

Operating Instruction Wireless Receiver SRC-ADO

Version 3.10, 17.08.2009

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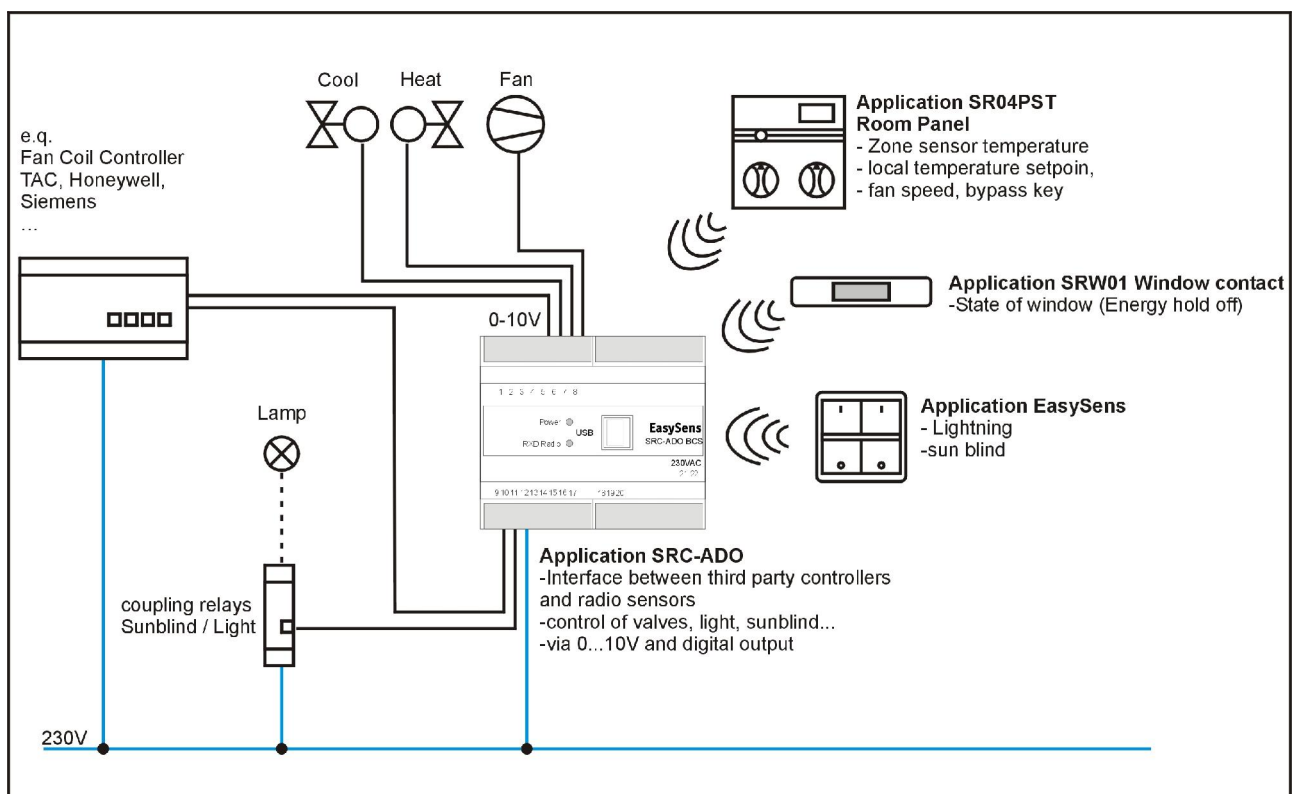
1 Introduction

1.1 Product Overview

The SRC-ADO-BCS is designed for receiving und processing telegrams of Thermokon wireless sensors of the EasySens product line and other brand devices transmitting measuring values according to the EnOcean standard. The measuring values of the sensors can be assigned to analogue (0-10V) and/or digital outputs. (For applications, please see picture 1-1).

A CD with the PC configuration software is supplied along with the receiver. The software provided enables the configuration of the outputs, the learning-in of sensors to the receiver and diagnosis possibilities. The connection between PC and receiver is made via an USB interface (1.1 and 2.0).

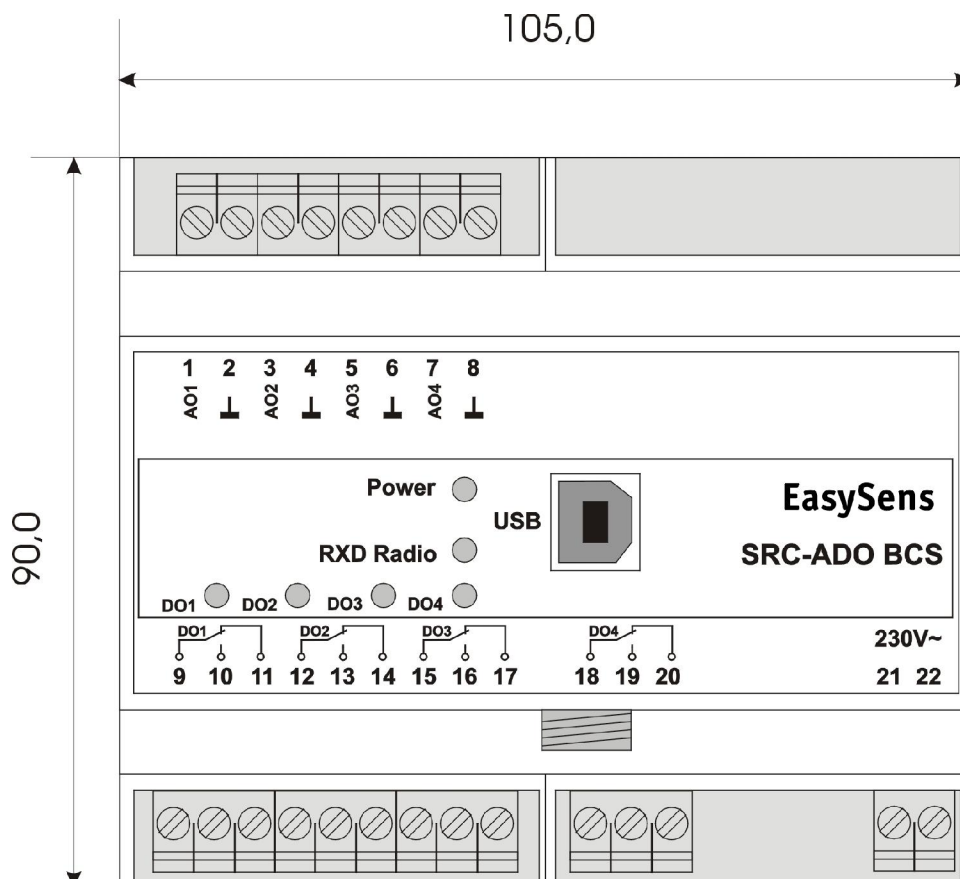
For the operation of the receiver, an external 868MHz antenna with a FME-female connection is needed, additionally. The antenna is in the delivery included. Can be separately ordered as an accessory with different connecting lengths (10m/20m).



Picture 1-1: Schematic Assembly

1.2 Product Specification

Product:	Receiver for up to 15 wireless sensors according to the EnOcean- Standard
Type SRC-ADO 4AO 2DO:	4 analogue outputs, 2 digital outputs
Type SRC-ADO 4AO 4DO:	4 antilog outputs, 4 digital outputs
Interface:	USB 1.1 and USB 2.0 compatible
Power supply:	230V AC 50/60Hz
Typical range :	30m in buildings with antenna
CE-conformity:	89/336/EEG Electromagnetic Compatibility R&TTE 1999/5/EC Radio and Telecommunications Terminal Equipment Directive
Standards: EN 61000	EN 61000-6-2: 2001 EN 61000-6-3: 2001 ETSI EN 301 489-3 V.1.4.1 EN 61000-3-2: 2000 EN 61000-3-3: 1995 + A1
Ambient temperature:	0...60°C
Rel. air humidity:	0...75%rF, non-condensed
Storage temperature:	-20...70°C



1.3 Function Overview Type 1

By means of the SRC-ADO Type 1 the following functions can be realized:

Analogue Outputs (0-10 V)

- Sensor Evaluation
 - Temperature
 - Relative humidity
 - Set point
 - Brightness
 - Individual Settings
 - Linear evaluation or interpretation of measuring ranges
 - Selection of EnOcean data byte
- Dimming
 - 1 button – operation
 - 2 button – operation
- Control
 - Continuous heating (PI)
 - Continuous cooling (PI)
 - Continuous heating and cooling (PI) on 2 outputs

1.3.1 Digital Outputs (Relay On / Off)

- Control
 - Continuous heating (PI) with pulse width modulation
 - Continuous cooling (PI) with pulse width modulation
 - Continuous heating and cooling (PI) on 2 outputs with pulse width modulation
 - Two-point heating
 - Two-point cooling
 - Two-point heating and cooling on 2 outputs with
- Sensor Evaluation
 - Individual settings
 - Interpretation of measuring range
 - Selection of EnOcean data byte
 - Pilot Contact
 - Window contact
 - SecuSignal
 - Wireless chair
 - Motion sensor
 - Digital contact
 - Presence button
- Dimming
 - 1 button – operation
 - 2 button – operation
- Switching
 - 1 button – operation (toggle)
 - 2 button – operation
- Blind
- Shutter

1.4 Function Overview Type 2

By means of the SRC-ADO Type 2 the following functions can be realized:

Analogue Outputs (0-10 V)

- Sensor Evaluation
 - Temperature
 - Relative humidity
 - Set point
 - Brightness
 - Individual Settings
 - Linear evaluation or interpretation of measuring ranges
 - Selection of EnOcean data byte
- Control
 - Continuous heating (PI)
 - Continuous cooling (PI)
 - Continuous heating and cooling (PI) on 2 outputs
 - Continuous heating and cooling (PI) on 1 outputs
 - Continuous FanCoil (automatic and manual mode)

1.4.1 Digital Outputs (Relay On / Off)

- Control
 - Continuous heating (PI) with pulse width modulation
 - Continuous cooling (PI) with pulse width modulation
 - Continuous heating and cooling (PI) on 2 outputs with pulse width modulation
 - Continuous heating and cooling (PI) on 1 outputs with pulse width modulation
 - FanCoil 1-2-3 stages (automatic and manual mode)
- Sensor Evaluation
 - Individual settings
 - Interpretation of measuring range
 - Selection of EnOcean data byte
 - Pilot Contact
 - Window contact
 - SecuSignal
 - Wireless chair
 - Motion sensor
 - Digital contact
 - Presence button
- Switching
 - 1 button – operation (toggle)
 - 2 button – operation
- Blind
- Shutter

2 Installation

2.1 Hardware Installation

For detailed information on installation and mounting, please see the product data sheet SRC-ADO.

2.2 Software Installation

For the installation of the wireless receiver the configuration software and the driver are needed. They are on the supplied CD. Please note, that administrator rights are required on the PC for both the installation and the operation of the programmes.

2.2.1 Automatic Installation of Drivers

Install the configuration software SRC-ADO-BCS and follow the screen instructions. Software and driver are installed automatically. Connect the SRC-ADO to the PC by an USB cable. Follow the instructions. The SRC-ADO is ready for operation now and can be configured via the software.

After an successful installation, the configuration software can be started via the Start Menu\Programme\Thermokon.

Supported operating systems: Windows9x; WindowsNT; WindowsMe; Windows2000; WindowsXP; WindowsServer

2.2.2 Manual Installation of Drivers

It is possible to install the drivers manually without having installed the configuration software first. Connect the SRC-ADO to the PC by an USB cable. In the window "Assistant for searching of new hardware" select "Install software from a list or a certain source".

2.2.3 Logo-Test

Continue the Window-Logo test.

