CONDUCTOR™ W1/W3

Technical Manual

22°C AUTO

Swegon
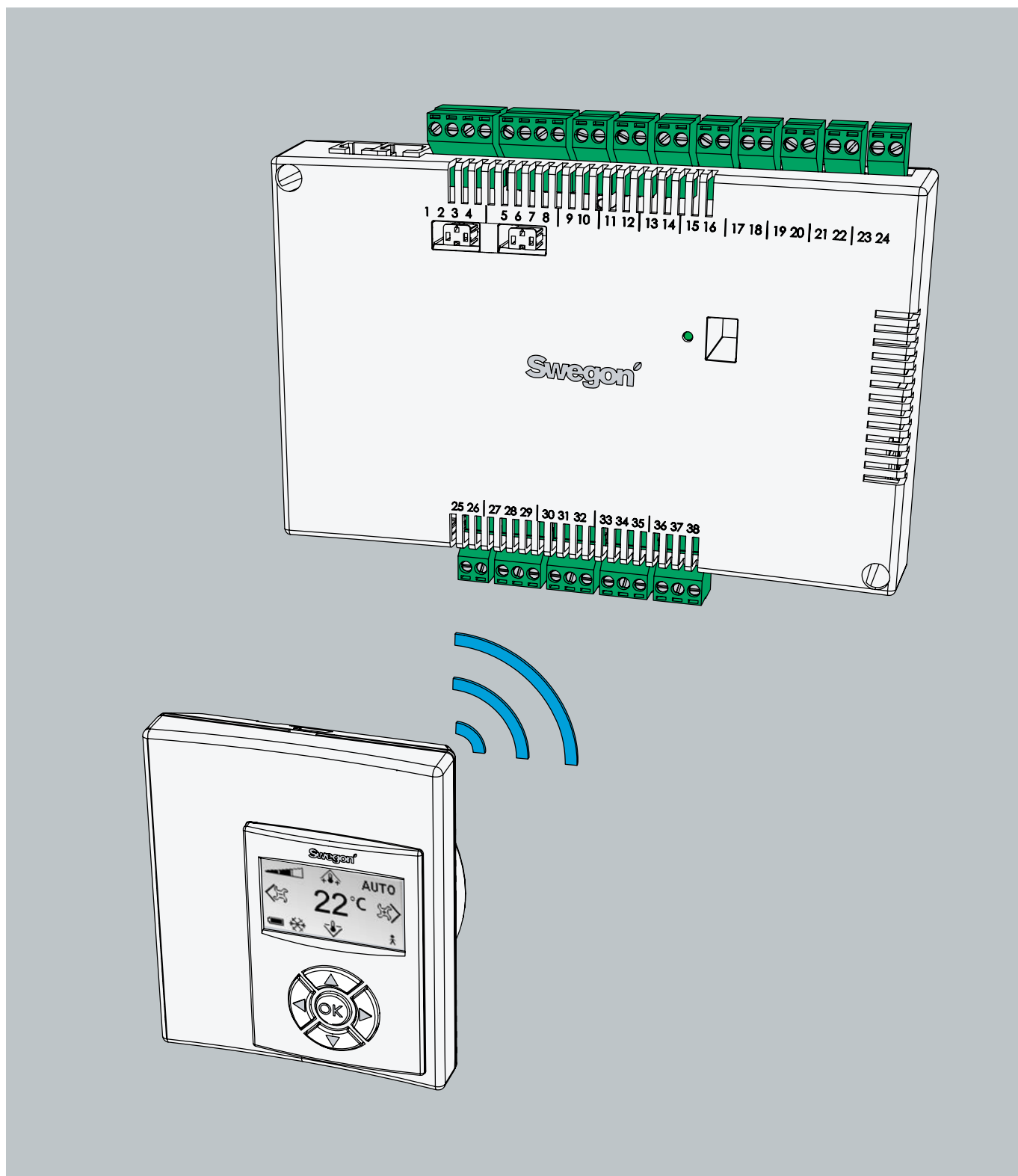
Contents

Contents

Introduction and safety

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About this manual

This manual is intended for use by the members of the staff who are responsible for maintenance of the climate system and it contains the following information:
- Technical description of the CONDUCTOR W1/W3 controller.
- Installing and commissioning the CONDUCTOR W1/W3 controller .
- Instructions on how the various settings should be entered in the room unit (thermostat).

The Service section is intended for personnel who are specially trained by Swegon.

Product design changes

Swegon reserves the right to change the specifications in the manual and change the design of the product without notice.

Safety precautions

Responsibility

It is the responsibility of the user to do the following:
- Assess all the risks involved in the activities which are related to this manual.
- Make sure that all necessary safety precautions are made before starting the activities which are related to this manual.

Safety levels

The following levels of safety warnings are used in this manual:

WARNING:
Used when there is risk of damage to persons or equipment.

N.B.!

Used to point out important information.

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Technical Description

About Conductor W1/W3

CONDUCTOR W1/W3 is a controller application in the CONDUCTOR series. The W designation indicates that the application is applicable to water-borne climate systems.

CONDUCTOR is a control system for the individual control of room temperature and airflow (W3)., especially adapted for partitioned offices and hotel rooms. It can operate independently or in combination with a central system.

Controller and Room Unit (thermostat)

The main components in the CONDUCTOR W1/W3 control system are a controller and a room unit (thermostat).

Controller
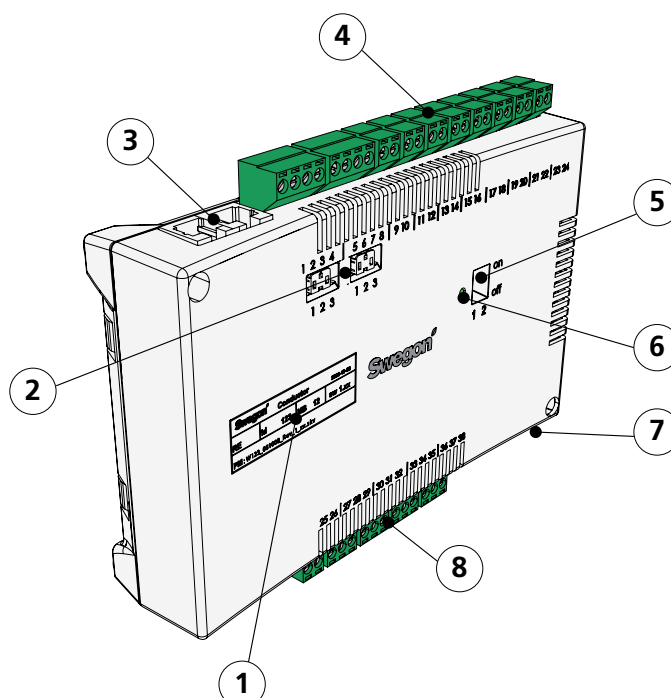
Figur 1.   Overview of the Controller.

Pos 1.   Product marking.
Pos 2.   Termination resistance.
Pos 3.   Modbus RTU units.
Pos 4.   Inputs: Wiring terminals for the connection of sensors.
Pos 5.   DIP switch for ModBUS RTU.
Pos 6.   LED, indicates the status of the controller.
Pos 7.   Input and output for signal to external relay.
Pos 8.   Outputs: Wiring terminals for the connection of valve and damper actuators.

The controller is equipped with inputs for connection of a condensation sensor, carbon dioxide sensor, window switch, presence detector and outputs for the connection of actuators for valves and air dampers.

Up to twelve pairs of actuators (twelve for cooling + twelve for heating) can be wired to each controller. Or you can connect up to four complete units per controller for controlling both the airflow (supply air and central extract air, 5 damper actuators) and cooling and heating (cooling and heating circuit, valve actuators).

The controller provides proportional and integral (PI) control. Through so-called PWM control (pulse width modulation), the I section senses both the size and the duration of the control deviation and adjusts the actuator opening time accordingly. It is possible to switch over from PWM control to 0-10 V control, if needed.

The user can easily configure the controller functions and parameters by means of the room unit (thermostat).

The controller has a built-in communication port that enables connection to an RS 485 network with ModBus RTU for supervising and override control via a main control system.

Product Identification Label

The product identification label affixed to the front of the controller, indicates rated data, the controller ID-number, which you will need when you install the CONDUCTOR.
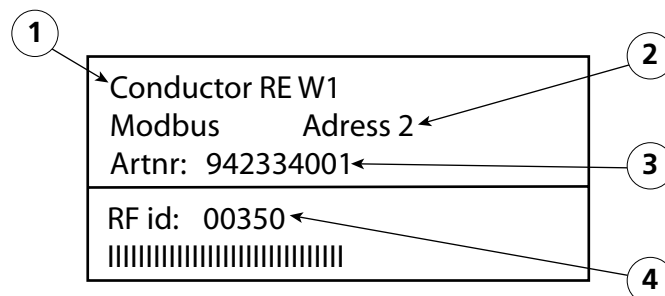
Figur 2.   Product identification label on the controller.

Pos 1. Name of the product.
Pos 2. ModBus RTU address.
Pos 3. Part number.
Pos 4. Controller ID number.

Room Unit
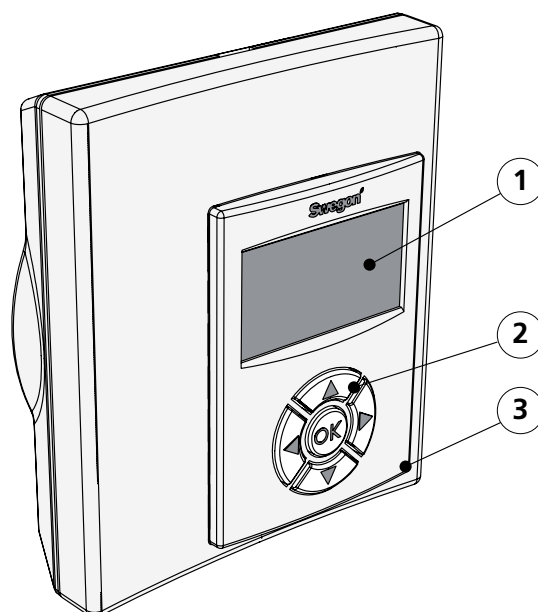
Figur 3.   Overview of the room unit (thermostat).

