Min 1000 Max 10000	
P_1124	3	I value. Larger value quicker regulation, smaller value slower regulation.
	I term Cooling Scale 1:100	
	Min 1 Max 50	
P_1125	4500	P value. Larger value quicker regulation, smaller value slower regulation.
	P term Heating Scale 1:100	
	Min 1000 Max 10000	
P_1126	3	I value. Larger value quicker regulation, smaller value slower regulation.
	I term Heating Scale 1:100	
	Min 1 Max 50	

ModBus Register W1				
Coil Status	**Discrete Output (1 bit)**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
0x0001	Not used			
0x0002	Not used			
0x0003	Not used			
0x0004	Not used			
0x0005	Economy mode	0/1	0=Unavailable, 1= Available	0
0x0006	Not used			
0x0007	Not used			

ModBus Register W1				
Input Status	**Discrete Input (1 bit)**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
1x0001	Condensation	0/1		
1x0002	Relay state	0/1		
1x0003	Occupancy switch	0/1		
1x0004	Window switch	0/1		
1x0005	Motion	0/1		
1x0006	No active alarms	0/1	ALARM INFO	
1x0007	No Room Unit 1	0/1	ALARM, resets automatically	
1x0008	No Room Unit 2	0/1	ALARM, resets automatically	
1x0009	No Pressure sensor	0/1	ALARM, resets automatically	
1x0010	No Supply Flow sensor	0/1	ALARM, resets automatically	
1x0011	No Exhaust Flow sensor	0/1	ALARM, resets automatically	
1x0012	Room Unit 1 Temperature	0/1	ALARM, resets automatically	
1x0013	Room Unit 2 Temperature	0/1	ALARM, resets automatically	
1x0014	Regulator KTY short circuit	0/1	ALARM, resets automatically	
1x0015	Regulator KTY open circuit	0/1	ALARM, resets automatically	
1x0016	Room Unit Low Battery	0/1	ALARM, resets automatically	
1x0017	PI-controller overload	0/1	ALARM, resets automatically	
1x0018	Setpoint not reached	0/1	ALARM, resets automatically	
1x0019	TBD	0/1	ALARM, resets automatically	
1x0020	TBD	0/1	ALARM, resets automatically	
1x0021	No device list	0/1	ALARM, resets automatically	
1x0022	AC overload	0/1	ALARM, resets automatically	
1x0023	System fault	0/1	ALARM	
1x0024	No serial number	0/1	ALARM	
1x0025	TBD	0/1	ALARM	
1x0026	Short circuit X11	0/1	ALARM, requires HW reset	
1x0027	Short circuit X12	0/1	ALARM, requires HW reset	
1x0028	Short circuit X13	0/1	ALARM, requires HW reset	
1x0029	Short circuit X14	0/1	ALARM, requires HW reset	
1x0030	SPI Flash broken	0/1	ALARM, requires HW reset	
1x0031	Radio chip broken	0/1	ALARM, requires HW reset	
1x0032	Parameter file revision	0/1	ALARM, requires HW reset	
1x0033	Parameter file format	0/1	ALARM, requires HW reset	
1x0034	No ModBus ID	0/1	ALARM, requires HW reset	
1x0035	No Application	0/1	ALARM, requires HW reset	