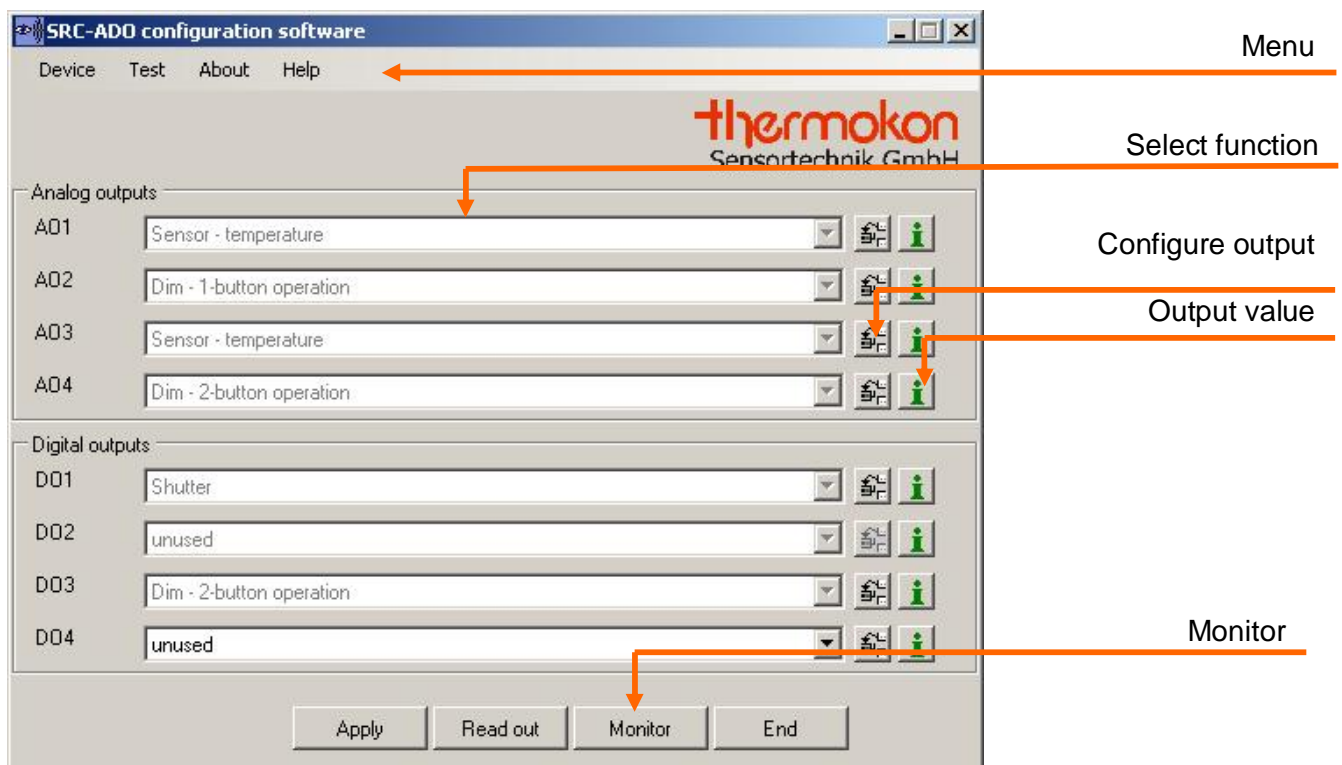


Picture 2: Windows-Logo Test

3 Configuration of Receiver

3.1 Software Specification

The software is designed for the configuration of analogue and digital outputs. In addition, the respective current status can be inquired via the info buttons. Picture 3-1 shows the start window which is displayed after the programme start.



Picture 3-1: Start Window

3.2 Function Overview Type 1

By means of the SRC-ADO Type 1 the following functions can be realized:

Analogue Outputs (0-10 V)

- Sensor Evaluation
 - Temperature
 - Relative humidity
 - Set point
 - Brightness
 - Individual Settings
 - Linear evaluation or interpretation of measuring ranges
 - Selection of EnOcean data byte
- Dimming
 - 1 button – operation
 - 2 button – operation
- Control
 - Continuous heating (PI)
 - Continuous cooling (PI)
 - Continuous heating and cooling (PI) on 2 outputs

3.2.1 Digital Outputs (Relay On / Off)

- Control
 - Continuous heating (PI) with pulse width modulation
 - Continuous cooling (PI) with pulse width modulation
 - Continuous heating and cooling (PI) on 2 outputs with pulse width modulation
 - Two-point heating
 - Two-point cooling
 - Two-point heating and cooling on 2 outputs with
- Sensor Evaluation
 - Individual settings
 - Interpretation of measuring range
 - Selection of EnOcean data byte
 - Pilot Contact
 - Window contact
 - SecuSignal
 - Wireless chair
 - Motion sensor
 - Digital contact
 - Presence button
- Dimming
 - 1 button – operation
 - 2 button – operation
- Switching
 - 1 button – operation (toggle)
 - 2 button – operation
- Blind
- Shutter

3.3 Function Overview Type 2

By means of the SRC-ADO Type 2 the following functions can be realized:

Analogue Outputs (0-10 V)

- Sensor Evaluation
 - Temperature
 - Relative humidity
 - Set point
 - Brightness
 - Individual Settings
 - Linear evaluation or interpretation of measuring ranges
 - Selection of EnOcean data byte
- Control
 - Continuous heating (PI)
 - Continuous cooling (PI)
 - Continuous heating and cooling (PI) on 2 outputs
 - Continuous heating and cooling (PI) on 1 outputs
 - Continuous FanCoil (automatic and manual mode)

3.3.1 Digital Outputs (Relay On / Off)

- Control
 - Continuous heating (PI) with pulse width modulation
 - Continuous cooling (PI) with pulse width modulation
 - Continuous heating and cooling (PI) on 2 outputs with pulse width modulation
 - Continuous heating and cooling (PI) on 1 outputs with pulse width modulation
 - FanCoil 1-2-3 stages (automatic and manual mode)
- Sensor Evaluation
 - Individual settings
 - Interpretation of measuring range
 - Selection of EnOcean data byte
 - Pilot Contact
 - Window contact
 - SecuSignal
 - Wireless chair
 - Motion sensor
 - Digital contact
 - Presence button
- Switching
 - 1 button – operation (toggle)
 - 2 button – operation
- Blind
- Shutter

3.4 Menu

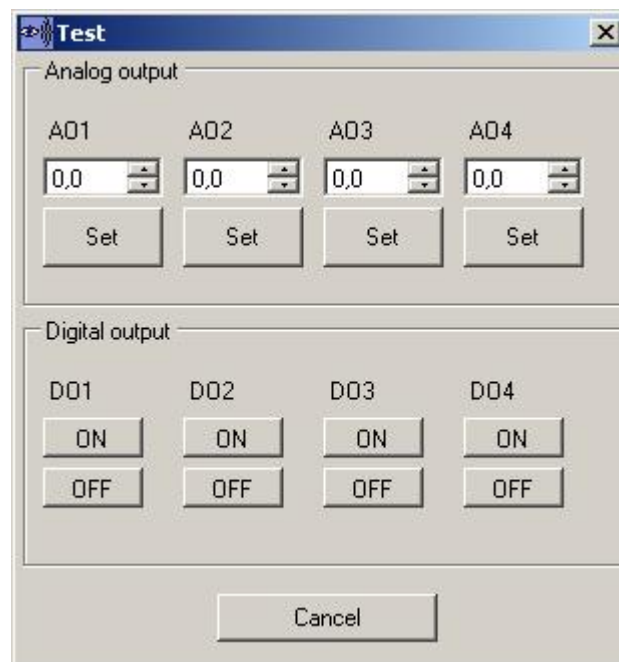
The menu consists of the points "Device", "Test", "Via" and "Help".

3.4.1 Devices

The output properties and the sensors can be saved respectively loaded via the menu point "Devices". This function can be used for transmitting settings from one device to another. By means of the "Take over"- button on the start side the loaded data are taken over. Reset of device in delivery mode: Thereby all sensors and outputs are deleted. Furthermore, all sensors in the device can be deleted in the menu point.

3.4.2 Test

In the menu "Test" values can be manually assigned to the outputs (0-10V level with analogue outputs and "On" or "Off"-status with digital outputs picture 3-1). By the buttons "Set", "On" and "Off" the outputs are set immediately. Sensors and settings learned-in already are ignored during the test mode. After completion of the test mode, the output remains in the same status until it is replaced by a radio telegram.



Picture 3-1: Test Window

3.4.3 Help

In the menu "Via" there are information about the manufacturer and the product. A help for the programme can be polled via the menu "Help".


3.5 Start Window

In the start window (picture 3-1) the outputs currently configured are shown. If special sensors are assigned to an output, the output is marked in grey and cannot be changed. Only if no sensors are assigned to an output, the same can be changed. Different functions, such as „Heating/Cooling PI-Controller AO1/AO2“ require two outputs. If such a function is used, the second output is marked in grey and cannot be changed.


By means of the info button  the current status of the output can be found.

An overview of the sensors connected can be called-off via the button „Monitor“.

By pressing the button “Read Out“ the device is read out again.

If a function was selected for one output, the same must be configured. Therefore, please change in the property / sensor windows via the button  „configure output“.

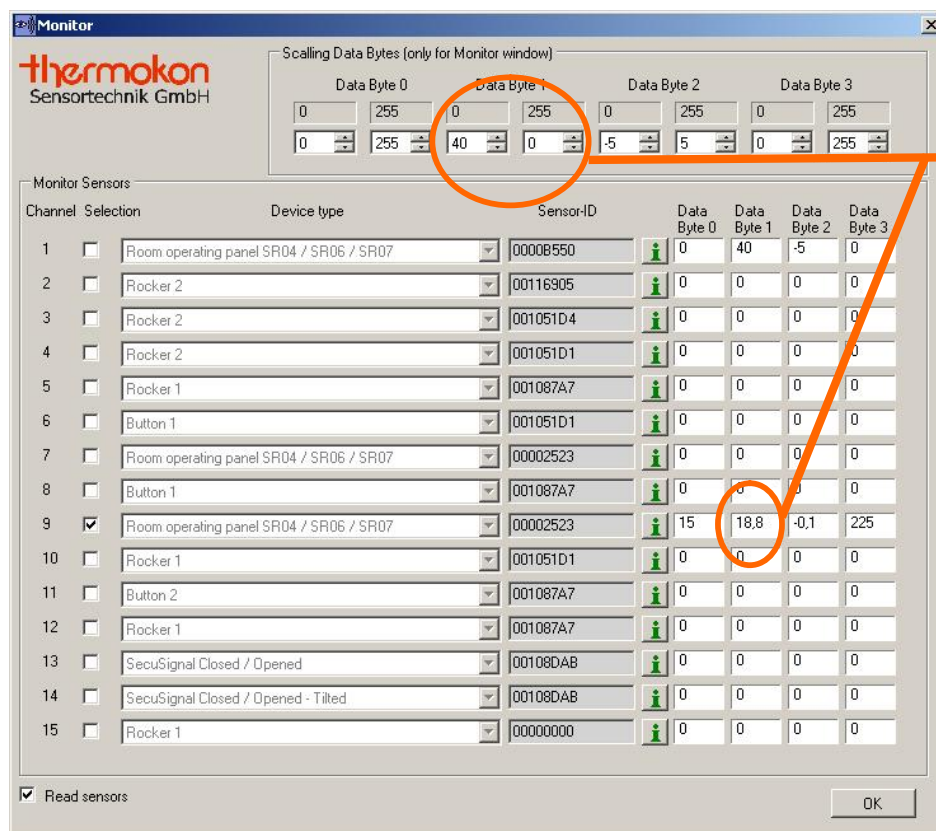
3.6 Monitor

In the window “Monitor” (picture 3-3) all sensors connected are displayed. Via the info button  the current status of the sensor can be shown. In the field “Scaling of Data Byte” a scaling for the respective data bytes can be put in. This serves a better display of the sensor data in the window “Monitor”.