Pos 1. Display
Pos 2. Keypad.
Pos 3. Temperature sensor.

The room unit is simple to use and has an easy-to-interpret design that makes it user-friendly. The digital display shows the current preset temperature and airflow settings.

The function of the room unit is to measure the temperature in the room, communicate with the controller and to serve as a tool for adjusting the climate in the room.

The internal communication between the controller and the room unit is wireless, which makes it easier to find an appropriate spot in the room where the room unit can be installed.

If requested, the room unit can be wire-connected with a RJ12 cable to the controller.

Installation Examples

The illustration below shows a typical arrangement of a complete installation with the CONDUCTOR W1/W3 control system.
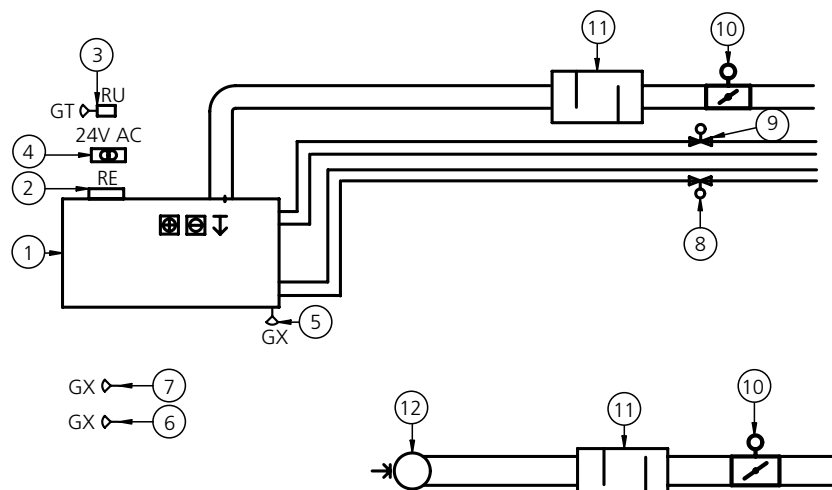
Figur 4.   Example of a CONDUCTOR W1/W3 installation.

Item	Component	Quantity	Description
1.	PARASOL 1192-B-HF	1	Comfort module including cooling, heating and ventilation
2.	CONDUCTOR RE W1/W3	1	Controller
3.	CONDUCTOR RU	1	Room unit
4.	SYST TS-1	1	Transformer
5.	SYST CG	1	Condensation sensor
6.	DETECT Occupancy	1	Presence detector
7.	External	1	Window contact, not supplied by Swegon (W3)
8.	LUNA a AT-2	2	Valve actuator
9.	SYST VD 115-CLC	2	Control valve
10.	SYST CRTc 9-125-2 CM 24	1	Supply air damper 1 including motor (W3) Extract air damper 1 including motor (W3)
11.	CLA 125-500	1	Sound attenuator
12.	Extract air register	1	Extract air register with given C-Factor
Accessories	SYST MS	4	Assembly part for suspending the PARASOL Not necessary if the product is mounted directly against the ceiling.

Operating Mode

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 offi ces, mainly designed for partitioned offi ces, but which also can be used in large rooms, as with open-plan offi ces. The application is suitable for so called CAV systems (Constant Air Volume), which means that the airfl ow 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, a temperature sensor and an presence detection 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 offi ces or for hotel rooms. It is well-suited for systems with variable airfl ow (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 airfl ow 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 airfl ow, depending on occupancy and sensor status.

Table 3: Operating conditions for application W3

Occupancy	Window	Conden-sation	Cooling	Heating	Supply air	Extract air
Yes	Yes	Yes	Off	Frost protection	Min.	Min.
Yes	Yes	No	Off	Frost protection	Min.	Min.
Yes	No	Yes	Off	Normal	Max.	Max.
Yes	No	No	Normal	Normal	Normal	Normal
No	Yes	Yes	Off	Frost protection	Min.	Min.
No	Yes	No	Off	Frost protection	Min.	Min.
No	No	Yes	Off	Normal/Energy saving	Min.	Min.
No	No	No	Normal	Normal/Energy saving	Min.	Min.

Operating Modes

There are a variety of functions built into the CONDUCTOR:
- MAN, manual mode.
- AUTO, automatic mode.
- ECON, energy-saving mode.
- Stand-by mode.
- EMERG, emergency mode.

MAN, Manual operating mode.

Whenever the CONDUCTOR registers occupancy in the room in response to signals from a presence detector, 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).

AUTO, Automatic operating mode.

When the CONDUCTOR no longer registers occupancy in the room, the controller automatically decreases the supply air flow to the low airflow setting and the system automatically returns to the AUTO mode.

The controller also switches automatically to the AUTO mode after a predefined number of minutes after the most recent change, manually entered on the room unit.

When the controller is set to the automatic mode, the valve actuators for chilled water and hot water respectively and the supply air damper and extract air damper respectively are adjusted in response to occupancy in the room and the level of carbon dioxide as well as the status of the window contact and the condensation sensor.

The automatic control system controls the airflow, cooling and heating until the user manually enters a new airflow or temperature setting.

ECON, energy-saving mode.

When the energy-saving function is enabled, the system switches automatically to the ECON energy-saving mode, when no occupancy has been registered for a predefined number of minutes. 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 and hot water respectively 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.

Stand-by mode.

When the control system registers a signal indicating that a window is open, the controller switches over to the standby mode. When the window is closed, the controller switches to the AUTO operating mode.

While the controller is in the Stand-by mode, the room temperature is maintained above the predefined level for the Frost protection function.

EMERG, emergency mode.

In the event of a fire alarm, the air damper in the extract air duct is opened or closed, depending on the setting entered in the control system. The cooling and heating functions are shut off while the system is in the EMERG mode. The supply air is normally shut off.

The EMERG mode can only be managed in control systems that are connected to a main control system via ModBus RTU.

Functions

There are a variety of functions built into the CONDUCTOR W1/W3:
- Exercising of valves
- First open
- Frost protection
- Change over
- Night cool
- Time-set setpoint restoration

Exercising of valves

The function involves regularly exercising the water valves by utilising automated functions in order to prevent them from becoming sluggish or jamming. During the exercising period, all the valves that are wired to the controller are opened for a maximum of 6 minutes and are then closed. The valves for the cooling system are exercised first. Then the valves for the heating system are exercised.

First open

The function means that the water valves are open when the system is installed, which makes it easier to fill, pressure test and vent the water system.

The function will be automatically disabled after the actuator has been energized for approx. 6 minutes. A clicking noise will be heard when the valves and the dampers change over to the NC mode (=normally closed) and the normal control function is enabled.

Frost protection

The function involves the following: Heating operation is started at a predefined room temperature in order to counteract the risk of damage that otherwise can arise due to freezing.

Change over

The function involves the use of only one valve actuator which should be wired to the cooling output terminal. This actuator then controls both the heating water and the cooling water, which are transported in the same pipe.

In winter, when heating is required, the valve opens if the water in the pipe is warmer than the temperature setpoint. If the water is colder, the valve does not open.

In summer, when cooling is required, the valve opens if the water in the pipe is colder than the temperature setpoint.

In order to be able to use this function, you are required to mount an external temperature sensor onto the water pipe through which supply water circulates continuously. Wire the sensor according to the general wiring diagram shown in the section entitled: Installation

Night cool

The function involves using cold air from outdoors for cooling the room at night to the predefined level.

The function can only be managed in control systems that are connected to a main control system via ModBus RTU.

Time-set setpoint restoration

The function involves adjusting the room temperature to the predefined level when the controller switches to the AUTO operating mode.

The controller also switches automatically to the AUTO mode after a predefined number of minutes after the most recent change, manually entered on the room unit.

Technical Data

CONDUCTOR RE Controller

Technical data applicable to the CONDUCTOR RE controller (W1/W3) is specified below.

Item	Data
Designation	CONDUCTOR RE (W1/W3)
Storage temperature	-40 °C to +80 °C
Operating temperature	-20 °C to +50 °C
Degree of protection	IP 32
Dimensions	121 x 193 x 44 mm
Supply voltage	24V AC ± 10%
Power consumption	1 VA
Control function	PI
P-band, cooling/heating increments	1 K
Dead band, occupancy in room	Depends on switching in cooling and switching in heating
Dead band, no occupancy	Depends on switching in cooling and switching in heating
Frost protection	10 °C
Valve installation	1 time/48h period (fully open for 3 minutes)
Installation	Mounting holes in enclosure or onto DIN rail
Connections	Wiring terminal for 2.5 mm² multicore cable
Data communication	ModBus RTU
Wireless communication	433 MHz band radio modem with room unit (thermostat)
Inputs	
Condensation sensor	Resistance
Temperature sensor	Resistance
Presence detector	No occupancy/NO/NC (optional), default = NC for occupancy
Window contact (W3)	No occupancy/NO/NC (optional), default = NC for closed window
Carbon dioxide sensor	2 - 10 V, or 24 V
Pressure sensor / ModBus RTU sensor	2 - 10 V / RJ12 cable
Modular contact	RJ12 6-pole for connecting up to the room unit (thermostat)
	RJ12 6-pole for connecting up to ModBus RTU
Outputs	
Actuator, heating	24 V AC, PWM (on/off or 0 - 10 V) max load: 72 VA = 12 actuators
Actuator, cooling	24 V AC, PWM (on/off or 0 - 10 V) max load: 72 VA = 12 actuators
Supply air damper (W3)	0 - 10 V DC (low/normal/high) max load 25 VA = 5 actuators.
Extract air damper (W3)	0 - 10 V DC (low/normal/high) max load 25 VA = 5 actuators.