ModBus Register W1				
Input Status	**Discrete Input (1 bit)**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
1x0036	No parameters	0/1	ALARM, requires HW reset	
1x0037	Parameter missing	0/1	ALARM, requires HW reset	
1x0038	Parameter value error	0/1	ALARM, requires HW reset	
1x0039	Parameter file size	0/1	ALARM, requires HW reset	
1x0040	Wrong parameter file	0/1	ALARM, requires HW reset	
1x0041	Check Duct Group SM	0/1	ALARM, resets after right parameters	
1x0042	Check Duct Group DC	0/1	ALARM, resets after right parameters	
1x0043	Previous parameters are lost	0/1	ALARM, requires HW reset	
1x0044	Factory parameters take up	0/1	ALARM, requires HW reset	
1x0045	TBD	0/1	ALARM, requires HW reset	
1x0046	TBD	0/1	ALARM, requires HW reset	
1x0047	No supply pressure from AHU	0/1	ALARM, resets automatically	
1x0048	No exhaust pressure from AHU	0/1	ALARM, resets automatically	
1x0049	Supply duct 100% open	0/1	ALARM, resets automatically	
1x0050	Exhaust duct 100% open	0/1	ALARM, resets automatically	
1x0051	Low voltage detect	0/1	ALARM, resets automatically	
1x0052	TBD	0/1	ALARM, resets automatically	
1x0053	Duct group member missing	0/1	ALARM, resets automatically	
1x0054	Negative pressure	0/1	ALARM, resets automatically	

ModBus Register W1				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
4x0001	Relay in Emergency	0/1	0=Close, 1=Open, 2=No Action	
4x0002	Application transition	1/8	1=Normal, 3=Manual, 4=Stand-by, 5=Emergency, 6=NightCool	
4x0003	Room number			0
4x0004	Valve exercise	0/72	Valve exercise 0=Not used (hours)	48
4x0005	Motion Timer	0/20	Motion timer (minutes)	20
4x0006	General warning time	0/60	Warning delay, general (minutes)	30
4x0007	PI-overload warning time	0/60	Warning delay, PI-overload (minutes)	10
4x0008	Set-point warning time	0/60	Warning delay, Set point (minutes)	10
4x0009	Not used			
4x0010	Not used			
4x0011	Not used			
4x0012	Not used			
4x0013	Not used			
4x0014	System type	1/4	1= Heat, 2= Cool, 3= Change Over, 4=Heat+Cool	4
4x0015	Number of Room units	1/2	1=One room unit, 2= Two room units	1
4x0016	Window switch	0/2	0=Not used, 1=Normaly Closed, 2=Normaly Open	0
4x0017	Occupancy switch	0/2	0=Not used, 1=Normaly Closed, 2=Normaly Open	0
4x0018	Actuator Type Cool	1/2	1=24VAC, 2=0-10V	1
4x0019	Actuator Type Heat	1/2	1=24VAC, 2=0-10V	1
4x0020	Not used			

ModBus Register W1				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
4x0021	Not used			
4x0022	Not used			
4x0023	Frost guard temp.	5/15		10
4x0024	Economy neutral zone	0/10	Ex 4=±2 (°C)	4
4x0025	Room temperature Setpoint	10/32	(°C)	22
4x0026	Night cool temp set point	10/20	(°C)	15
4x0027	Not used			
4x0028	Not used			
4x0029	Room unit's min set point	0/20	only when room unit is manual state (°C)	10
4x0030	Room unit's max set point	25/50	only when room unit is manual state (°C)	32
4x0031	Not used	5/50		
4x0032	Not used	50/100		
4x0033	Not used	1/10		
4x0034	Not used	0/10		
4x0035	RU back to auto state	0/1200	Time when room unit come back from manual state to auto (minutes)	0
4x0036	Not used			
4x0037	Not used			
4x0038	Not used			
4x0039	Not used			
4x0040	Not used			
4x0041	Not used			
4x0042	Not used			
4x0043	Not used			
4x0044	Not used			
4x0045	Not used			
4x0046	Not used			
4x0047	Not used			
4x0048	P term Heat	1/10000		4500
4x0049	I term Heat	1/10000		3
4x0050	P term Cool	1/10000		7000
4x0051	I term Cool	1/10000		3
4x0052	P term Change over	1/10000		5000
4x0053	I term Change over	1/10000		5
4x0054	Not used			
4x0055	Not used			
4x0056	Not used			
4x0057	Not used			
4x0058	Not used			
4x0059	Not used			
4x0060	Not used			