Example: Scale e.g. the measuring range from 40°C to 0°C for a room temperature sensor SR04.

The load of the single data byte and the measuring range of the sensor can be found in the product data sheet of the sensor manufacturer.

If a hook mark is set with “Read out of Sensors“, all sensors are read out and the data are shown in the configuration software. If a scaling is put in, the data bytes are scaled.



Example scaling

Picture 3-2: Monitor

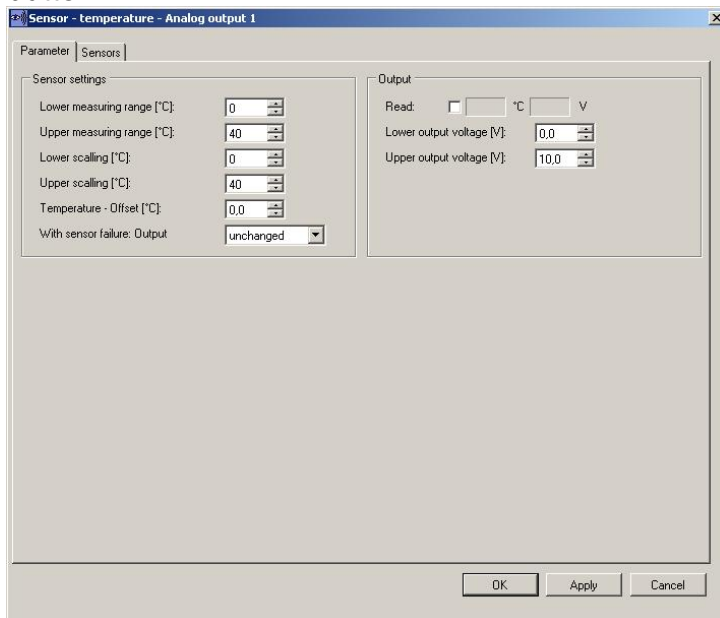
4 Configuration of Outputs

By actuating the button “Configure output”  the window for the configuration of the outputs is opened. It consists of the rider “Property” for adjusting different properties and the rider “Sensors” for learning-in and assigning sensors to the outputs (picture 4-1).

4.1 Register Card Property

The register card property is designed for the parameterizing of the output. Type and number of property is depending on the output functions selected. For instance, picture 4-1 shows the setting adjustments for the function “sensor-temperature”. The detailed description of all properties is made later on.

Property changes are transmitted by pressing the “OK“-button or by the “Take over“ button.



Picture 4-1: Sensor – Temperature

Independent of the output function selected, the configuration window always disposes of the following setting options:

4.1.1 Sensor Monitoring

If a sensor fails, a defined value can be assigned to the output. The same is adjustable via the field “**upon sensor failure**”. The monitoring time of a sensor amounts to 90 min. If a sensor is transmitting again after a failure, the output is operating properly again.

4.1.2 Reading of Output

In the field “**Reading**” the current status of the output can be displayed by activating the hook mark.

4.1.3 Scaling of Output Quantity

The analogue output can be adjusted in the field “**lower and upper output voltage**” of 0-10 V.

4.2 Register Card Sensors

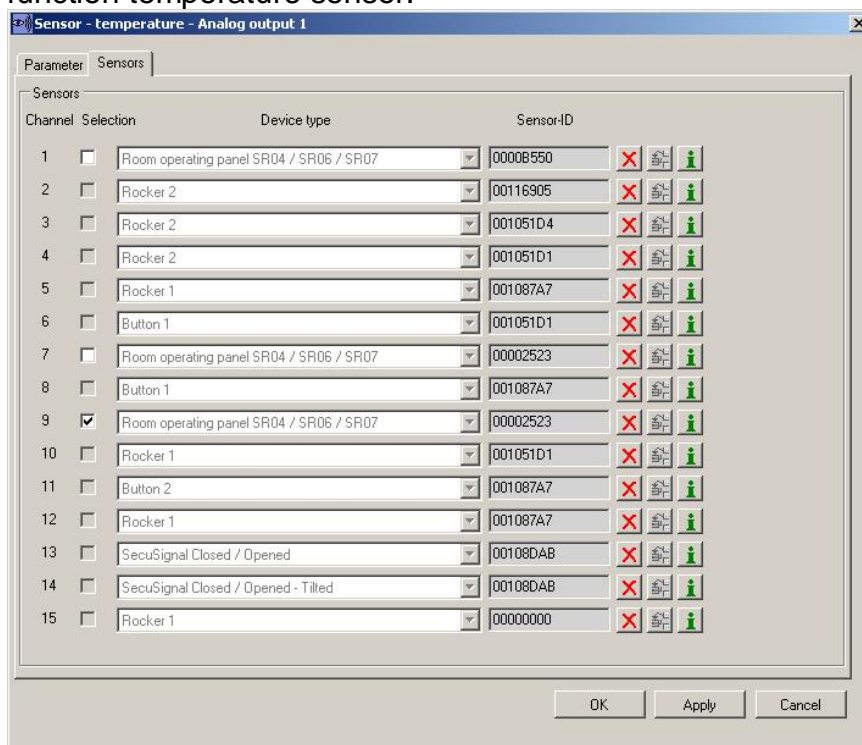
In the register card „Sensors“ sensors can be learned-in and assigned to the output. At maximum, 15 sensors can be learned-in and allocated to the output by a hook mark at „selection“.

Attention:

When assigning several sensors to one output, the sensors must have the same measuring range.


4.2.1 Device Types

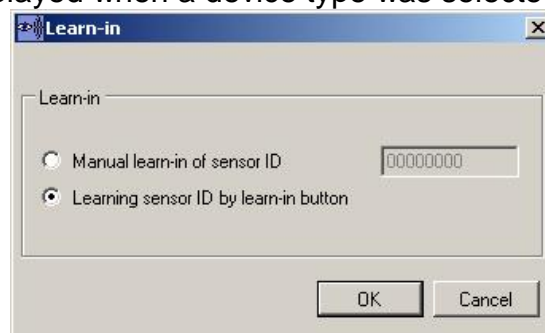
Depending on the function of the output only selected device types can be learned-in. For example, it is not possible to learn-in a button with an analogue output including the function temperature sensor.



Picture 4-2: Sensors

4.2.2 Learning-In


For learning-in a sensor, the „SensorID learn-in“  button must be actuated. The learning-in window is displayed when a device type was selected.

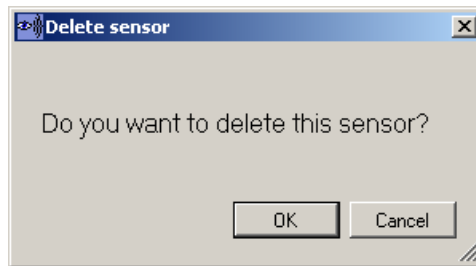


Picture 4-3: Learning-In Window

If the SensorID of the sensor is known, the same can be entered manually. Otherwise a sensor can be learned-in via the learning-in button. For learning-in of buttons, any rocker must be actuated for the learning-in process. By means of a hook mark in the selection field of the rider "Sensor" a sensor is assigned to the output. If **no** hook mark is set, the same does not affect the output.

4.2.3 Clearing of Sensors


For clearing a sensor, the button  "Erase SensorID " must be actuated. The clearing window appears.

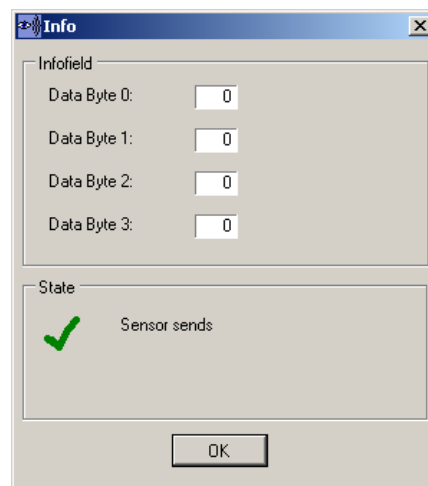


Picture 4-4: Clearing Window

If the inquiry is confirmed, the sensor is cleared. It is only possible to clear a sensor if it is not assigned to another output.

4.2.4 Info

By means of the info button  the data bytes of the sensor are displayed.



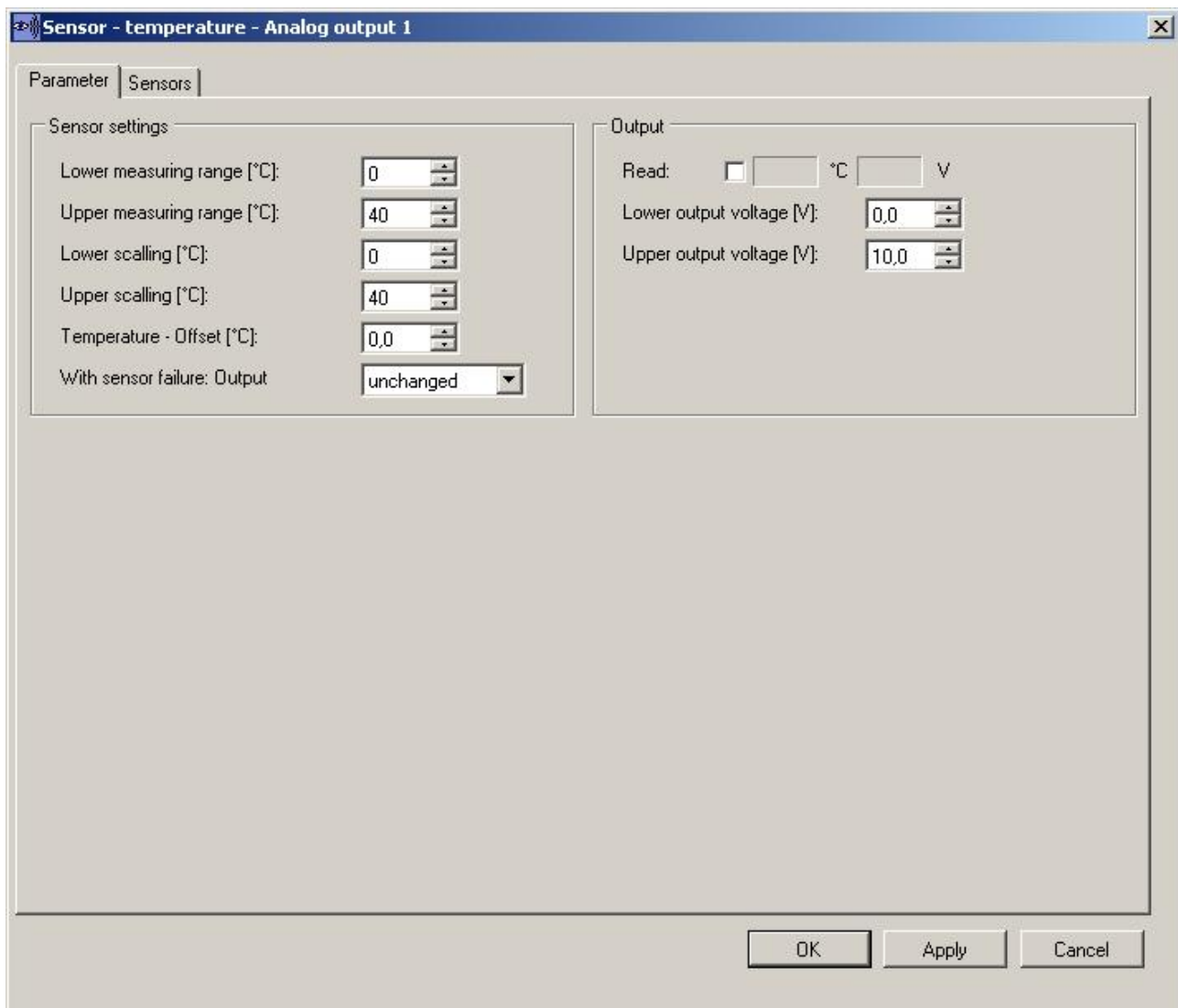
Picture 4-5: Monitor

For the precise meaning of the individual data bytes, please see the product data sheet of the sensor manufacturer.