CONDUCTOR RU room unit (thermostat)

Item	Data		
Designation:	CONDUCTOR RU		
Storage temperature	-40 °C to +80 °C (*)		
Operating temperature	0 °C to +50°C		
Degree of protection	IP 20		
Dimensions	86 x 100 x 32 mm		
Supply voltage	12 V, 4 size AAA batteries		
Actual value, range	+10 °C to +32°C		
Installation	Against a wall or in a 70 mm standard junction box. Must not be exposed to direct sunlight		
In-operation LED, temperature	Cooling load		
	Heating load		
In-operation LED, air	Low airflow: One LED lit		
	Normal airflow: Two LEDs lit		
	High airflow: Three LEDs lit		
In-operation LED, enabled	Lit LED, AUTO		
In-operation LED, disabled	Dimmed display, AUTO		
Input			
Modular contact	RJ12 6-pole for connecting up to the controller (**)		

(*) = Specified storage temperature appies to a room unit WITHOUT batteries.

(**) = Used only if wireless communication is not desired.

Installation

Ordering, delivery and electrical installation

Ordering key, Control equipment

Item	Data
Controller W1/W3	CONDUCTOR RE (aa)
Room unit (Thermostat)	CONDUCTOR RU

Ordering Key, Accessories

Item	Data
Valve	SYST VD 115-CLC
Valve actuator	LUNA a AT-2
Ventilation damper incl. damper actuator	SYST CRTc 9 (aaa)-2-CM-24
Adapter, actuator/valve	LUNA a T-VA-(aa)
Condensation sensor	SYST CG
Carbon dioxide sensor	DETECT Quality
Presence detector	DETECT Occupancy
Modular cable	RJ12 6/6, 5 metres long
Transformer	SYST TS-1
External temperature sensor	CONDUCTOR T-TG
(aa) = Fitted to valve type:	
32	Tour & Andersson
39	Oventrop
50	Honeywell, Reich, MNG, Böhnisch (H), Cazzaniga
54	Certain MMA-valves
59	Danfoss RAV/L
72	Danfoss RAV
78	Danfoss RA
80	Siemens and more (always included in the LUNA a AT-2 actuator)
(aaa) =	125 or 160

Ordering

Specify the desired number of ordered components or refer to drawing.

Delivery

- The valves are delivered to the plumbing contractor for installation in the system.
- The room controller is delivered to the electrical contractor, systems contractor or other contractor for installation onto the junction box.
- Controller is normally delivered factory fitted on the comfort module or climate beam. The controller is delivered to electrical contractor, systems contractor or other contractor for installation by means of screws at some other suitable place, if separate components are supplied.

⚠️ **WARNING:**

All electrical installation, including wiring the actuators, valve actuators and various sensors is to be carried out by the electrical contractor or the systems contractor.

The electrical contractor or the systems contractor provides a 230 V earthed outlet for transformer, a fitted junction box for the room unit (thermostat) and possible external cables.

Preparations

The CONDUCTOR W1/W3 should be installed in steps as follows:

1. To mount the controller.

2. To connect units.

3. Commissioning.

4. To mount the room unit (thermostat).

Check the following before installing the CONDUCTOR W1/W3:
- The comfort module, with pre-fitted valve actuators for chilled and hot water, are mounted in the ceiling.
- The required sensors (e.g. presence detector, window contact and condensation sensor) are installed in the room.
- Required actuators are installed.
- Cables from all the units are marked and run up to the comfort module, or alternative location for the controller.

The following are required for installation:
- ordinary screwdriver or electric screwdriver
- Electric drill.

Step 1, To mount the controller.

Mounting on a DIN rail

If a DIN rail is mounted on the comfort module or at another suitable location, the controller should be fastened to this rail.
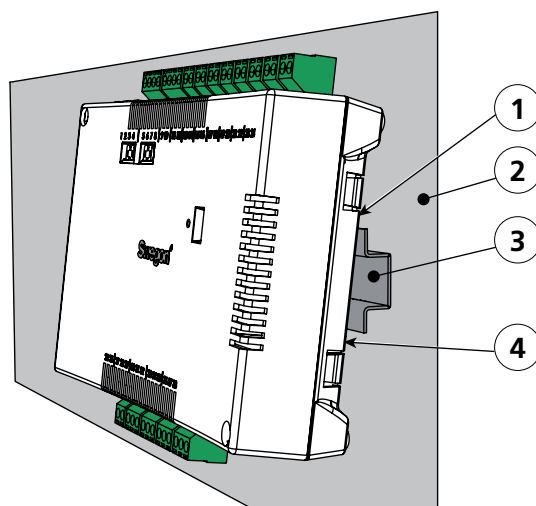
Figur 1.   To mount the controller.

Pos 1. Plastic hooks
Pos 2. Supporting surface, for example a comfort module or climate beam.
Pos 3. DIN rail
Pos 4. Snap-on fastener.

1. Fasten the two plastic hooks on the backside of the controller on the upper control edge on the DIN rail.

2. Press to fasten the snap-on fasteners on the backside of the controller against the lower control edge on the DIN rail.

To be installed above a false ceiling

If a DIN rail is NOT available pre-mounted or is not available, the controller can be appropriately mounted above the false ceiling (**not** on the module).
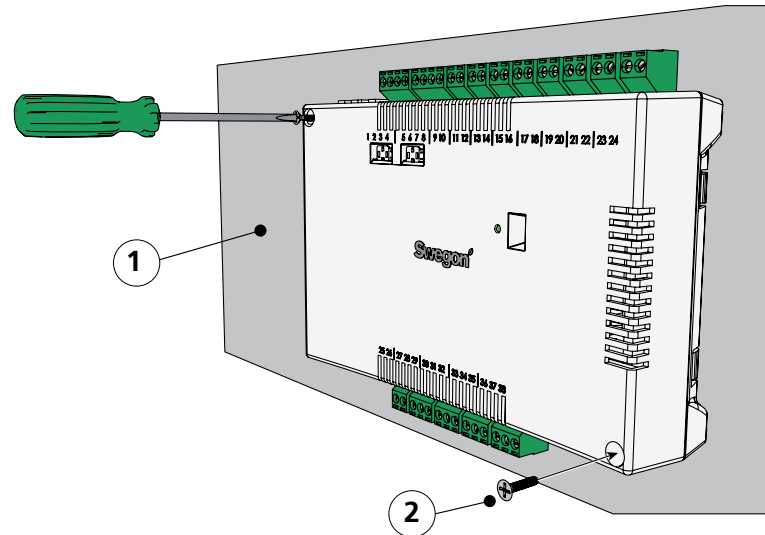
*Figur 2.   To mount the controller.*

Pos 1. Supporting surface, NOT for the comfort module or climate beam.
Pos 2. Screws.

1.   Secure the controller by means of screws in the upper left-hand and the lower right-hand corners. Use screws suitable for the supporting surface.

Step 2, Installation of units

The following units should be connected to the detachable wiring terminals of the controller:
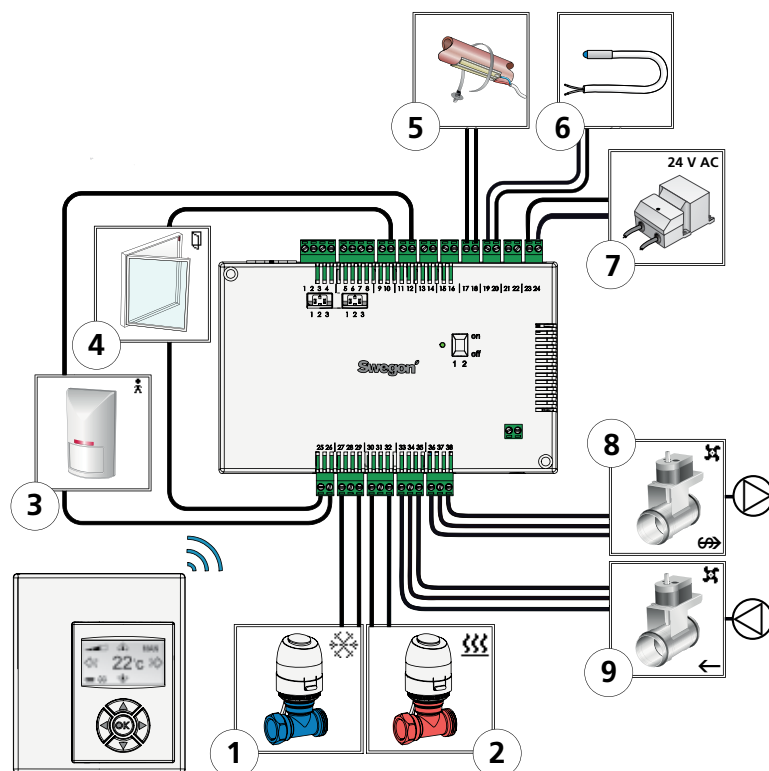
Figur 3.   Overview of the units.

Pos 1.   Valve actuator for cooling water.
Pos 2.   Valve actuator for heating water
Pos 3.   Presence detector.
Pos 4.   Window contact. (W3)
Pos 5.   Condensation sensor.
Pos 6.   External temperature sensor
Pos 7.   Transformer.
Pos 8.   Damper motor for extract air. (W3)
Pos 9.   Damper motor for supply air. (W3)

1.   Connect the valve actuator for cooling water to wiring terminals 27 (blue cable) and 29 (brown cable) respectively.

2.   Connect the valve actuator for heating water to wiring terminals 30 (blue cable) and 32 (brown cable) respectively.

3.   Connect the presence sensor to wiring terminals 12 and 26 respectively.

4.   Connect the window contact (normally closed or normally open) to wiring terminals 10 and 25 respectively.

5.   Connect the wires of the condensation sensor to wiring terminals 17 and 18 respectively.

6.   Connect the wires of the temperature sensor to wiring terminals 30 and 32 respectively.

7.   Connect the secondary side cables of the transformer to wiring terminals 23 (G) and 24 (GO) respectively.

8.   Connect the damper motor for extract air G0 (blue cable) to wiring terminal no. 36. 0-10 V signal (red cable) to no. 37. and 24 V (brown cable) to no. 38.