ModBus Register W1				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
4x0061	Not used			
4x0062	Not used			
4x0063	Manual Temp	10-32	Only used in Manual state (°C)	
4x0064	Not used			
4x0065	Not used			
4x0066	Not used			
4x0067	Not used			
4x0068	Not used			
4x0069	Copy of Coil Status 1-16	0/65535	"Bit0=0x0001 Bit1=0x0002 … Bit15=0x0016"	

ModBus Register W1				
Input register	**16 bit integer register**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
3x0001	Component Name ID	0/10	ID for type of controller in Conductor and Wise system	00003
3x0002 - 0017	Component Name	0/999	Name built of max 16 chr, exch chr (ASCII standard)	0
3x0018	Application ID			
3x0019	HW Serial No.			
3x0020	SW version			
3x0021	Not used			
3x0022	Application state	0/8	" 0=Init, 1=Auto Normal, 2=Auto Economy, 3=Manual, 4=Stand-by, 5=Emengency 6=NightCool"	
3x0023	Not used			
3x0024	Not used			
3x0025	Time since last boot (Year)			
3x0026	Time since last boot (Hours)	0/8760	After 8760h Year is updated	
3x0027	Time since last boot (Minutes)	0/60	After 60min Hour is updated	
3x0028	Temp sensor regulator		Scaling 1:10 (°C)	
3x0029	Temp sensor RU1		Scaling 1:10 (°C)	
3x0030	Temp sensor RU2		Scaling 1:10 (°C)	
3x0031	Temp set point RU		(°C)	
3x0032				
3x0033	Battery level RU		Scaling 1:10 (V)	
3x0034	Not used			
3x0035	Not used			
3x0036	Not used			
3x0037	Input Analog 1	0/10000	(mV)	
3x0038	Input Analog 2	0/10000	(mV)	
3x0039	Input Analog 3	0/10000	(mV)	
3x0040	Input Analog 4	0/10000	(mV)	
3x0041	Output PWM 1	0/100	(%)	
3x0042	Output PWM 2	0/100	(%)	

ModBus Register W1				
Input register	**16 bit integer register**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
3x0043	Output PWM 3	0/100	(%)	
3x0044	Output PWM 4	0/100	(%)	
3x0045	Output Analog 1	0/10000	(mV)	
3x0046	Output Analog 2	0/10000	(mV)	
3x0047	Output Analog 3	0/10000	(mV)	
3x0048	Output Analog 4	0/10000	(mV)	
3x0049	PID Water Out	-100/100	(%)	
3x0050	PID ChangeOver Out	-100/100	(%)	
3x0051	Not used			
3x0052	Not used			
3x0053	Cool Water	0/100	(%)	
3x0054	Warm Water	0/100	(%)	
3x0055	Not used			
3x0056	Not used			
3x0057	Not used			
3x0058	Not used			
3x0059	Not used			
3x0060	Room temp		(°C)	
3x0061	Change over temp		(°C)	
3x0062	Not used			
3x0063	Copy of Input Status 1-16	0/65535	"Bit0=0x0001 Bit1=0x0002 ... Bit15=0x0016"	
3x0064	Copy of Input Status 17-32	0/65535	"Bit0=0x0017 Bit1=0x0018 ... Bit15=0x0032"	
3x0065	Copy of Input Status 33-48	0/65535	"Bit0=0x0033 Bit1=0x0034. ... Bit15=0x0048"	
3x0066	Copy of Input Status 49-64	0/65535	"Bit0=0x0049 Bit1=0x0050 ... Bit15=0x0064"	

ModBus Register W3				
Coil Status	**Discrete Output (1 bit)**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
0x0001	Not used			
0x0002	SA Emergency action	0/1		0
0x0003	EA Emergency action	0/1		0
0x0004	Not used			
0x0005	Economy mode	0/1	0=Unavailable, 1= Available	1
0x0006	Timer Function	0/1	0=Unavailable, 1= Available	1
0x0007	Not used	0/1	0=Unavailable, 1= Available	