4.3 Analogue Outputs

4.3.1 Sensor - Temperature

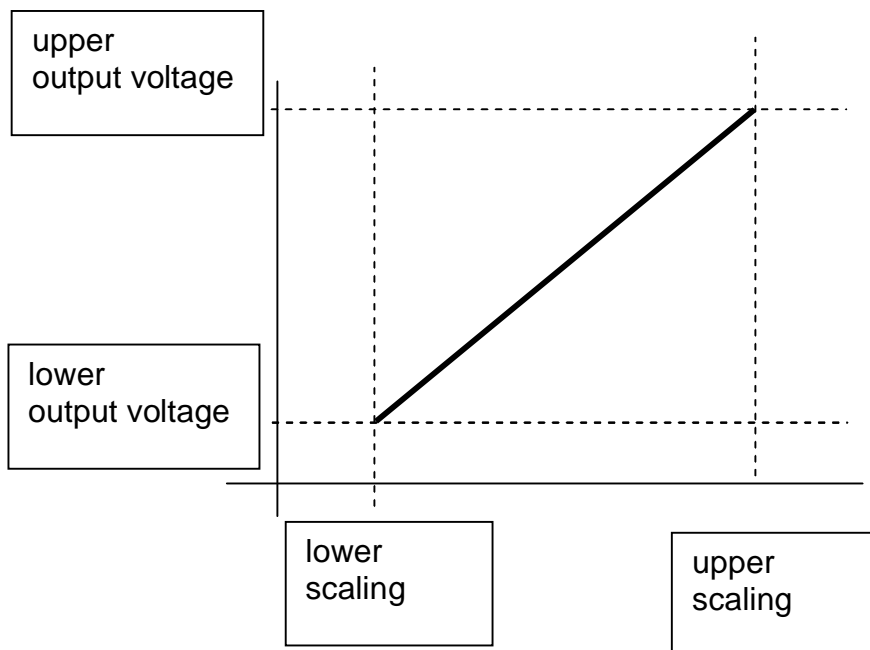
In the output function “Sensor Temperature” the measured temperature is output to an analogue output (0-10 V).



Picture 4-6: Sensor Temperature

4.3.1.1 Register Card Property

- Lower sensor measuring range / Upper sensor measuring range
 - Enter measuring range of sensor
 - The measuring range can be found in the product data sheet of the sensor
- Scaling of output value
 - Fields “lower-“ and “upper scaling“:
The input values must be within the measuring range of the sensor.
 - Fields “lower-“ and “upper output voltage“
The input values must be within the 0-10V output range.



Example SR65:

Lower sensor measuring range: -20°C

Upper sensor measuring range: 60°C

Lower scaling: 20°C

Upper scaling: 40°C

Temperature: 20°C -> output: 0V

Temperature: 30°C -> output: 5

Temperature: 40°C -> output: 10V

The analogue output can be adjusted between 0-10 V.

Example:

Fix input range of controller 0-50 °C corresponds to 0-10 V, then the output of the temperature 0-40 °C can be assigned to 0-8 V.

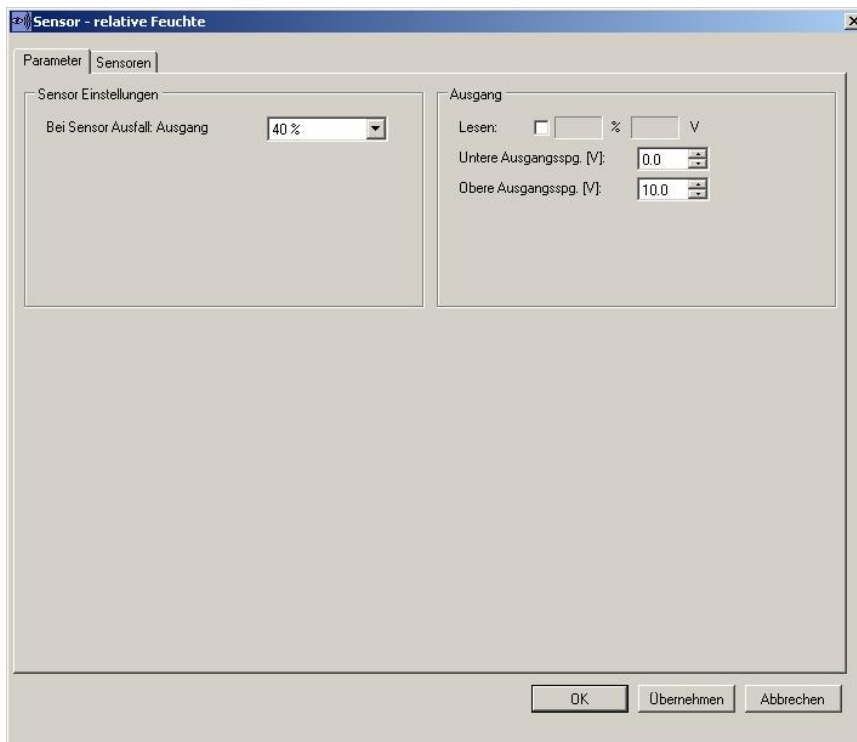
- Temperature-Offset
 - Adaption of temperature deviation to sensor
- Upon sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
- Output
 - In the field "Output" the current status of the output can be displayed by activating the hook mark.
 - Lower output voltage and output voltage
 - Scaling of output voltage in the range 0-10V

4.3.1.2 Register Cards Sensors

- Averaging
 - Averaging is made via all sensors which are marked by a hook on the register card "Sensors"
 - **Attention:** For an averaging all sensors must have the same measuring range
- Number of sensors
 - Up to 15 sensors can be selected for an averaging and can be assigned to the output.

4.3.2 Sensor - Relative Humidity

In the output function “Sensor relative humidity” the relative humidity measured is output for an analogue output (0-10 V).



Picture 4-7: Sensor Relative Humidity

4.3.2.1 Register Card Property

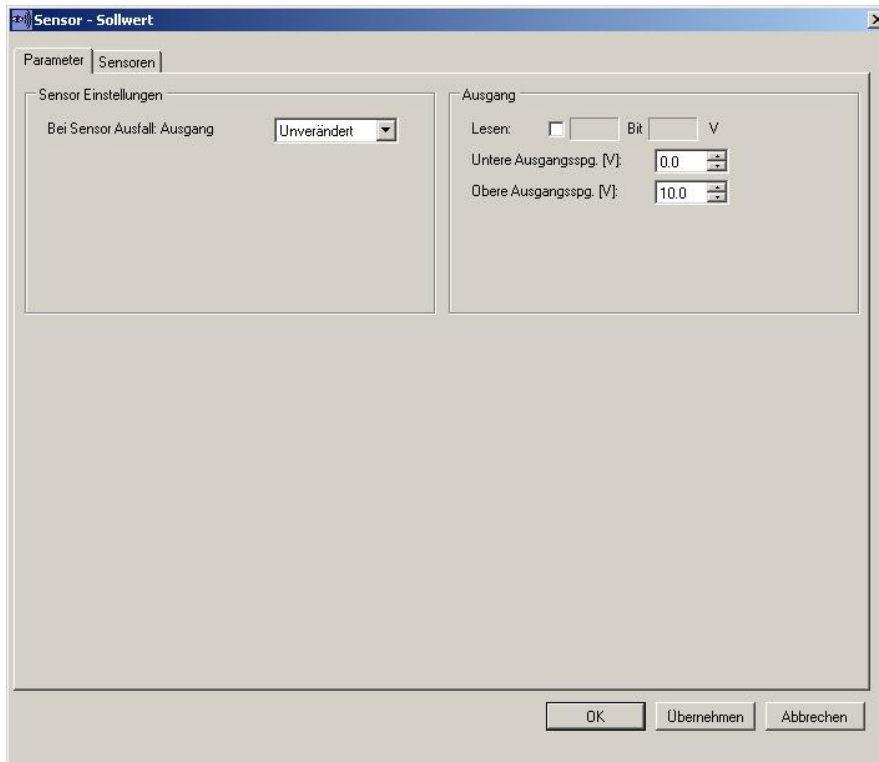
- Upon sensor failure
 - Assignment of a defined value upon sensor failure
 - Monitoring time amounts to 90 minutes
- Output
 - In the field “output” the current status of the output can be displayed by the activation of the hook mark.
 - Lower output voltage and output voltage
 - Scaling of output voltage in the range 0-10V

4.3.2.2 Register Card Sensors

- Averaging
 - Averaging is made via all sensors which are marked by a hook on the register card “Sensors”.
- Number of Sensors
 - Up to 15 sensors can be selected for an averaging and can be assigned to the output.

4.3.3 Sensor – Set point

In the output function “Sensor set point” the adjusted set point is output to an analogue output (0-10 V).



Picture 4-8: Sensor Set Point

4.3.3.1 Register Card Property

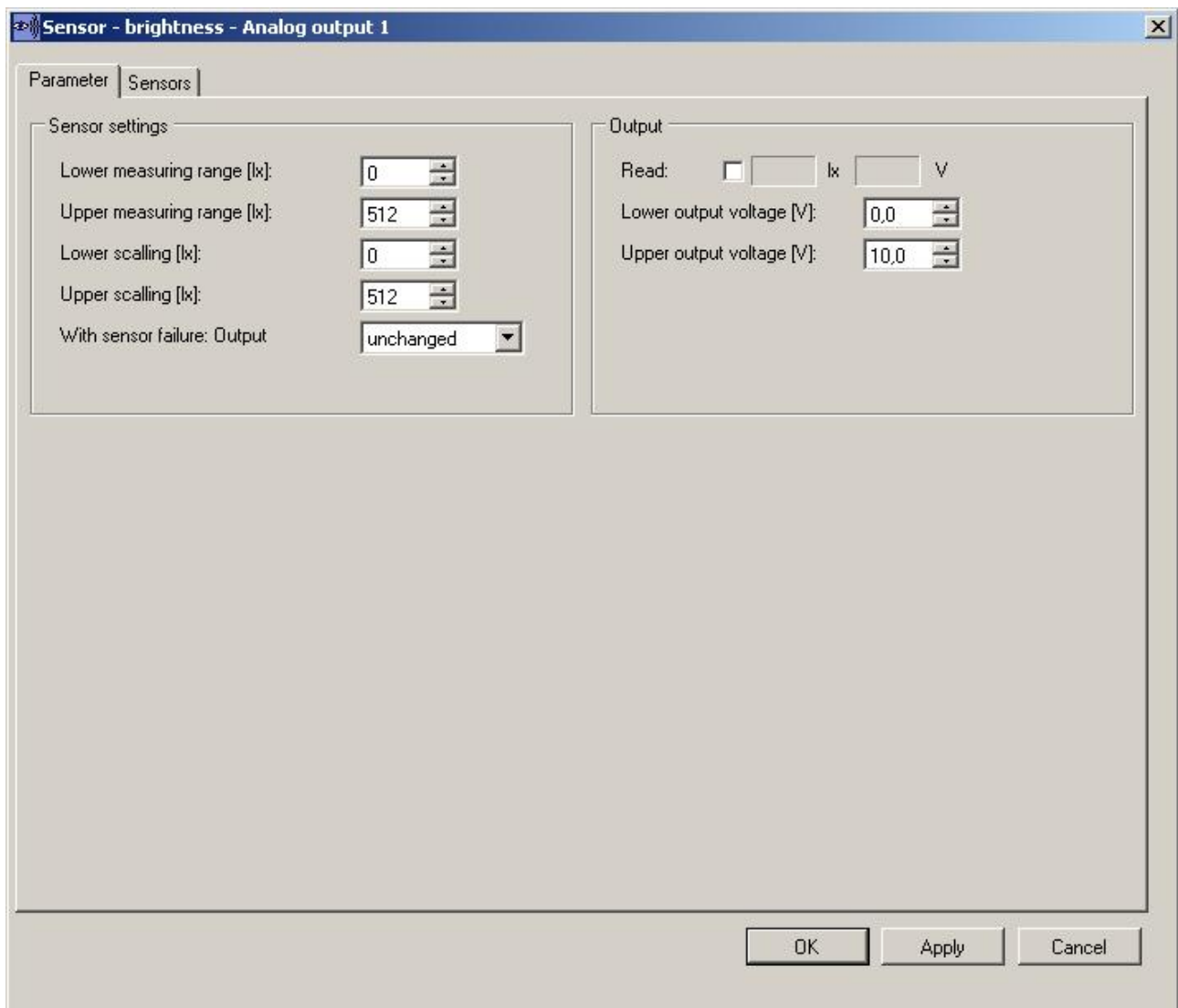
- Upon sensor failure
 - Assignment of a defined value upon sensor failure
 - The monitoring time amounts to 90 minutes
- Output
 - In the field “output” the current status of the output can be displayed by activating the hook mark.
 - Lower output voltage and output voltage
 - Scaling of output voltage in the range 0-10V