9.   Connect the damper motor for supply air G0 (blue cable) to wiring terminal no. 33. 0-10 V signal (red cable to no. 34 and 24 V (brown cable) to no. 35.

Step 3, Commissioning

To connect the mains power supply cable

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

To insert batteries in the room unit (thermostat)

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

As an alternative to batteries, the room unit can be energized from the controller, via a 6-pole cable with RJ12 modular connectors.

N.B.!

If the room unit is energized via a controller, the cable must be connected at this point.
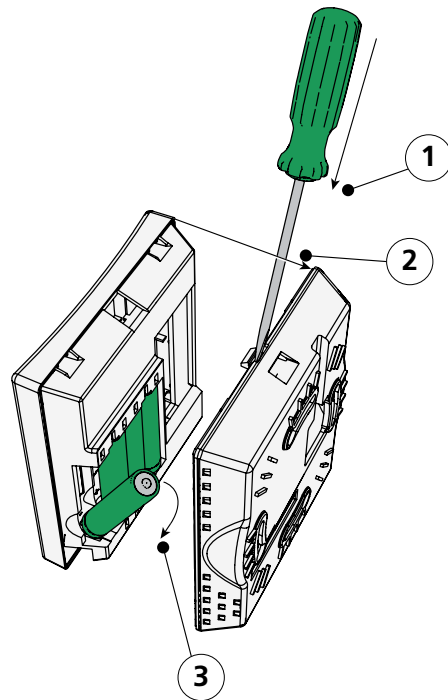
Figur 4.   To insert batteries in the room unit (thermostat).

Pos 1. To open the snap-on fastener.
Pos 2. Remove the back piece.
Pos 3. To insert batteries.

2. Insert the batteries in the room unit (thermostat) as follows:
    *   Open the snap-on fastener by pressing a screw driver in the notch between the front piece and back piece of the room unit.
    *   Press on the snap-on fastener and remove the back piece.
    *   Insert the batteries with the poles turned according to the relief markings in the battery compartment.

Booting

As soon as the controller and the room unit have been energized, the system boots up and the main view is shown in the display of the room unit.

The controller is in the AUTO operating mode when the system has finished booting.

Figur 5.   Main view in the display of the room unit.

1.   Check that the main view is shown in the display.

Selection of Language

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

2.   Change to desired language in accordance with instructions in the section: Room unit menus.

Check the factory settings

3.   Make sure that the current application setting is in agreement with units connected to the controller. Check in accordance with instructions in the section: Room unit menus.

To connect units

In order for the controller to be able to properly communicate with the room unit, they must be connected up to one another.

> N.B.!
>
> If the room unit is operated via the controller, you need not connect it.

4.   Connect the controller and the room unit to one another in accordance with the instructions in section: Room unit menus. The ID or serial number of the controller should be given as address when connecting up.

Step 4, To install the room unit (thermostat)

The room unit contains a temperature sensor used for measuring the current room temperature. In order for the controller to regulate the temperature in relation to the preset setting, the room unit must be installed in such a way that enables it to correctly measure the temperature. The room unit should, for example, not be exposed to direct sunlight.
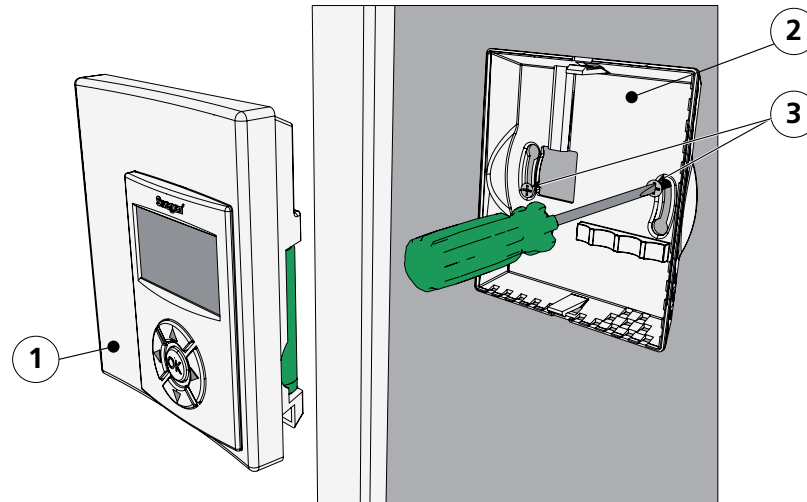
Figur 6.   To mount the room unit (thermostat).

Pos 1.   Front piece.
Pos 2.   Back piece.
Pos 3.   Screws suitable for the supporting surface.

1.   Select a suitable location in the room for installing the room unit. The recommended height above the floor is standard height for of a light switch.

2.   Remove the back piece from the room unit.

> N.B.!
>
> Tighten the back piece only in the right-hand and the left-hand fastening holes.

3.   Then secure the back piece to the wall by means of two countersink screws, appropriate for the supporting surface.

The menus of the room unit (thermostat)

The main image and the key pad of the room unit
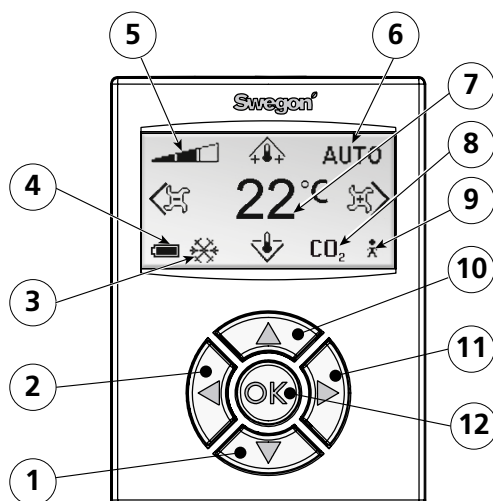
Figur 1.   Overview of the main image of the room unit.

Pos 1. Cursor key for moving DOWN.
Pos 2. Cursor key for moving to the LEFT.
Pos 3. Heating/cooling.
Pos 4. Battery charge status/Window status.
Pos 5. Current airflow.
Pos 6. Operating mode.
Pos 7. Current temperature.
Pos 8. Carbon dioxide content.
Pos 9. Occupancy status
Pos 10. Cursor key for moving UP.
Pos 11. Cursor key for moving to the RIGHT.
Pos 12. OK key.

Heating/Cooling

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

Symbol for heating.

Symbol for cooling.

Battery charge status/Window status

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

Symbol for fully charged batteries.

Symbol for half charged batteries.

Symbol for empty batteries.

Symbol for an open window.

Current airflow

The field shows the present airflow setting.

Symbol for low airflow.

Symbol for normal airflow.

Symbol for high airflow.

Operating mode

The field shows the current operating mode. The field is empty if the unit is operating in the manual mode.

AUTO   Automatic.

ECON   Economy.

STOP   Standby.

EMERG   Emergency.

Current temperature

The field shows the current temperature setting. The temperature is specified in°C.

Level of carbon dioxide

The symbol is shown in the field when the carbon dioxide content in the room exceeds the pre-defined content.

CO_2 Symbol for carbon dioxide content.

Occupancy status

The symbol is shown in the field when someone is in the room.

Symbol for occupancy.

Overview over the menu system of the room unit.

The menu system of the room unit consists of the following menus with associated submenus.
- Main menu
- Service menu

Main menu and Service menu

```
                    ┌─────────────────┐
                    │   Main menu     │
                    │   ▓ Setup ▓     │
                    └────────┬────────┘
                             │
                    ┌────────┴────────┐
                    │   Enter code    │
                    └────────┬────────┘
                             │
                    ┌────────┴────────┐
                    │  Service menu   │
                    └────────┬────────┘
```

Regulator adjust	Settings	Info	General Param.	Appl. Param.	Alarms
Econ SA % 20 **Norm SA % 50** **Boost SA % 80**	ModBUS	**Room temp** **Serial Number** **Battery Level**	Enter code	Enter code	
Econ EA % 20 **Norm EA % 50** **Boost EA % 80**	RF pair-up	**Application** **Sw. ver. RE** **SW. ver. RU**	Parameter value P_101 2 ModBus address Min 0 Max 79	Parameter values P_1902 1 1 or 2 room units Min 0 Max 2	
Temp C	RF Quality				
	Language				
	FirstTime func				
	Temp. calibration				

Navigating in the menus of the room unit

Go to the main menu

*Figur 2.   Main image and Main menu.*

1.   Press on the OK key while the main image is shown in the display and hold the key pressed down for 3 seconds.

Go to the Service menu

A authorization code must be entered in order to reach the Service menu.
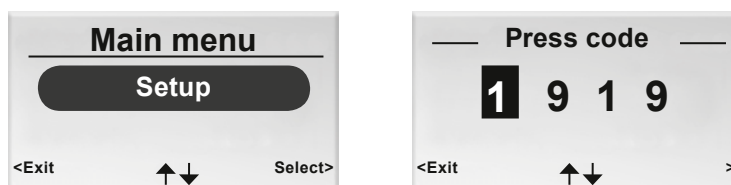
Figur 3.   The image for selecting Setup and to enter the code.

1.   Go to the Main menu.

2.   Highlight Setup.

3.   Press OK or on the ►Right key.

4.   Enter the first digit in the code by pressing the ▲ UP or ▼ DOWN key.

5.   Mark the next digit position by pressing the ► Right key.

6.   Enter the remaining three digits in the code.

7.   Press OK to confirm the code.
      If you have entered the correct code, the Service menu will be shown.
      Otherwise the Main menu will be shown.