ModBus Register W3				
Input Status	**Discrete Input (1 bit)**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
1x0001	Condensation	0/1		
1x0002	Relay state	0/1		
1x0003	Occupancy switch	0/1		
1x0004	Window switch	0/1		
1x0005	Motion	0/1		
1x0006	No active alarms	0/1	ALARM INFO	
1x0007	No Room Unit 1	0/1	ALARM, resets automatically	
1x0008	No Room Unit 2	0/1	ALARM, resets automatically	
1x0009	No Pressure sensor	0/1	ALARM, resets automatically	
1x0010	No Supply Flow sensor	0/1	ALARM, resets automatically	
1x0011	No Exhaust Flow sensor	0/1	ALARM, resets automatically	
1x0012	Room Unit 1 Temperature	0/1	ALARM, resets automatically	
1x0013	Room Unit 2 Temperature	0/1	ALARM, resets automatically	
1x0014	Regulator KTY short circuit	0/1	ALARM, resets automatically	
1x0015	Regulator KTY open circuit	0/1	ALARM, resets automatically	
1x0016	Room Unit Low Battery	0/1	ALARM, resets automatically	
1x0017	PI-controller overload	0/1	ALARM, resets automatically	
1x0018	Setpoint not reached	0/1	ALARM, resets automatically	
1x0019	TBD	0/1	ALARM, resets automatically	
1x0020	TBD	0/1	ALARM, resets automatically	
1x0021	No device list	0/1	ALARM, resets automatically	
1x0022	AC overload	0/1	ALARM, resets automatically	
1x0023	System fault	0/1	ALARM	
1x0024	No serial number	0/1	ALARM	
1x0025	TBD	0/1	ALARM	
1x0026	Short circuit X11	0/1	ALARM, requires HW reset	
1x0027	Short circuit X12	0/1	ALARM, requires HW reset	
1x0028	Short circuit X13	0/1	ALARM, requires HW reset	
1x0029	Short circuit X14	0/1	ALARM, requires HW reset	
1x0030	SPI Flash broken	0/1	ALARM, requires HW reset	
1x0031	Radio chip broken	0/1	ALARM, requires HW reset	
1x0032	Parameter file revision	0/1	ALARM, requires HW reset	

ModBus Register W3				
Input Status	**Discrete Input (1 bit)**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
1x0033	Parameter file format	0/1	ALARM, requires HW reset	
1x0034	No ModBus ID	0/1	ALARM, requires HW reset	
1x0035	No Application	0/1	ALARM, requires HW reset	
1x0036	No parameters	0/1	ALARM, requires HW reset	
1x0037	Parameter missing	0/1	ALARM, requires HW reset	
1x0038	Parameter value error	0/1	ALARM, requires HW reset	
1x0039	Parameter file size	0/1	ALARM, requires HW reset	
1x0040	Wrong parameter file	0/1	ALARM, requires HW reset	
1x0041	Check Duct Group SM	0/1	ALARM, resets after right parameters	
1x0042	Check Duct Group DC	0/1	ALARM, resets after right parameters	
1x0043	Previous parameters are lost	0/1	ALARM, requires HW reset	
1x0044	Factory parameters take up	0/1	ALARM, requires HW reset	
1x0045	TBD	0/1	ALARM, requires HW reset	
1x0046	TBD	0/1	ALARM, requires HW reset	
1x0047	No supply pressure from AHU	0/1	ALARM, resets automatically	
1x0048	No exhaust pressure from AHU	0/1	ALARM, resets automatically	
1x0049	Supply duct 100% open	0/1	ALARM, resets automatically	
1x0050	Exhaust duct 100% open	0/1	ALARM, resets automatically	
1x0051	Low voltage detect	0/1	ALARM, resets automatically	
1x0052	TBD	0/1	ALARM, resets automatically	
1x0053	Duct group member missing	0/1	ALARM, resets automatically	
1x0054	Negative pressure	0/1	ALARM, resets automatically	