4.3.3.2 Register Card Sensors

- Averaging
 - The averaging is made via all sensors which are marked by a hook on the register card “Sensors”
- Number of sensors
 - Up to 15 sensors can be selected for an averaging and assigned to the output.

4.3.4 Sensor - brightness

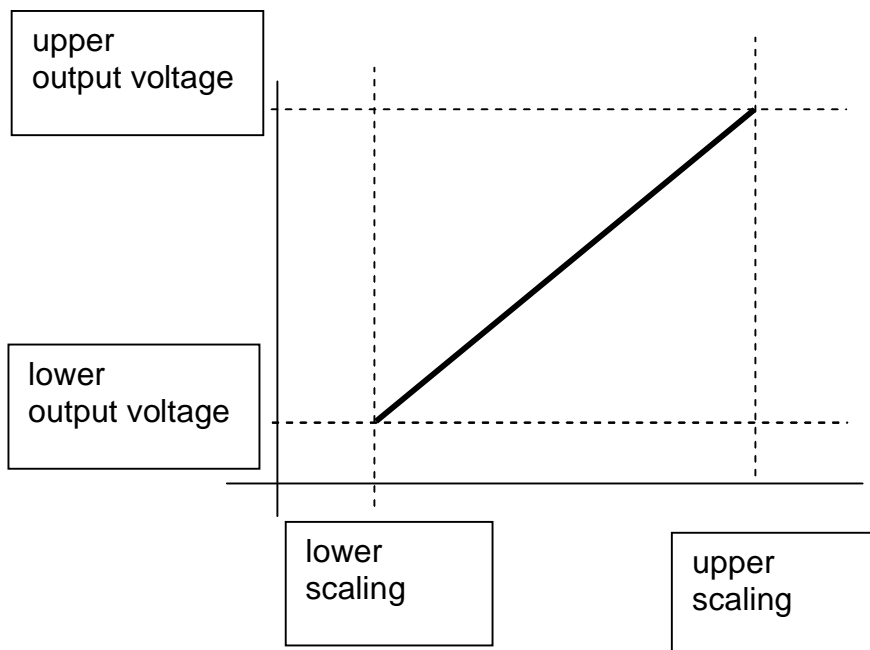
In the output function “Sensor brightness” the measured light value is output to an analogue output (0-10 V).



Picture 4-9: Sensor brightness

4.3.4.1 Register Card Property

- Lower measuring range / Upper measuring range
 - Enter measuring range of sensor
 - The measuring range can be found in the product data sheet of the sensor
- Scaling of output value
 - Fields “lower-“ and “upper scaling“:
The input values must be within the measuring range of the sensor.
 - Fields “lower-“ and “upper output voltage“
The input values must be within the 0-10V output range.



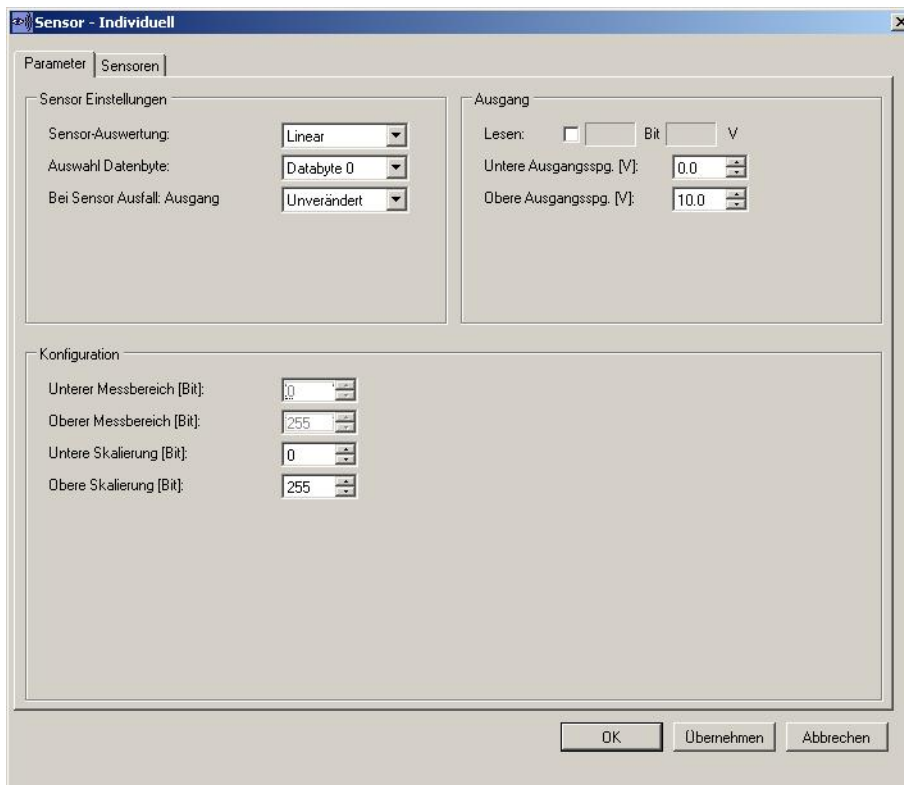
- Upon sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
- Output
 - In the field "Output" the current status of the output can be displayed by activating the hook mark.
 - Lower output voltage and output voltage
 - Scaling of output voltage in the range 0-10V

4.3.4.2 Register Cards Sensors

- Averaging
 - Averaging is made via all sensors which are marked by a hook on the register card "Sensors"
 - **Attention:** For an averaging all sensors must have the same measuring range
- Number of sensors
 - Up to 15 sensors can be selected for an averaging and can be assigned to the output.

4.3.5 Sensor - Individual

In the output function “Sensor Individual” an EnOcean data byte of the sensor is output linear or also in levels to an analogue output (0-10V).



Picture 4-10: Sensor Individual

4.3.5.1 Register Card Property

- With sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
- Output
 - In the field “Output“ the current status of the output can be displayed by activating the hook mark
 - Lower output voltage and output voltage
 - Scaling of output voltage in the range 0-10V
- Selection Data Byte
 - Selection of data byte that should be effective to the output
 - Function of data bytes can be found in the product data sheet of the manufacturer
- Sensor Evaluation Linear:
 - Lower scaling and upper scaling
 - Sensor can be scaled between 0-255 bit and is output to the output linear

- **Sensor-Evaluation Range**
 - 5 different ranges can be assigned to the output
 - A voltage can be assigned to these 5 ranges
 - e.g. for displaying the fan stage of an analogue output

Sensor - individual - Analog output 1

Parameter | **Sensors**

Sensor settings

Sensor evaluation: Span

Selection data byte: Databyte 0

With sensor failure: Output unchanged

Output

Read: ☐ Bit 0 V

Configuration

Lower value range 1 [Bit]:	0	Lower value range 4 [Bit]:	75
Upper value range 1 [Bit]:	25	Upper value range 4 [Bit]:	100
Output voltage 1 [V]:	0,0	Output voltage 4 [V]:	6,0
Lower value range 2 [Bit]:	25	Lower value range 5 [Bit]:	100
Upper value range 2 [Bit]:	50	Upper value range 5 [Bit]:	125
Output voltage 2 [V]:	2,0	Output voltage 5 [V]:	8,0
Lower value range 3 [Bit]:	50		
Upper value range 3 [Bit]:	75		
Output voltage 3 [V]:	4,0		

OK Apply Cancel

Picture 4-11: Sensor Evaluation Range

4.3.5.2 Register Card Sensors

- **Number of Sensors**
 - Up to 15 sensors can be selected and assigned to the output.

4.3.6 Dimming Type1

Dimming is only on SRC-ADO Type 1 available.

If a relay should be switched during the dimming, the function Dimming –1 – button operation respectively Dimming – 2- button operation must be selected on one digital output and the button from the analogue dimming function must be assigned.

Register Card Property

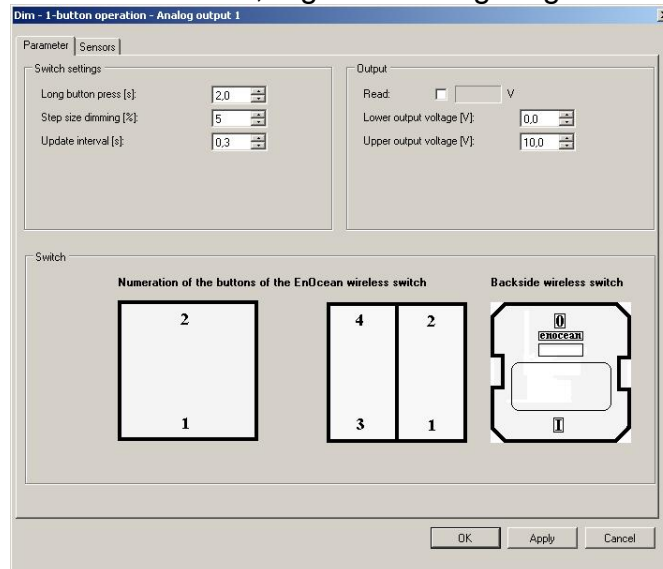
- Switch Adjustment
 - Long button actuation
 - Time from which the output shall dim
 - Step size dimming
 - Adjustable by how many percents the output shall be changed per interval
 - Update Interval
 - Adjustable in which timer interval it should be dimmed
- Output
 - In the field “Output“ the current status of the output can be displayed by activating the hook mark.
 - Lower output voltage and output voltage
 - Scaling of output voltage in the range 0-10V

4.3.6.1 Register Card Sensors

- Number of Sensors
 - Up to 15 sensors can be selected and assigned to the output

4.3.6.2 Dimming - 1 – Button Operation

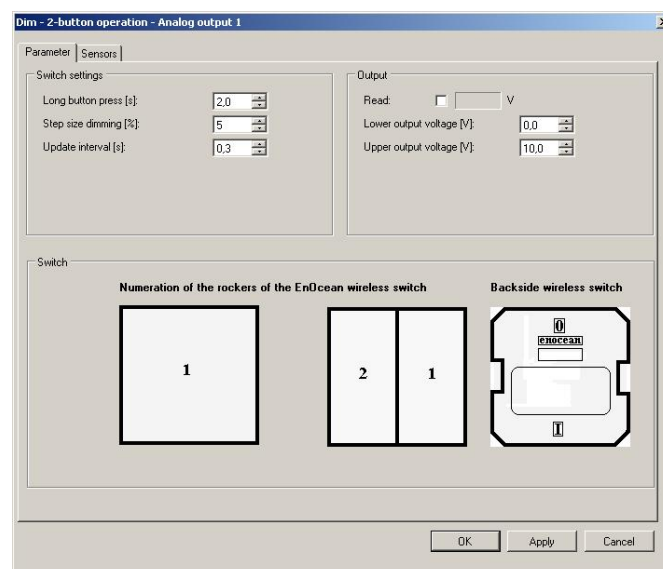
With 1 – button operation the output is dimmed by long button actuation (e.g. the output is changed by e.g. 5% all 0,3 s). With a renewed long button actuation the dimming direction is changed. By a short button actuation, e.g. < 2s the lighting can be switched-on or off.