Changes in the Main image

To set the desired room temperature

Figur 4.   The Main image

1. Check that the main image is shown in the display.

2. Press on:
   - The ▲ UP key to raise the temperature.
   - The ▼ DOWN key to lower the temperature.

3. Press OK or wait 3 seconds to confirm the setting.

To set the desired airflow

Figur 5.   Main image.

1. Check that the main image is shown in the display.

2. Press on:
   - The ► Right key to increase the airflow.
   - The ◄ Left key to decrease the airflow.

3. Press OK or wait 3 seconds to confirm the setting.

Low airflow corresponds to the ECON operating mode. Normal airflow corresponds to th AUTO operating mode. High airflow corresponds to the BOOST operating mode.

Changes and settings in the Service menu

To set the air damper for supply air and to change the K-factor

Service Menu	
Regulator adjust	
Settings	
<Exit ↑↓	Select>

Econ SA %	20
Norm SA %	50
Boost SA %	80
<Exit OK select	Next>

Figur 6.   Image for selecting Regulator adjustment settnings and view for setting the K-factor and the damper for supply air in air duct 1.

1. Go to the Service menu.

2. Highlight the Regulator adjustment settings.

3. Press OK or on the ►Right key.

4. Highlight the line of the value you want to change by pressing the ▲ UP key or the ▼ DOWN key.

5. Press OK to highlight the value.

6. To change the value:
    - K-factor.
    - Norm = the value applicable to normal airflow.
    - Boost = the value applicable to high airflow.

7. Press OK to confirm the change.

8. Press the ►Right key for advancing further and changing the values of K-factor and supply air in air duct 2.

9. Press the ◄ Left key twice to return to the Service menu.

Adjust the air damper for extract air and change the value for offset

Service Menu	
Regulator adjust	
Settings	
<Exit ↑↓ Select>	

Econ EA %	20
Norm EA %	50
Boost EA %	80
<Previous OK select Next>	
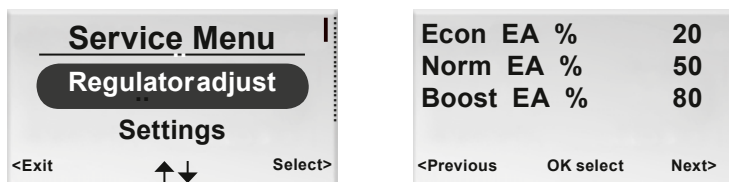
Figur 7.   Image for selecting Regulator adjustment settings and image for setting the air damper for extract air and the value for offset.

1. Go to the Service menu.

2. Highlight the Regulator adjustment settings.

3. Press OK or on the ► Right key.

4. Press the ► Right key twice for showing the image for setting the air damper for extract air and offset.

5. Highlight the line of the value you want to change by pressing the ▲ UP key or the ▼ DOWN key.

6. Press OK to highlight the value.

7. Change to desired value.

8. Press OK to confirm the change.

9. Press the ◄ Left key twice to return to the Service menu.

To set the existing room temperature

Figur 8.   Image for selecting Regulator adjustment settings and image for setting the existing room temperature.

1.   Go to the Service menu.

2.   Highlight the Regulator adjustment settings.

3.   Press OK or on the ►Right key.

4.   Press the ► Right key three times to show the image for setting the existing room temperature.

5.   Press OK to highlight and to be able to change the room temperature.

6.   Change the room temperature by pressing the ▲ UP key or ▼ DOWN key.

7.   Press OK to confirm the change.

8.   Press the ◄ Left key four times to return to the Service menu.

Change ModBus address in room unit for RU
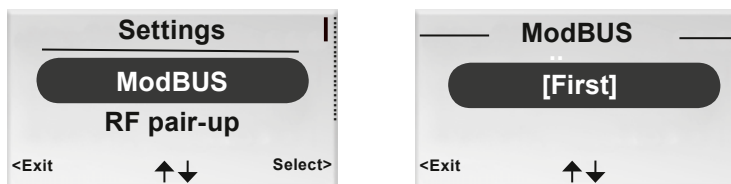
Figur 9. Image for selecting to change the ModBus address and the MB address image.

The unit must be assigned an adress to enable connecting it up to ModBUS, when the room unit is connected via cable to the controller.

1. Go to the Service menu.

2. Highlight Settings

3. Press OK or on the ►Right key.

4. Highlight ModBus.

5. Press OK.

6. Make one of the following selections:
   • Select First whether the room unit is the first one in the room.
   • Select Second if the room unit is the second one in the room.

7. Press OK in order to confirm the selection and return to the Service menu.

Connect units room unit (RU) to controller (RE)

Figur 10. Image for selecting RF pair-up and the RF pair-up image.

The units must be connected together in order to control the controller by means of a hand-held micro terminal. This is done by entering the RF (radio frequency) ID of the controller, which is specified on the identification plate of the controller.

1. Go to the Service menu.

2. Highlight Settings.

3. Press OK or on the ► Right key.

4. Mark Connect units.

5. Press OK or on the ► Right key.

6. Enter the first digit in the RF ID number by pressing the ▲ UP key or ▼ DOWN key.

7. Highlight the next digit position by pressing the ► Right key.

8. Enter the remaining four digits in the RF ID number.

9. Press OK to confirm the RF ID number and connect the room unit to the controller.
    If the connection is successful, the text: Connected will be shown.

10. Return to the Settings menu by pressing the ◄ Left key.

11. Return to the Service menu by pressing the ◄ Left key.

Test the radio connection
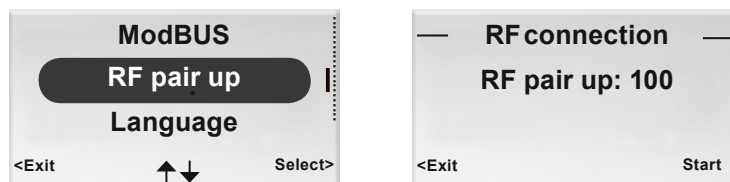
Figur 11. Imaage for selecting the RF pair-up and the RF connection image.

If no cable is connected between the controller and the room unit, the two will communicate with one another via radio signals.

1. Go to the Service menu.

2. Highlight Settings.

3. Press OK or on the ►Right key.

4. Highlight RF pair up

5. Press OK or on the ►Right key.

6. Start the test by the ► Right key.
   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.
   • The test can be cancelled by pressing the ► Right key.

7. Press the ◄ Left key when the test is finished to return to the Settings menu.

8. Return to the Service menu by pressing the ◄Left key.

Change language
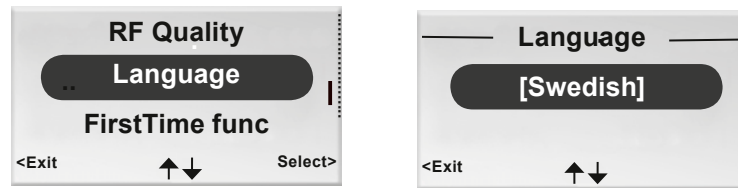
Figur 12. Image for selecting Language and the Language image.

1. Go to the Service menu.

2. Highlight Settings.

3. Press OK or on the ► Right key.

4. To highlight Language.

5. Press OK or on the ► Right key.

6. Select between the languages Swedish, English and Finnish by pressing the ▲ UP or ▼ DOWN key.

7. Press OK in order to confirm the change and return to the Settings menu.

8. Return to the Service menu by pressing the ◄ Left key.

To enable/disable the "first open" function
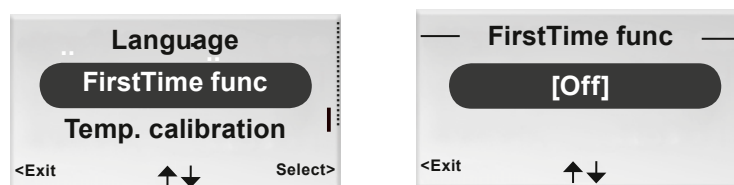
Figur 13. Image for selecting FirstTime function and the FirstTime function function image.

1. Go to the Service menu.

2. Highlight Settings.

3. Press OK or on the ► Right key.

4. Highlight FirstTime function.

5. Press OK or on the ► Right key.

6. Enable the function by selecting [On], disable by selecting [Off].

7. Press OK in order to confirm the selection and return to the Settings menu.

8. Return to the Service menu by pressing the ◄ Left key.

Calibrate temperature
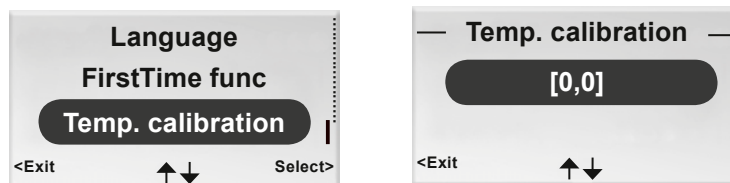
Figur 14. Image for selecting calibrate temperature and the Temp. calibration image .

The purpose of the Calibrate temperature action is to ensure that the temperature reading is in agreement with the actual room temperature.

1.   Go to the Service menu.

2.   Highlight Settings

3.   Press OK or press on the ► Right key..

4.   Highlight Temp. calibration.

5.   Press OK or on the ► Right key.

6.   Change the number of degrees to which the temperature reading should be adjusted.
     • Increase the number of degrees by pressing the ▲ UP key.
     • Decrease the number of degrees by pressing the ▼ DOWN key.

7.   Press OK to confirm the calibration and return to the Settings menu.

8.   Return to the Service menu by pressing the ◄ Left key.

Show system information
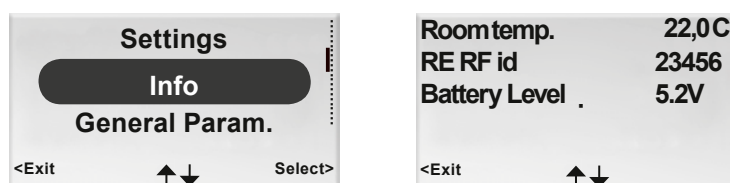
Figur 15. Image for selecting Info and the first image in System information.