ModBus Register W3				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
4x0001	Relay in Emergency	0/1	0=Close, 1=Open, 2=No Action	1
4x0002	Application transition	1/8	1=Auto Normal, 2=Auto Economy, 3=Auto boost, 4=Manual, 5=Timerfunction 6=Stand-by, 7=Emergency, 8=Night Cool	
4x0003	Room number			0
4x0004	Valve exercise	0/72	Valve exercise 0=Not used (hours)	48
4x0005	Motion Timer	0/20	Motion timer (minutes)	20
4x0006	General warning time	0/60	Warning delay, general (minutes)	30
4x0007	PI-overload warning time	0/60	Warning delay, PI-overload (minutes)	10
4x0008	Set-point warning time	0/60	Warning delay, Set point (minutes)	10
4x0009	Not used			
4x0010	Not used			
4x0011	Not used			
4x0012	Not used			
4x0013	Not used			
4x0014	System type	1/4	1= Heat, 2= Cool, 3= Change Over, 4=Heat+Cool	4
4x0015	Number of Room units	1/2	1=One room unit, 2= Two room units	1
4x0016	Window switch	0/2	0=Not used 1=Normaly Closed 2=Normaly Open	0
4x0017	Occupancy switch	0/2	0=Not used 1=Normaly Closed 2=Normaly Open	1
4x0018	Actuator Type Cool	1/2	1=24VAC, 2=0-10V	1

ModBus Register W3				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
4x0019	Actuator Type Heat	1/2	1=24VAC, 2=0-10V	1
4x0020	Not used			
4x0021	Not used			
4x0022	Not used			
4x0023	Frost guard temperature	5/15		10
4x0024	Economy neutral zone	0/10	Ex 4=±2 (°C)	4
4x0025	Room temperature Setpoint	10/32	(°C)	22
4x0026	Night cool temp set point	10/20	(°C)	15
4x0027	Timer function time	1/300	Boost time when occupancy occurs in room (minutes)	5
4x0028	Not used			
4x0029	Room unit's min set point	0/20	only when room unit is manual state (°C)	10
4x0030	Room unit's max set point	25/50	only when room unit is manual state (°C)	32
4x0031	Room unit's min air flow	5/50	only when room unit is manual state (%)	10
4x0032	Room unit's max air flow	50/100	only when room unit is manual state (%)	100
4x0033	Boost temp. positive hysteresis	1/10	Room temp rise from defined setpoint, Auto Boost activated (°C)	2
4x0034	Boost temp. negative hysteresis	0/10	Room temp fall from defined setpoint, Auto Boost activated (°C)	1
4x0035	RU back to auto state	0/1200	Time when room unit come back from manual state to auto (minutes)	480
4x0036	Normal flow SA	0/100	(%)	50
4x0037	Normal flow EA	0/100	(%)	50
4x0038	Economy flow SA	0/100	(%)	20
4x0039	Economy flow EA	0/100	(%)	20
4x0040	Night cool flow SA	50/100	(%)	80
4x0041	Night cool flow EA	50/100	(%)	80
4x0042	Boost flow SA	0/100	(%)	90
4x0043	Boost flow EA	0/100	(%)	90
4x0044	Timer flow SA	0/100	(%)	90
4x0045	Timer func flow EA	0/100	(%)	90
4x0046	Stand-by flow EA	0/100	(%)	10
4x0047	Stand-by flow EA	0/100	(%)	10
4x0048	P term Heat	1/10000		4500
4x0049	I term Heat	1/10000		3
4x0050	P term Cool	1/10000		7000
4x0051	I term Cool	1/10000		3
4x0052	P term Change over	1/10000		5000
4x0053	I term Change over	1/10000		5
4x0054	SA 0% value	0/5000		0
4x0055	SA 100% value	5000/10000		10000
4x0056	EA 0% value	0/5000		0
4x0057	EA 100% value	5000/10000		10000
4x0058	Not used			