Picture 4-12: Dimming - 1 –button operation

4.3.6.3 Dimming - 2 – button operation

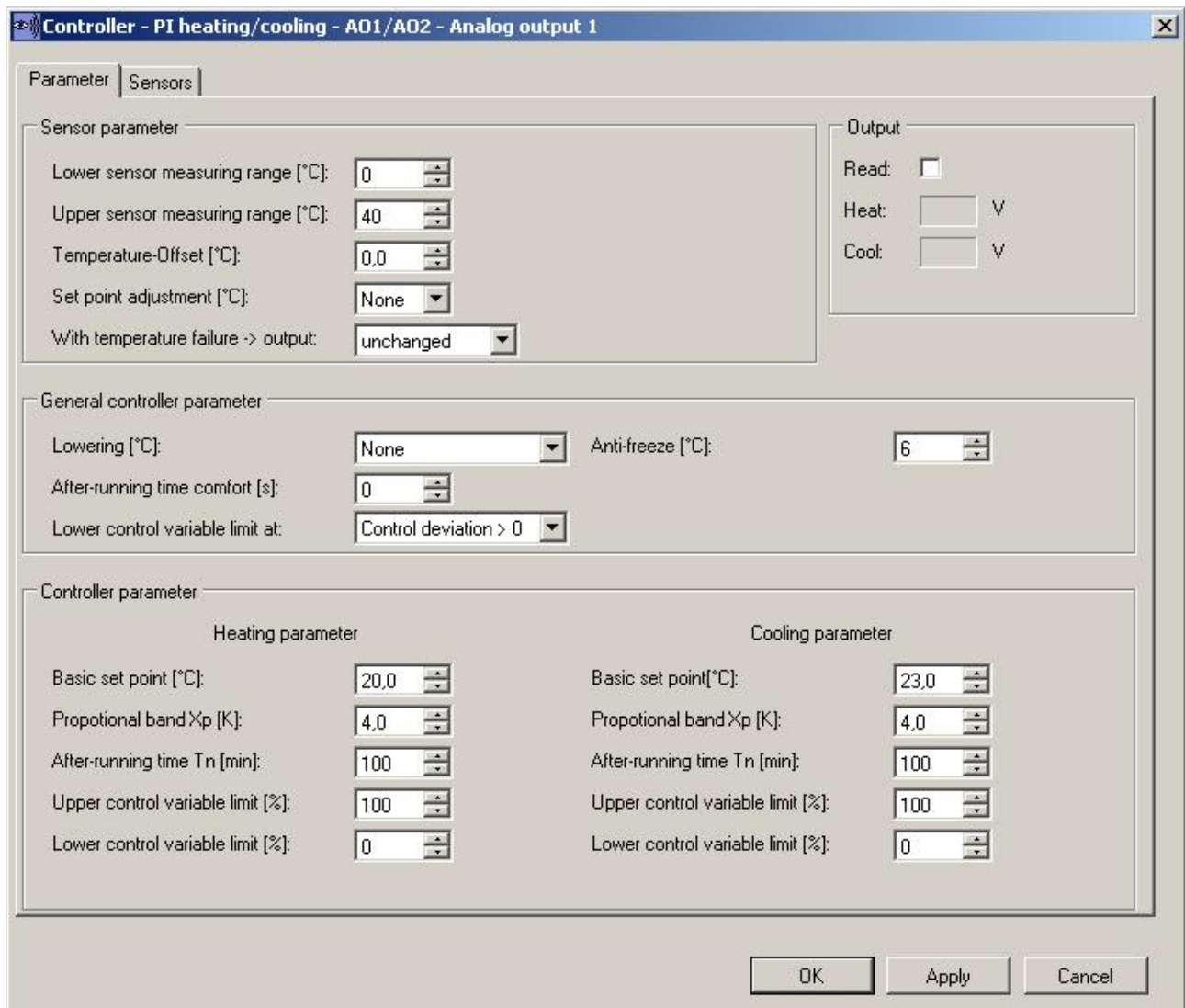
With 2 – button operation the output is dimmed darker by a long button actuation on the lower button. By actuating the upper button, the output is dimmed brighter (e.g. the output is changed by e.g. 5% all 0,3s). By a short button actuation e.g. < 2s the lighting can be switched-on or off.



Picture 4-13: Dimming - 2 – button operation

4.3.7 Controller – PI Heating / Controller – PI Cooling / Controller – PI Heating / Cooling

With a continuous control the control can be ideally adapted to the room by adjusting the properties. With any new telegram received, the output quantity is recalculated. By using window contacts the energy-stop is activated if the window is opened. By the night lowering, the set point can be lowered. The night lowering can be realized by the use of a SR65 DI, a slide switch respectively by a motion sensor. The devices for night lowering are “OR” operating -> if one device is in night lowering when the controller is in night lowering.



Controller - PI heating/cooling - A01/A02 - Analog output 1

Parameter | Sensors

Sensor parameter

Lower sensor measuring range [°C]: 0

Upper sensor measuring range [°C]: 40

Temperature-Offset [°C]: 0,0

Set point adjustment [°C]: None

With temperature failure -> output: unchanged

General controller parameter

Lowering [°C]: None Anti-freeze [°C]: 6

After-running time comfort [s]: 0

Lower control variable limit at: Control deviation > 0

Controller parameter

Heating parameter		Cooling parameter	
Basic set point [°C]:	20,0	Basic set point [°C]:	23,0
Proportional band Xp [K]:	4,0	Proportional band Xp [K]:	4,0
After-running time Tn [min]:	100	After-running time Tn [min]:	100
Upper control variable limit [%]:	100	Upper control variable limit [%]:	100
Lower control variable limit [%]:	0	Lower control variable limit [%]:	0

OK Apply Cancel

Picture 4-14: Property Continuous Control

4.3.7.1 Register Card Property

Sensor Property

- Lower sensor measuring range / upper sensor measuring range
 - Enter measuring range of sensor
 - Measuring range can be found in the data sheet of the sensor
- Temperature-Offset
 - Adaption of temperature deviation of the sensor
- Set point adjustment (with SR04P., SR04rHP., SR07P...)
 - Manual adjustment of set point on the sensor
 - Range $-3/+3K$ and $-5 / +5K$ and "None" adjustable
- Upon sensor failure
 - Assignment of defined value upon sensor failure
 - Monitoring time amounts to 90 minutes
 - Upon sensor failure, window contacts are ignored after 90 minutes
 - If a sensor transmits again, the output is working properly again
 - Buttons are not monitored

General Control Settings

- Night Lowering
 - Reduction of set point by none, 2 K, 4 K, 6 K, 8 K, 10 K, 12 K, antifreeze operation
 - For night lowering the following can be used (OR-operation):
 - Room operating panel SR0x with slide switch
 - Digital module SR65DI
(lowering if contact is opened e.g. with time switch)
 - Motion sensor
 - Wireless chair
 - Rocker / radio timer (PTM switch, Easyclick Timer)
- Antifreeze protection (with activated energy-stop)
 - Adjustable between 0 and 10 °C
 - For energy-stop the following devices can be used:
 - Window contact SRW01
 - Window handle SecuSignal, SRG01
- Lower limit of control variable
 - Selection whether the lower control variable limit shall be effective if no control deviation is existing
 - Control deviation > 0
 - Lower control variable limit is only effective if a control deviation is existing
 - Control deviation $= 0$
 - Lower control variable is always effective even if no control deviation is existing
- Comfort extension

- The toggle between comfort operation to lowering mode is made delayed by the adjusted time(s), e.g. when using the wireless chair or motion detector.
Control Property
- Basic Set Point
 - Basic set point for control
- Proportional range Xp
 - adjustable between 0-10 K
- Running-after time „Tn“
 - Reset time of integral range, adjustable from 0-255 min
 - If the running-after time „Tn“ is set to 0, the same is deactivated
- Lower and upper control variable limit
 - Limit of control output

Output

- In the field “Output“ the current status of the output can be displayed by activating the hook mark.

4.3.7.2 Register Card Sensors

- 1 temperature sensor can be learned-in
- Window contacts are “Or“-operated, i.e. all window contacts must be closed
- If the window is opened, the controller switches to 100% if the antifreeze temperature is fallen below.
- Devices for night lowering are “OR“-operated.

4.3.7.3 Changeover-Function

Changeover function is only on SRC-ADO-Type2 available. Changeover function is used by 2-pipe Systems. Changeover between heating and cooling could be realized by using micro switch (SR04/SR07 MS) or an extra digital input module (SR65-DI).

4.3.8 Constant FanCoil

With a continuous controller a control value is calculated. With this control value and changeable switch value the fan speed is automatically controlled. Via sensor the fan speed could be manual controlled. To control the fan speed with a continuous controller the same channel of the sensor as is used by the continuous controller has to be selected.

Constant - FanCoil - Analog output 2

Parameter | **Sensors**

Sensor parameter

With sensor failure: Stage 3

Output

Read: ☒

Stage: V

General parameter

Value stage 1 [%]: 0

Value stage 2 [%]: 33

Value stage 3 [%]: 66

Max. stage turn on time [s]: 5

Number of fan stages: 3

OK Apply Cancel

Abbildung 4-15: Parameter Constant FanCoil

4.3.8.1 Register Card Property

Sensor Property

- Upon sensor failure
 - Assignment of defined value upon sensor failure
 - Monitoring time amounts to 90 minutes

General parameters

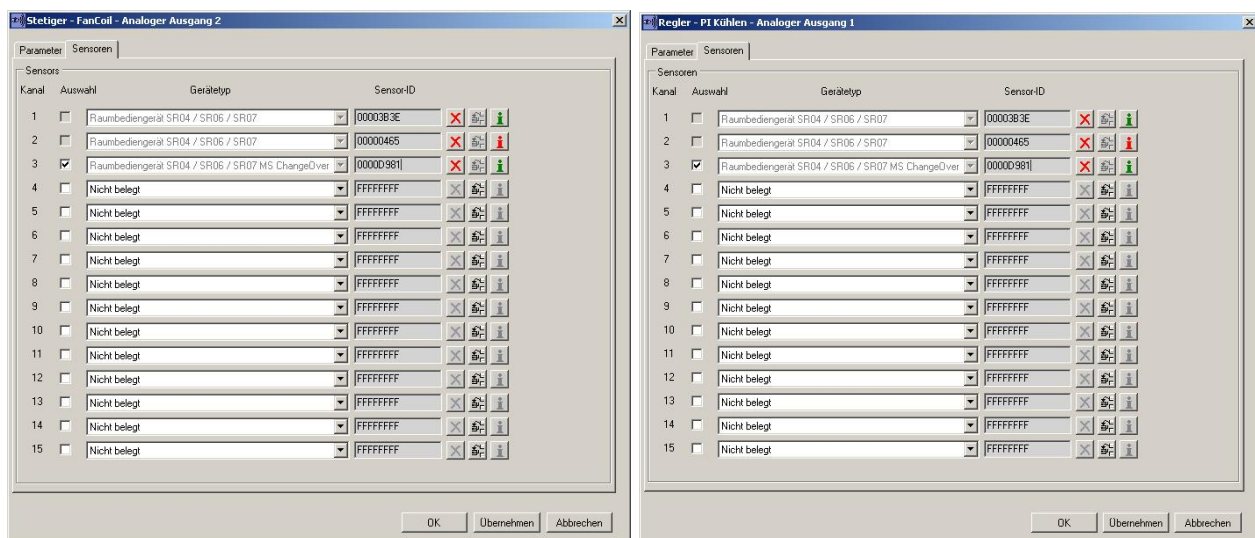
- Value stage
 - Free definable value, by this value stage of FanCoil is set
- Max. stage turn on time
 - FanCoils need for starting high voltage for run up
 - This value the time is set how long the FanCoil should run at start up in the highest stage
- Number of fan stages
 - 1-2 or 3 fan stages could be used