1.   Go to the Service menu.

2.   Highlight Info.

3.   Press OK or on the ► Right key.
     Current information for the application is shown in the System information images. Navigate between the images by pressing the ▲UP or ▼ DOWN key.

4.   Return to the Service menu by pressing the ◄ Left key.

Change parameters
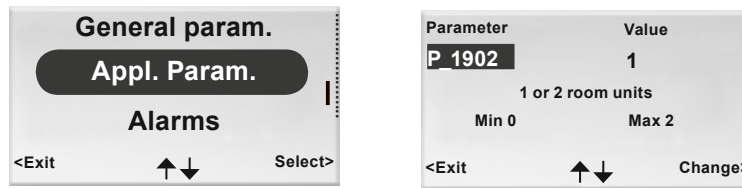
Figur 16. Image for selecting changes in the application parameters and typical parameter image.

1. Go to the Service menu.

2. Depending on which parameters you want to change, highlight the appropriate General parameter or Application parameter.

3. Press OK or on the ► Right key.

4. Enter the authorization code for General parameters or Application parameters.

5. Select the parameter to be altered by pressing the ▲ UP or ▼ DOWN key.

6. Highlight the value by pressing the ► Right key.

7. Highlight the value by pressing the ▲ UP or ▼ DOWN key.

8. Press OK to confirm the new value.

9. Press the ◄ Left key to exit the parameter change image.

10. Highlight:
    - Yes to save the changes you've made.
    - No to not to save the changes.
    - Cancel to return to parameter change image.

11. Press OK to return to the Service menu.

Show Alarms
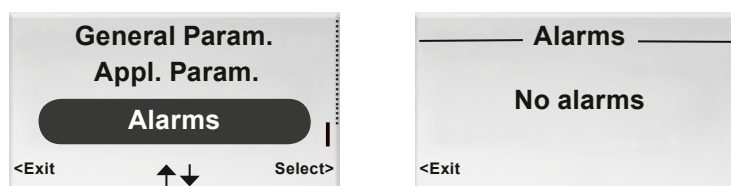
Figur 17. Image for selecting Show Alarms and the Alarm image.

1. Go to the Service menu.

2. Highlight Alarms.

3. Press OK or on the ► Right key.
   All active alarms are shown in the image.

4. Return to the Service menu by pressing the ◄ Left key.

Service

This section is intended only for use by personnel who are specially trained by Swegon.

Parameters

In order to control the functions in the CONDUCTOR W4, there are a number of parameters, which can be changed in order to optimize the current installation. In the display of the room unit (thermostat) every parameter is shown in accordance with the figure below.
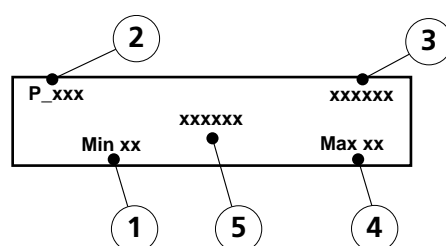
Figur 1.   Main image in the display of the room unit

Pos 1.   Minimal value.
Pos 2.   Parameter number.
Pos 3.   Factory-preset value
Pos 4.   Maximum value.
Pos 5.   Parameter text.

System parameters

System parameters are basic parameters which are common for several applications.

Display image	Description
P_101 set 2 ID Modbus Address min 1 max 247	Indicates the ModBus address.
P_102 set 3 BMS Baudrate, 9.6 19.2 38.4 min 1 max 3	Indicates the transmission speed for connecting up to a Building Management System (BMS). 1 = 9.6 2 = 19.2 3 = 38.4
P_103 set 2 BMS Parity 0=Od. 1=Ev. 2=None min 0 max 2	Parity setting for connection to BMS. 0 = Uneven 1 = Even 2 = None
P_104 1 BMS Stop bits min 1 max 2	Number of stop bits for connection to BMS. 1 = 1 bit 2 = 2 bits

Display image	Description
P_105 3 Component type, 2=DC, 3=RC min 2 max 3	Indicates the current type of controller.
P_106 2 Application type min 1 max 14	Indicates which application the controller is set to run. 1 = W3 2 = W1
P_107 1 Relay at emer. 0=Op. 1=Cl. 2=No act. min 0 max 2	Indicates the status of the relay for the EMERG mode. 0 = Open 1 = Closed 2 = No action
P_108 48 hour Valve exercise (h) 0=Not used min 0 max 96	Indicates how often the valves should be exercised (how many hours shall pass between two exercise runs).
P_109 20 min Motion timer delay (min) min 0 max 60	Indicates the number of minutes after which the controller should switch from AUTO to ECON after the last occupant has left the room.
P_110 60 min Warning delay from start-up (min) min 0 max 720	Indicates the number of minutes after which the controller shall be permitted to initiate an alarm following a start up.
P_111 120 min Warning delay, PI-overload (min) min 0 max 720	Indicates the number of minutes after which the system should initiate an alarm for a +100% or -100% output signal.
P_112 120 min Warning delay, Set point (min) min 0 max 720	Indicates the number of minutes after which the system should initiate an alarm, if the temperature, flow or pressure setpoint has not been reached.
P_113 30 min Warning delay, pressure sensor (min) min 0 max 720	Indicates the number of minutes after which the system should initiate an alarm if no signal is received from the pressure sensor or flow sensor.
P_114 0 Room Number (optional) min 0 max 32000	Indicates the room number.
P_118 0 h Zero calibration (h) 0=not used min 0 max 720	Zero point calibration of the Modbus-pressure sensor. Indicates hours between calibration.
P_119 3 min Zero calibration wait (min) min 1 max 6	Indicates the delay before the calibration starts. (The damper blade should have time to close)

Application parameters W1

Application parameters are parameter-specific for the selected application.

Display image	Description
P_1101 4 System1=H,2=C,3=ChOv,4=HC min 1 max 4	Indicates how the climate system should operate for heating and cooling. 1 = Heating only 2 = Cooling only 3 = Change-over function 4 = Heating/Cooling
P_1102 1 0=ext.temp, 1 or 2 room units min 0 max 2	Indicates whether one or two room units are used. If 2 units are used they should be connected with a cable. 0 = The controllers temp. sensor is used, 1 = 1 unit 2 = 2 units
P_1103 10 C Frost guard temp. min 5 max 12	Indicates at which temperature the frost protection should switch in.
P_1104 4 K Economy neutral zone (K) min 0 max 10	Indicates the temperatur zone in which the controller is operating in the Economy mode. For example: 4 = ±2 K
P_1105 22 C Room temperature Setpoint min 10 max 32	Indicates the existing room temperature setting.
P_1108 1 Economy mode available min 0 max 1	Indicates whether the Economy mode is available. 0 = No 1 = Yes
P_1109 1 ActuatorCool 1=NC, 2=0-10V, 3=NO min 1 max 3	Indicates which sort of valve actuator is installed in the cooling water circuit (1=24V-NC, 2=0-10V, 3=24V-NO)
P_1110 1 ActuatorHeat 1=NC, 2=0-10V, 3=NO min 1 max 3	Indicates which sort of valve actuator is installed in the heating water circuit.. (1=24V-NC, 2=0-10V, 3=24V-NC)
P_1111 0 Window 0=NP min 0 max 0	Indicates whether a window contact is installed and if so how it is installed. 0 = No contact installed
P_1112 0 Occupancy 0=NP min 0 max 0	Indicates whether a presence detector is installed and if so how it is installed. 0 = No contact installed

Display image	Description
P_1113 5000 P term Change over min 1 max 10000	Indicates the value for P for the Change Over function. A high value denotes faster control. A low value denotes slower control.
P_1114 50 I term Change over min 1 max 10000	Indicates the value for I for the Change Over function. A high value denotes faster control. A low value denotes slower control.
P_1119 16 C Room unit's min temperature min 0 max 20	Indicates which lowest temperature is possible to adjust manually on the room unit in the MAN operating mode.
P_1120 28 C Room unit's max temperature min 25 max 50	Indicates which highest temperature is possible to adjust manually on the room unit in the MAN operating mode.
P_1121 20 C Night cool temp set point min 10 max 20	Indicates the temperature setpoint applicable to the Night cool function.
P_1122 480 RU back to auto state min 0 max 1200	Indicates how long after the most recent manual room temperature adjustment that the controller should return to the AUTO mode. 0 = Not used
P_1123 3500 P term Cooling Scale 1:100 min 1 max 10000	Indicates the value for P for cooling. A high value denotes faster control. A low value denotes slower control
P_1124 10 I term Cooling Scale 1:100 min 1 max 10000	Indicates the value for I for cooling. A high value denotes faster control. A low value denotes slower control.
P_1125 3500 P term Heating Scale 1:100 min 1 max 10000	Indicates the value for P for heating. A high value denotes faster control. A low value denotes slower control.
P_1126 10 I term Heating Scale 1:100 min 1 max 10000	Indicates the value for I for heating. A high value denotes faster control. A low value denotes slower control.

Application parameters W3

Application parameters are parameter-specific for the selected application.