ModBus Register W3				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
4x0059	Not used			
4x0060	Not used			
4x0061	Not used			
4x0062	Not used			
4x0063	Manual Temp	10-32	Only used in Manual state (°C)	
4x0064	Manual SA flow	10/100	Only used in Manual state (%)	
4x0065	Manual EA flow	10/100	Only used in Manual state (%)	
4x0066	Not used			
4x0067	Not used			
4x0068	Not used			
4x0069	Copy of Coil Status 1-16	0/65535	"Bit0=0x0001 Bit1=0x0002 … Bit15=0x0016"	

ModBus Register W3				
Input register	**16 bit integer register**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
3x0001	Component Name ID	0/10	ID for type of controller in Conductor and Wise system	00003
3x0002 - 0017	Component Name	0/999	Name built of max 16 chr, exch chr (ASCII standard)	
3x0018	Applacation ID			
3x0019	HW Serial No.			
3x0020	SW version			
3x0021	Not used			
3x0022	Application state	0/8	0=Init, 1=Auto Normal, 2=Auto Economy, 3=Auto-Boost, 4=Manual, 5=TimerFunction 6=Stand-by, 7=Emergency, 8=NightCool	
3x0023	Not used			
3x0024	Not used			
3x0025	Time since last boot (Year)			
3x0026	Time since last boot (Hours)	0/8760	After 8760h Year is updated	
3x0027	Time since last boot (Minutes)	0/60	After 60min Hour is updated	
3x0028	Temp sensor regulator		Scaling 1:10 (°C)	
3x0029	Temp sensor RU1		Scaling 1:10 (°C)	
3x0030	Temp sensor RU2		Scaling 1:10 (°C)	
3x0031	Temp set point RU		(°C)	
3x0032	Flow set point RU			
3x0033	Battery level RU		Scaling 1:10 (V)	
3x0034	Not used			
3x0035	Not used			
3x0036	Not used			
3x0037	Input Analog 1	0/10000	(mV)	
3x0038	Input Analog 2	0/10000	(mV)	
3x0039	Input Analog 3	0/10000	(mV)	
3x0040	Input Analog 4	0/10000	(mV)	

ModBus Register W3				
Input register	**16 bit integer register**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
3x0041	Output PWM 1	0/100	(%)	
3x0042	Output PWM 2	0/100	(%)	
3x0043	Output PWM 3	0/100	(%)	
3x0044	Output PWM 4	0/100	(%)	
3x0045	Output Analog 1	0/10000	(mV)	
3x0046	Output Analog 2	0/10000	(mV)	
3x0047	Output Analog 3	0/10000	(mV)	
3x0048	Output Analog 4	0/10000	(mV)	
3x0049	PID Water Out	-100/100	(%)	
3x0050	PID ChangeOver Out	-100/100	(%)	
3x0051	Not used			
3x0052	Not used			
3x0053	Cool Water	0/100	(%)	
3x0054	Warm Water	0/100	(%)	
3x0055	SA Damper pos.	0/100	(%)	
3x0056	EA Damper pos	0/100	(%)	
3x0057	Not used			
3x0058	Not used			
3x0059	Not used			
3x0060	Room temp		(°C)	
3x0061	Change over temp		(°C)	
3x0062	Not used			
3x0063	Copy of Input Status 1-16	0/65535	"Bit0=0x0001 Bit1=0x0002 … Bit15=0x0016"	
3x0064	Copy of Input Status 17-32	0/65535	"Bit0=0x0017 Bit1=0x0018 … Bit15=0x0032"	
3x0065	Copy of Input Status 33-48	0/65535	"Bit0=0x0033 Bit1=0x0034 .. Bit15=0x0048"	
3x0066	Copy of Input Status 49-64	0/65535	"Bit0=0x0049 Bit1=0x0050 .. Bit15=0x0064"	