Output

- In the field “Output“ the current status of the output can be displayed by activating the hook mark.
- The output is as:
 - (Fan stage) / (Number of fan stages) * 10 V

4.3.8.2 Register Card Sensors

- 1 temperature sensor can be learned-in
- If the FanCoil should be connected to a controller, the same channel of the sensor have to be chosen as it is used by the controller



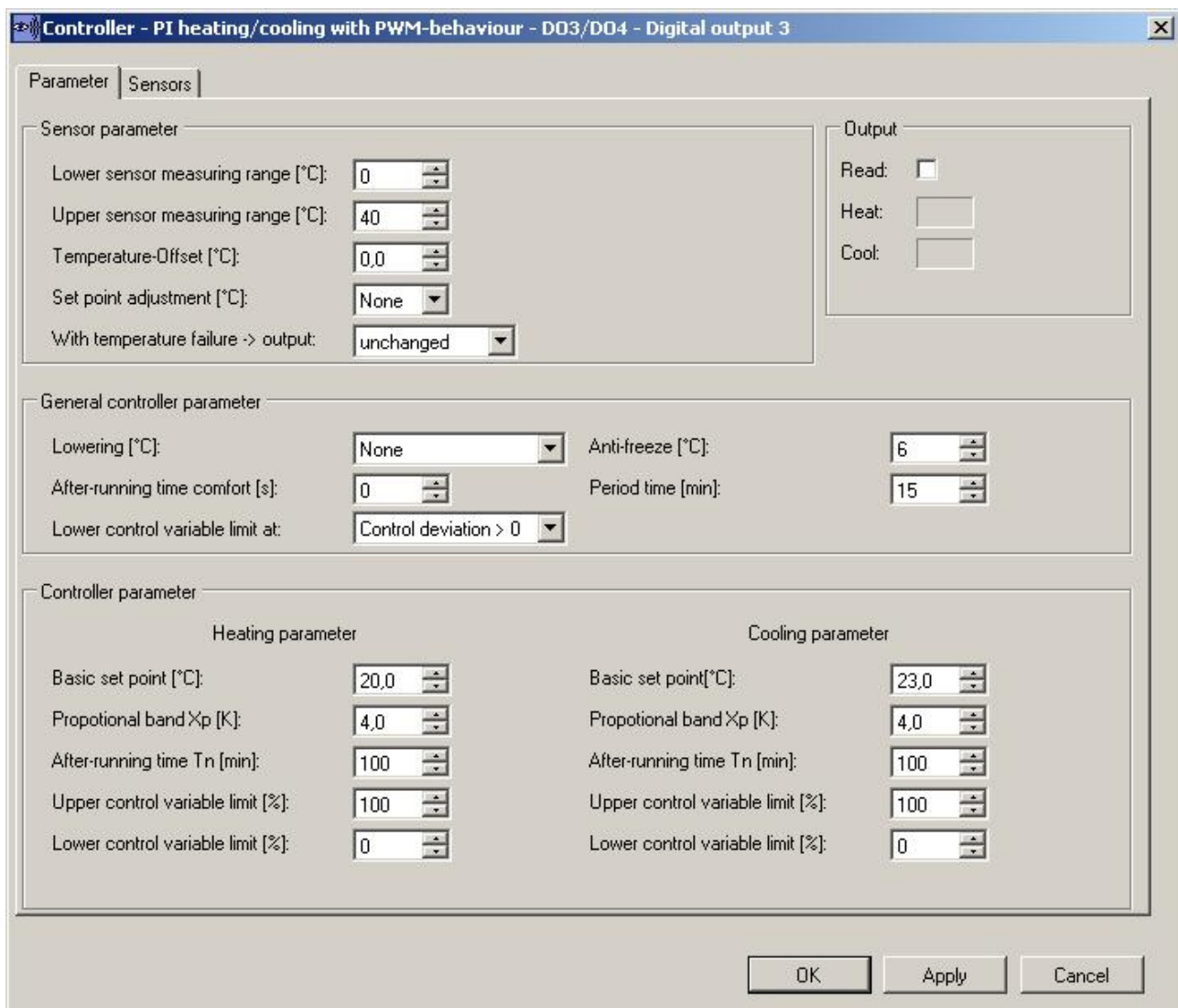
Picture 4-16: Continuous FanCoil / PI Controller

4.4 Digital Outputs

The functions of the digital outputs are described in the following:

4.4.1 Controller – PI Heating / Cooling by PWM - behaviour

With the continuous control the control can ideally be adapted to the room by the property setting. With each new telegram receipt, the output quantity is recalculated. By using window contacts the energy stop is activated if the window is opened. By the night lowering the set point can be lowered. The night lowering can be realized by the use of the SR65DI, a slide switch respectively by a motion sensor. For the night lowering, the devices are “Or” operated -> if one device is in night lowering when the controller is in night lowering.



Picture 4-17: Property Continuous Control

4.4.1.1 Register Card Property

Sensor Property

- Lower sensor measuring range/ Upper sensor measuring range
 - Enter measuring range of sensor
 - The measuring range can be found in the product data sheet of the sensor
- Temperature-Offset
 - Adaption of temperature deviations of sensor
- Set point adjustment (with SR04P., SR04rHP., SR07P...)
 - Manual adjustment of set point on the sensor
 - Range of $-3/+3K$ and $-5 / +5K$ and "None" adjustable
- With sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
 - With sensor failures window contacts are ignored after 90 minutes
 - If a sensor is transmitting again, the output is working normally again
 - Buttons are not monitored

General Controller Settings

- Night lowering
 - Reduction of set point by none, 2 K, 4 K, 6 K, 8 K, 10 K, 12 K, antifreeze protection
 - For night lowering the following can be used (OR-operation):
 - Room operating panel SR0x with slide switch
 - Digital module SR65DI
(lowering with opened contact e.g. with time switch)
 - Motion sensor
 - Wireless chair
 - Radio rocker / radio timer (PTM switch, Easyclick Timer)
- Antifreeze protection (with activated energy stop)
 - Adjustable between 0 and 10 °C
 - For energy stop the following can be used:
 - Window contact SRW01
 - Window handle SecuSignal, SRG01
- Lower Control Variable Limit
 - Selection whether the lower control variable limit shall be effective , if no offset is existing.
 - Offset > 0
 - Lower control variable limit only becomes effective, if an offset is existing
 - Offset = 0
 - Lower control variable limit is always effective, even if no offset is existing.
- Comfort Extension
 - The toggle between comfort operation into night lowering is made delayed by the adjusted time (s). For example with the use of a wireless chair or a motion sensor.

- Period
 - Time for pulse width modulation

Control Property

- Basic-Set Point
 - Basic set point for control
- Proportional range Xp
 - between 0-10 K adjustable
- After-running time „Tn“
 - After-running time of integral range, adjustable from 0-255 min
 - If the after-running time „Tn“ is set to 0, the same is deactivated
- Lower and upper control variable limit
 - Limitation of control output

Output

- In the field “Output“ the current status of the output can be adjusted by activating the hook mark

4.4.1.2 Register Card Sensors

- 1 Temperature sensor can be learned-in
- Window contacts are “OR“- operated, i.e. all window contacts must be closed
- If the window is opened the controller switches to 100% if the antifreeze temperature was fallen below
- Devices for night lowering are “OR“- operated

4.4.1.3 Changeover-Function

Changeover function is only on SRC-ADO-Type2 available. Changeover function is used by 2-pipe Systems. Changeover between heating and cooling could be realized by using micro switch (SR04/SR07 MS) or an extra digital input module (SR65-DI).

4.4.2 Controller – Two-Point Heating/Cooling Type1

Two Point is only available on SRC-ADO Type 1

Heating

With the two-point control the relay is switched-on if the set point is fallen below. If the set point is exceeded, the relay is switched-off.

Cooling

With the two-point control the relay is switched-on if the set point is exceeded and switched-off if the set point is fallen below.

With each new telegram received, the output quantity is recalculated. By the use of window contacts the energy stop is activated if the window is opened. By the night lowering, the set point can be lowered. The night lowering can be realized by the use of SR65 DI, a slide switch respectively by a motion sensor. The devices for night lowering are "OR-operated -> if one device is in night lowering when the controller is in night lowering.

Controller - 2-point heating/cooling - DO3/DO4 - Digital output 3

Parameter | Sensors

Sensor parameter

Lower sensor measuring range [°C]: 0

Upper sensor measuring range [°C]: 40

Temperature-Offset [°C]: 0,0

Set point adjustment [°C]: None

With temperature failure -> output: unchanged

Output

Read: ☐

Heat:

Cool:

General controller parameter

Lowering [°C]: None

Anti-freeze [°C]: 6

After-running time comfort [s]: 0

Controller parameter

Heating parameter

Basic set point [°C]: 20,0

Cooling parameter

Basic set point [°C]: 23,0

OK Apply Cancel

Picture 4-18: Property Continuous Control

4.4.2.1 Register Card Property

Sensor Property

- Lower sensor measuring range / Upper sensor measuring range
 - Enter measuring range of sensor
 - Measuring range can be found in the product data sheet of the sensor
- Temperature-Offset
 - Adaption of temperature deviation of sensor
- Set point adjustment
 - Manual adjustment of set point on the sensor
 - Range adjustable from $-3/+3K$ and $-5/+5K$ and „none“
- With sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
 - Window contacts are ignored with a sensor failure after 90 minutes
 - If a sensor is transmitting again, the output works normally again.
 - Buttons are not monitored.

General Controller Setting

- Night lowering
 - Reduction of set point by none, 2 K, 4 K, 6 K, 8 K, 10 K, 12 K, antifreeze protection
 - For night lowering the following can be used (OR-operation):
 - Room operating panel SR0x with slide switch
 - Digital module SR65DI (lowering with opened contact e.g. with time switch)
 - Motion sensor
 - Wireless chair
 - Radio rocker / radio timer (PTM switch, Easyclick Timer)
- Antifreeze protection (with activated energy stop)
 - Adjustable between 0 and 10 °C
 - For energy stop the following can be used:
 - Window contact SRW01
 - Window handle SecuSignal, SRG01
- Comfort Extension
 - The toggle between comfort operation into night lowering is made delayed by the adjusted time (s). For example with the use of a wireless chair or a motion sensor.

Control Property

- Basic-Set Point
 - Basic set point for control

Output

- In the field “Output“ the current status of the output can be displayed by activating the hook mark.

4.4.2.2 Register Card Sensors

- 1 Temperature sensor can be learned-in
- Window contacts are “OR“-operated, i.e. all window contacts must be closed
- If the window is opened, the controller switches to 100% if the antifreeze temperature was fallen below
- Devices for night lowering are “OR“-operated.