Display image	Description
P_1001 4 System1=H,2=C,3=ChOv,4=HC min 1 max 4	Indicates how the climate system should operate for heating and cooling. 1 = Heating only 2 = Cooling only 3 = Change-over function 4 = Heating/Cooling
P_1002 1 0=ext.temp, 1 or 2 room units min 0 max 2	Indicates whether one or two room units are used.. (0=The controllers temp. sensor is used, 1=1 unit, 2=2 units If 2 units are used they should be connected with a cable.
P_1003 10 C Frost guard temp. min 5 max 12	Indicates at which temperature the frost protection should switch in.
P_1004 4 K Economy neutral zone, (K) min 0 max 10	Indicates the temperatur zone in which the controller is operating in the Economy mode. For example: 4 = ±2 K
P_1005 22 C Room temperature Setpoint min 10 max 32	Indicates the existing room temperature setting.
P_1008 90 % Boost flow SA % min 0 max 1	Indicates the supply airflow for BOOST.
P_1010 0 Emergency func SA damper min 0 max 1	Indicates which blade position the damper in the supply air duct should have in event of fire. 0 = Closed 1 = Open
P_1011 10 % Stand-by flow SA % min 0 max 100	Indicates the supply airflow for STOP.
P_1012 90 % Boost flow EA % min 0 max 100	Indicates the extract airfl ow for BOOST.
P_1014 0 Emergency func exhaust damper min 0 max 1	Indicates whether the damper in the extract air duct should be open or closed in the EMERG mode. (0=Closed, 1=Open)

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Display image	Description
P_1015 10 % Stand-by flow EA % min 0 max 100	Indicates the extract airflow for STOP.
P_1016 50 % Normal flow SA % min 0 max 100	Indicates the supply airflow for AUTO.
P_1017 50 % Normal flow EA % min 0 max 100	Indicates the extract airflow for AUTO.
P_1018 0 mV SA mV at 0% output min 0 max 5000	Offset voltage for 0% supply airflow. (Dissolution=50mV)
P_1019 10000 mV SA mV at 100% output min 5000 max 10000	Offset voltage for 100% supply airflow. (Dissolution=50mV)
P_1020 0 mV EA mV at 0% output min 0 max 5000	Offset voltage for 0% extract airflow. (Dissolution=50mV)
P_1021 10000 mV EA mV at 100% output min 5000 max 10000	Offset voltage for 100% extract airflow. (Dissolution=50mV)
P_1022 1 Economy mode available? min 0 max 1	Indicates whether the Economy mode is available. 0 = No 1 = Yes
P_1023 1 ActuatorCool 1=NC,2=0-10V,3=NO min 1 max 3	Indicates which sort of valve actuator is installed in the cooling water circuit. (1=24V-NC, 2=0-10V, 3=24V-NO)
P_1024 1 ActuatorHeat 1=NC,2=0-10V,3=NO min 1 max 3	Indicates which sort of valve actuator is installed in the heating water circuit. (1=24V-NC, 2=0-10V, 3=24V-NO)

Display image	Description
P_1025 0 Window 0=NP,1=NC,2=NO min 0 max 2	Indicates whether a window contact is installed and if so how it is installed. 0 = No contact installed 1 = Normally closed 2 = Normally open
P_1026 0 Occupancy 0=NP,1=NC,2=NO min 0 max 2	Indicates whether a presence detector is installed and if so how it is installed. 0 = No contact installed 1 = Normally closed 2 = Normally open
P_1027 5000 P term Change over min 1 max 10000	Indicates the value for P for the Change Over function. A high value denotes faster control. A low value denotes slower control.
P_1028 50 I term Change over min 1 max 10000	Indicates the value for I for the Change Over function. A high value denotes faster control. A low value denotes slower control.
P_1029 2 K Boost at temp. over setpoint (K) min 1 max 10	Indicates 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	Indicates whether time-adjusted fl ow boost is accessible. (0=No, 1=Yes)
P_1035 5 min Timer function time (min) min 1 300	Indicates how long the time-adjusted fl ow boost should be on ON when occupancy is activated
P_1038 16 C Room unit's min set point min 0 max 20	The lowest possible room temperature setpoint for the MAN operating mode
P_1039 28 C Room unit's max set point 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 air flow min 50 max 100	The highest possible airflow setpoint for the MAN operating mode.

Display image	Description
P_1042　　　　　　　　　　1　　K 　　　Boost temp. below setpoint (K) 　　　0　　　　　　　　max　10	Indicates how much the current room temperature should differ from the setpoint in order for the controller to switch from BOOST to AUTO.
P_1043　　　　　　　　　20　　% 　　　Economy flow SA % min　　0　　　　　　　max　100	Indicates the supply airflow for ECON.
P_1044　　　　　　　　　20　　% 　　　Economy flow EA % min　　0　　　　　　　max　100	Indicates the extract airflow for ECON.
P_1045　　　　　　　　480　　min 　　　RU back to auto state min　　0　　　　　　　max　1200	Indicates how long time after the latest manual adjustment of room temperature or airfl ow that the controller should return to AUTO. (0=Is not used)
P_1046　　　　　　　　　18　　C 　　　Night cool temp set point min　　10　　　　　　max　20	Indicates the temperature setpoint applicable to the Night cool function.
P_1047　　　　　　　　　80　　% 　　　Night cool flow SA % min　　50　　　　　　max　100	Indicates the supply airflow for "night cool".
P_1048　　　　　　　　　80　　% 　　　Night cool flow EA % min　　50　　　　　　max　100	Indicates the extract airflow for "night cool".
P_1049　　　　　　　　5000 　　　P term Cooling Scale 1:100 min　　1　　　　　　　max　10000	Indicates the value for P for cooling. A high value denotes faster control. A low value denotes slower control.
P_1050　　　　　　　　　10 　　　I term Cooling Scale 1:100 min　　1　　　　　　　max　10000	Indicates the value for I for cooling. A high value denotes faster control. A low value denotes slower control.
P_1051　　　　　　　　5000 　　　P term Heating Scale 1:100 min　　1　　　　　　　max　10000	Indicates the value for P for heating. A high value denotes faster control. A low value denotes slower control.
P_1052　　　　　　　　　10 　　　I term Heating Scale 1:100 min　　1　　　　　　　max　10000	Indicates the value for I for heating. A high value denotes faster control. A low value denotes slower control.

Indication on the controller

There are two indicating LEDs on the controller, one on the front (No.1) and under the lid (No.2). The indications that can be shown, their importance and their relation to the DIP switches (DIP) is as follows:

No.	1st	2nd	DIP 1	DIP 2	Explanation	Remarks
1.	Green flashing for 1 second.	None.	Off.	Off.	Normal operation.	-
2.	Red and green flashing.	None.	Off.	Off.	Normal operation, but: The room unit or pressure sensor is missing. The temperature sensor in the room unit is defectiveive. KTY sensor missing.	-
3.	Red flashing for 1 second.	None.	Off.	Off.	External memory error. AC output signals are incorrect. MB-ID = 0 or higher than 247.	X1 and X2 are "slaves" and X3 is a "master". MB-ID is 1. Set DIP 1 and DIP 2 to On.
4.	Orange flashing for 1 second.	None.	On.	Off.	Service position.	All MB ports are "slaves", 38400n1. Room unit does not operate in the service mode.
5.	-	-	Off.	On.	BMS mode.	The mode is automatically activated when required.
6.	Light orange.	Light orange.	-	-	The controller lacks bootloader or is in reset.	-
7.	Green.	Green.	-	-	The controller has bootloader but lacks software.	MB-ID is same as in the parameter file.
8.	Orange.	Green.	On.	-	The controller has bootloader but lacks software.	MB-ID is forced to 1.
9.	Fast green flashing.	Green.	-	-	The parameter file is being processed.	See to it that the power supply is maintained.
10.	-	Red.	-	-	The voltage is low (Supply voltage is <13V).	Safety measure for the AC output signals. All signals are Off.
11.	-	Very rapid green flashing.	-	-	Radio Frequency communication.	-
12.	-	Very rapid red flashing.	-	-	Further transmission of MB.	-

Trouble shooting

An alarm is initiated when an error arises in the control system. There are two types of alarms:
- General alarms.
- Application alarms.

Trouble shooting of the control system should always begin with investigating whether any alarm has been initiated and if so which.

Certain alarms are automatically reset (Auto) after the cause of the error has been remedied, while other alarms have to be manually (Man) reset.

If the control system is connected to a ModBus system, the alarms can be read within the 10100 – 10139 range.

Alarm No.	Alarm text	Description / Cause	Remedial measure	Resetting
0.	No active alarms	No active alarms present.	No measure required.	-
1.	No room unit 1	The controller has not received any signal from the room unit 1 within the given time (P_110).	Make a new connection – Radio Frequency mode. Check the cable.	Auto
2.	No room unit 2	The controller has not received any signal from the room unit 2 within the given time (P_110).	Check the cable.	Auto
3.	No pressure sensor	Pressure sensor is missing or is defectiveive. Alarm is initiated after given time (P_113).	Install or replace the sensor.	Auto
4.	No supply flow sensor	Flow sensor is missing or is defectiveive. Alarm is initiated after given time (P_113).	Install or replace the sensor.	Auto
5.	No exhaust flow sensor	Flow sensor is missing or is defectiveive. Alarm is initiated after given time (P_113).	Install or replace the sensor.	Auto
6.	Room unit 1 temperature	No temperature from room unit 1.	Change room unit!	Auto
7.	Room unit 2 temperature	No temperature from room unit 2.	Change room unit!	Auto
8.	Controller KTY short circuit	KTY sensor defectiveive.	Replace the KTY sensor.	Auto
9.	Controller KTY open circuit	KTY sensor missing.	Check connection of the KTY sensor.	Auto
10.	Room unit low battery	The level on the battery in the room unit is low.	Replace the batteries in the room unit!	Auto
11.	PT-controller overload	The output signal has been +100% or -100% during given time (P_111).	Check water the temperature and the water flow.	Auto
12.	Set point not reached	Set temperature, set flow or pressure has not been reached within given time (P_112).	Check the water temperature, the water flow and the airflow.	Auto
13.	TBD	-	-	-
14.	TBD	-	-	-
15.	No device list	-	-	-
16.	AC overload	The supply voltage is too high.	Check the voltage source.	Auto
17.	System fault	Component error.	Replace the controller!	-
18.	No serial number	Program error.	Replace the controller!	-

Alarm No.	Alarm text	Description / Cause	Remedial measure	Resetting
19.	TBD	-	-	-
20.	Short circuit X11	Connected component is defectiveive.	Troubleshoot to find the faulty component and replace the component.	Man.
21.	Short circuit X12	Connected component is defectiveive.	Troubleshoot to find the faulty component and replace the component.	Man.
22.	Short circuit X13	Connected component is defective.	Troubleshoot to find the faulty component and exchange the component.	Man.
23.	Short circuit X14	Connected component is defective.	Troubleshoot to find the faulty component and exchange the component.	Man.
24.	SPI flash broken	Component error.	Replace the controller!	Man.
25.	Radio chip broken	Component error.	Replace the controller!	Man.
26.	Parameter file revision	Parameter file is incorrect.	Update with new parameter file.	Man.
27.	Parameter file format	Parameter file is incorrect.	Update with new parameter file.	Man.
28.	No Modbus ID	Parameter file is incorrect.	Update with new parameter file.	Man.
29.	No application	Parameter file is incorrect.	Update with new parameter file.	Man.
30.	No parameters	Parameter file is incorrect.	Update with new parameter file.	Man.
31.	Parameter missing	Parameter file is incorrect.	Update with new parameter file.	Man.
32.	Parameter value error	Parameter file is incorrect.	Update with new parameter file.	Man.
33.	Parameter file size	Parameter file is incorrect.	Update with new parameter file.	Man.
34.	Wrong parameter file	Parameter file is incorrect.	Update with new parameter file.	Man.
35.	Check duct group SM	-	-	-
36.	Check duct group DC	-	-	-
37.	Previous parameters are lost	Changes in parameter file has been lost.	To restart the controller.	Man.
38.	Factory parameters take up	Changes in parameter file have not been approved.	To restart the controller.	Man.
39.	TBD	-	-	-
40.	TBD	-	-	-
41.	No supply pressure from AHU	-	-	-
42.	No exhaust pressure from AHU	-	-	-
43.	Supply duct 100% open	-	-	-
44.	Exhaust duct 100% open	-	-	-
45.	Low voltage detect	The voltage for the controller is low.	Check the voltage source.	Auto
46.	TBD	-	-	-
47.	Duct group member missing	-	-	-
48.	Negative pressure	-	-	-

Modbus-register W1

The information listed below applies when the CONDUCTOR W1 is connected to a so-called Mod-Bus system.

ModBus-register W1 applies to software before 0.54				
Input Status	Discrete Input (1 bit)	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
0x0001	Not used			0
0x0002	Not used	0/1		0
0x0003	Not used	0/1		0
0x0004	Not used	0/1	1= clears alarms	0
0x0005	Economy mode	0/1	0=Unavailable, 1= Available	1
0x0006	Not used			
0x0007	Not used			

ModBus-register W1 applies to software before 0.54				
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	

ModBus-register W1 applies to software before 0.54				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
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	
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 applies to software before 0.54				
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 RO	Read Only 1/8	1=Normal, 3=Manual, 4=Stand-by, 5=Emergency, 6=NightCool	
4x0003	Room number			
4x0004	Valve exercise	0/72	Valve exercise 0=Not used (hours)	0
4x0005	Motion Timer	0/20	Motion timer (minutes)	20
4x0006	General warning time	0/60	Warning delay, general (minutes)	1
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	0/60	Warning delay, pressure sensor (minutes)	1
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	1/2/3	1=24V-NC,2=0-10V, 1=24V-NO	1
4x0019	Actuator Type Heat	1/2/3	1=24V-NC,2=0-10V, 1=24V-NO	1
4x0020	Not used			
4x0021	Not used			
4x0022	Not used			
4x0023	Frost guard temp.	5/15		10
4x0024	Economy neutral zone	0/10	Ex 4=±2 degC	4
4x0025	Room temperature Setpoint	10/32		22
4x0026	Night cool temp set point	10/20		15
4x0027	Not used			
4x0028	Not used			
4x0029	Room unit's min set point	0/20	only when room unit is manual state (degC)	16
4x0030	Room unit's max set point	25/50	only when room unit is manual state (degC)	28
4x0031	Not used			
4x0032	Not used			
4x0033	Not used			
4x0034	Not used			
4x0035	RU back to auto state	0/1200	Time when room unit come back from manual state to auto	480
4x0036	Not used			

ModBus-register W1 applies to software before 0.54				
Input register	**16 bit integer register**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
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	10/10000	Scale 1:100	3500
4x0049	I term Heat	10/10000	Scale 1:100	10
4x0050	P term Cool	10/10000	Scale 1:100	3500
4x0051	I term Cool	10/10000	Scale 1:100	10
4x0052	P term Change over	10/10000	Scale 1:100	5000
4x0053	I term Change over	10/10000	Scale 1:100	50
4x0054	Not used			
4x0055	Not used			
4x0056	Not used			
4x0057	Not used			
4x0058	Not used			
4x0059	Not used			
4x0060	Not used			
4x0061	Not used			
4x0062	Not used			
4x0063	Manual Temp	0-50	(degC) Only used in Manual state	
4x0064	Not used	0/100	(%) Only used in Manual state	
4x0065	Not used	0/100	(%) 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 Bit2=0x0003 Bit3=0x0004 Bit4=0x0005 … Bit15=0x0016"	

ModBus-register W1 applies to software before 0.54				
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		Cels. Scaling 1:10	
3x0029	Temp sensor RU1		Cels. Scaling 1:10	
3x0030	Temp sensor RU2		Cels. Scaling 1:10	
3x0031	Temp set point RU		Celsius	
3x0032	Flow set point RU			
3x0033	Battery level RU		Volts. Scaling 1:10	
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	(%)	
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			

ModBus-register W1 applies to software before 0.54				5 : 57
Coil Status	**Discrete Output (1 bit)**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
3x0057	Not used			
3x0058	Not used			
3x0059	Not used			
3x0060	Room temp		(degC)	
3x0061	Change over temp		(degC)	
3x0062	Not used			
3x0063	Copy of Input Status 1-16	0/65535	"Bit0=0x0001 Bit1=0x0002 Bit2=0x0003 Bit3=0x0004 Bit4=0x0005 … 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

ModBus-register W3 applies to software before 0.54				
Input Status	**Discrete Input (1 bit)**	**Read only**		
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			

ModBus-register W3 applies to software before 0.54				
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	

ModBus-register W3 applies to software before 0.54				5 : 59
Input Status	**Discrete Input (1 bit)**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
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	
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 applies to software before 0.54				
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 RO	Read Only 1/8	"1=Auto Normal, 2=Auto Economy, 3=Auto boost, 4=Manual, 5=Timer-function 6=Stand-by, 7=Emergency, 8=Night Cool"	
4x0003	Room number			
4x0004	Valve exercise	0/72	Valve exercise 0=Not used (hours)	0
4x0005	Motion Timer	0/20	Motion timer (minutes)	20
4x0006	General warning time	0/60	Warning delay, general (minutes)	1
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	0/60	Warning delay, pressure sensor (minutes)	1
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	1/2/3	1=24V-NC,2=0-10V, 1=24V-NO	1
4x0019	Actuator Type Heat	1/2/3	1=24V-NC,2=0-10V, 1=24V-NO	1
4x0020	Not used			
4x0021	Not used			
4x0022	Not used			
4x0023	Frost guard temp.	5/15		10
4x0024	Economy neutral zone	0/10	Ex 4=±2 degC	4
4x0025	Room temperature Setpoint	10/32		22
4x0026	Night cool temp set point	10/20		15
4x0027	Timer function time	1/300	(min) Boost time when occupancy occurs in room	5
4x0028	Not used			
4x0029	Room unit's min set point	0/20	only when room unit is manual state (degC)	16
4x0030	Room unit's max set point	25/50	only when room unit is manual state (degC)	28
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 temperature rise from defined setpoint, Auto Boost activated	2
4x0034	Boost temp. negative hysteresis	0/10	Room temperature fall from defined setpoint, Auto Boost activated	1
4x0035	RU back to auto state	0/1200	Time when room unit come back from manual state to auto	480
4x0036	Normal flow SA	0/100	(%)	50

ModBus-register W3 applies to software before 0.54				
Holding register	**16 bit integer register**	**R/W**		
Modbus	Name	Min/Max	Remarks	Default
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	Not used			
4x0045	Not used			
4x0046	Stand-by flow EA	0/100	(%)	10
4x0047	Stand-by flow EA	0/100	(%)	10
4x0048	P term Heat	10/10000	Scale 1:100	5000
4x0049	I term Heat	10/10000	Scale 1:100	10
4x0050	P term Cool	10/10000	Scale 1:100	5000
4x0051	I term Cool	10/10000	Scale 1:100	10
4x0052	P term Change over	10/10000	Scale 1:100	5000
4x0053	I term Change over	10/10000	Scale 1:100	50
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			
4x0059	Not used			
4x0060	Not used			
4x0061	Not used			
4x0062	Not used			
4x0063	Manual Temp	0-50	(degC) Only used in Manual state	
4x0064	Manual SA flow	0/100	(%) Only used in Manual state	
4x0065	Manual EA flow	0/100	(%) 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 Bit2=0x0003 Bit3=0x0004 Bit4=0x0005 … Bit15=0x0016"	

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ModBus-register W3 applies to software before 0.54				
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	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=AutoBoost, 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		Cels. Scaling 1:10	
3x0029	Temp sensor RU1		Cels. Scaling 1:10	
3x0030	Temp sensor RU2		Cels. Scaling 1:10	
3x0031	Temp set point RU		Celsius	
3x0032	Flow set point RU			
3x0033	Battery level RU		Volts. Scaling 1:10	
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	(%)	
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	(%)	

ModBus-register W3 applies to software before 0.54				
Input register	**16 bit integer register**	**Read only**		
Modbus	Name	Min/Max	Remarks	Default
3x0057	Not used			
3x0058	Not used			
3x0059	Not used			
3x0060	Room temp		(degC)	
3x0061	Change over temp		(degC)	
3x0062	Not used			
3x0063	Copy of Input Status 1-16	0/65535	"Bit0=0x0001 Bit1=0x0002 Bit2=0x0003 Bit3=0x0004 Bit4=0x0005 … 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"	
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"	