4.4.3 FanCoil

With a continuous controller a control value is calculated. With this control value and changeable switch value the fan speed is automatically controlled. Via sensor the fan speed could be manual controlled. To control the fan speed with a continuous controller the same channel of the sensor as is used by the continuous controller has to be selected.

3-stage FanCoil - Digital output 1

Parameter | Sensors

Sensor parameter

With sensor failure: Stage 1

Output

Read: ☐

Stage 1:

Stage 2:

Stage 3:

General parameter

Value stage 1 [%]: 0

Value stage 2 [%]: 33

Value stage 3 [%]: 66

Max. stage turn on time [s]: 5

OK Apply Cancel

Abbildung 4-19: Parameter FanCoil

4.4.3.1 Register Card Property

Sensor Property

- Upon sensor failure
 - Assignment of defined value upon sensor failure
 - Monitoring time amounts to 90 minutes

General parameters

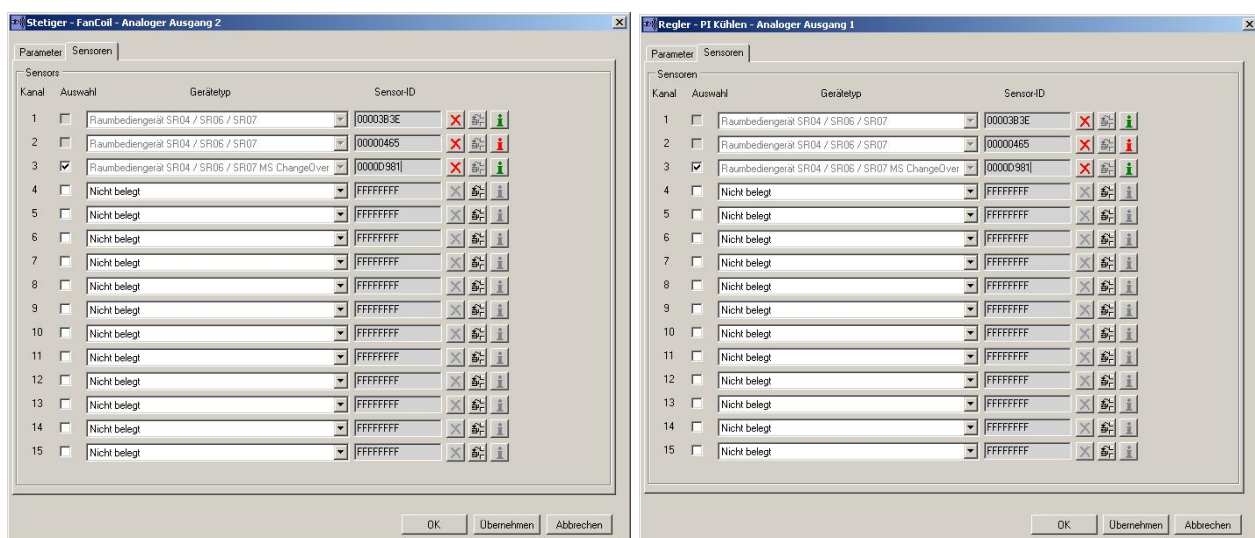
- Value stage
 - Free definable value, by this value stage of FanCoil is set
- Max. stage turn on time
 - FanCoils need for starting high voltage for run up
 - This value the time is set how long the FanCoil should run at start up in the highest stage
- Number of fan stages
 - Number of fan stages is chosen by the function in the main menu

Output

- In the field "Output" the current status of the output can be displayed by activating the hook mark.

4.4.3.2 Register Card Sensors

- 1 temperature sensor can be learned-in
- If the FanCoil should be connected to a controller, the same channel of the sensor have to be chosen as it is used by the controller

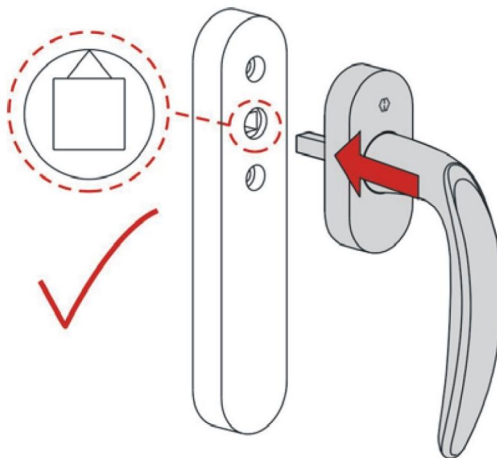


Picture 4-20: Continuous FanCoil / PI Controller

4.4.4 Sensor – Pilot Contact

In the output function “Sensor – Pilot Contact“ the digital output can be switched ON and OFF by the sensors. The sensors that are assigned to the function are OR-operated. This function can be used for the following applications:

- Presence button, slide switch (SR04 T, SR04 MS)
- Motion sensor (SR-PIR 360°)
- Motion sensor, light on / off depending on the light value (SR-MDS)
- Digital Input (SR65DI)
 - For the seamlessly connection, the digital input must be opened
- Wireless chair
- Window contact (SRW01)
- Radio rocker / radio timer (PTM switch, Easyclick Timer)
- Window handle (SecuSignal)
 - Closed / opened
 - Display if window is opened
 - Closed / tilted-opened
 - Display if window is tilted or opened
 - As for the SecuSignal® window handle a correct installation is very important. (Thus, also see SecuSignal® data sheet)



The relay is switched-on if:

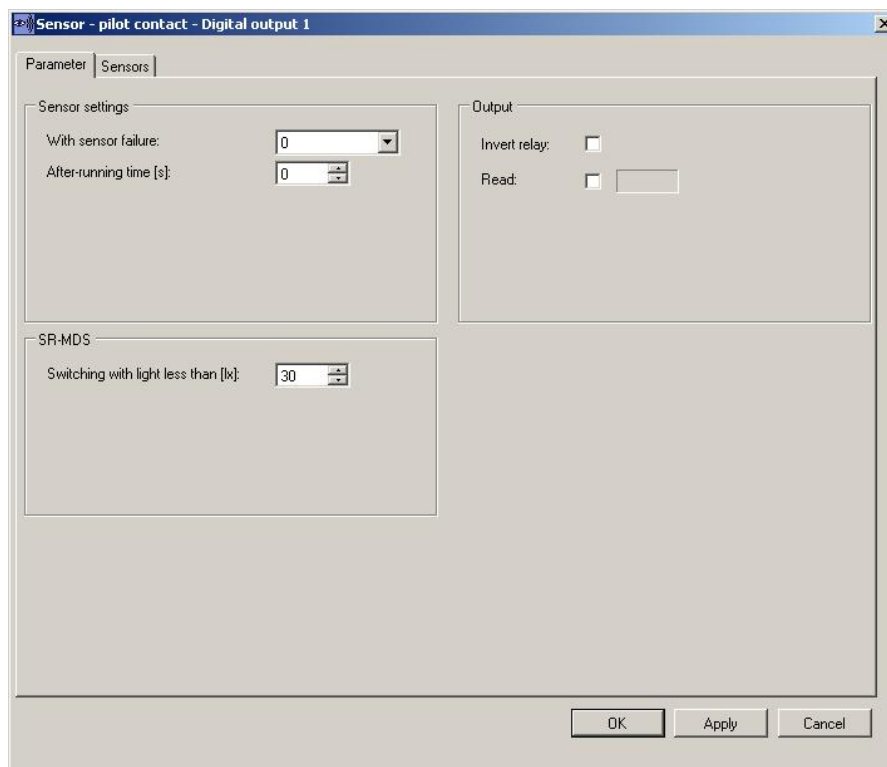
- the windows are opened
- motion was detected
- the digital contacts are closed
- the wireless chair is occupied
- the presence button is pressed
- slide switch is switched

4.4.4.1 Register Card Property

- With sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
- After-running time
 - adjustable from 0 –65000 seconds
- SR-MDS
 - Switches the light on if it is too dark and movement is detected
 - With a switch light could be manually switched on and off
- Output
 - Relays is invertible
 - In the field “Output“ the current status of the output can be displayed by activating the hook mark

4.4.4.2 Register Card Sensors

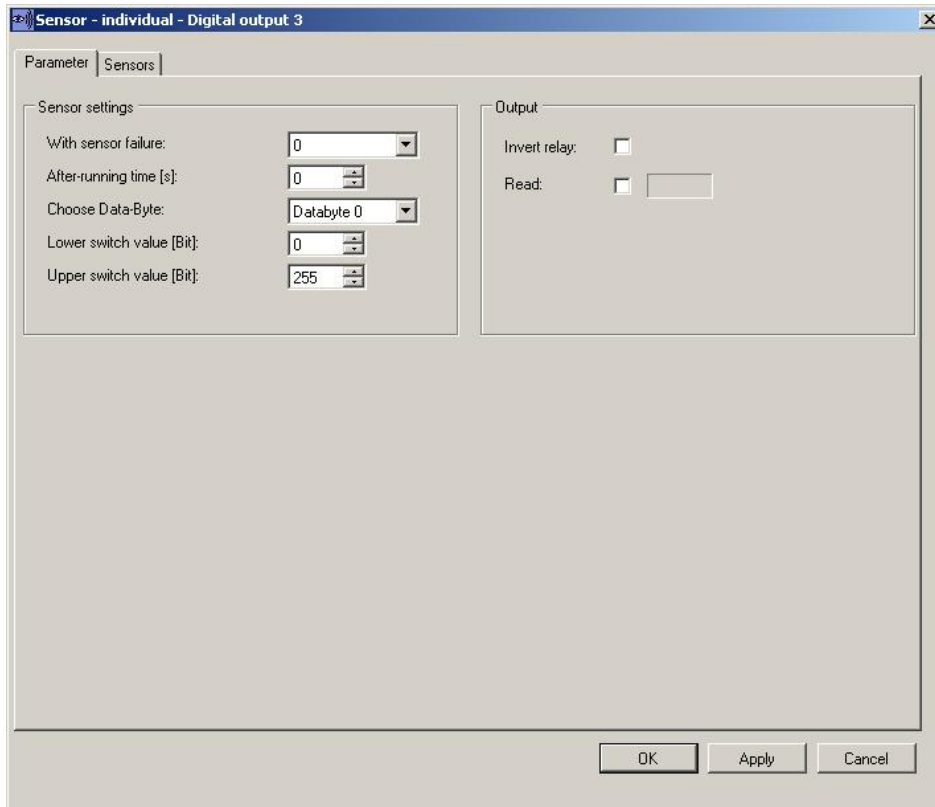
- Number of Sensors
 - Up to 15 sensors can be selected and assigned to an output



Picture 4-21: Pilot Relay

4.4.5 Sensor - Individual

In the output function “Sensor – Individual” an EnOcean data byte of a sensor can switch a digital output (On–Off).



Picture 4-22: Individual

4.4.5.1 Register Card Property

- With sensor failure
 - Assignment of a defined value with sensor failure
 - Monitoring time amounts to 90 minutes
- After-running time
 - Adjustable from 0 –65000 seconds
- Selection data byte
 - Selection of data byte which should be effective on the output
 - Function of data byte can be found in the product data sheet of the manufacturer
- Lower switch value and upper switch value
 - In the range between the lower and upper switch value, the relay is switched-on.

Example:

Temperature limiting value, sensor 0-40°C over 30°C, switch relay on:

Temperature of SR04 is inverted -> 0 °C = 255 bit and 40 °C = 0 bit

Selection data byte: data byte 1

Lower switch value: 0 bit

Upper switch value: 255 bit – (30 °C / 40 °C * 255 bit) = 64 bit

Rotary switch: With the 1. fan stage – switch relay on

Lower switch value: 165 bit

Upper switch value: 195 bit

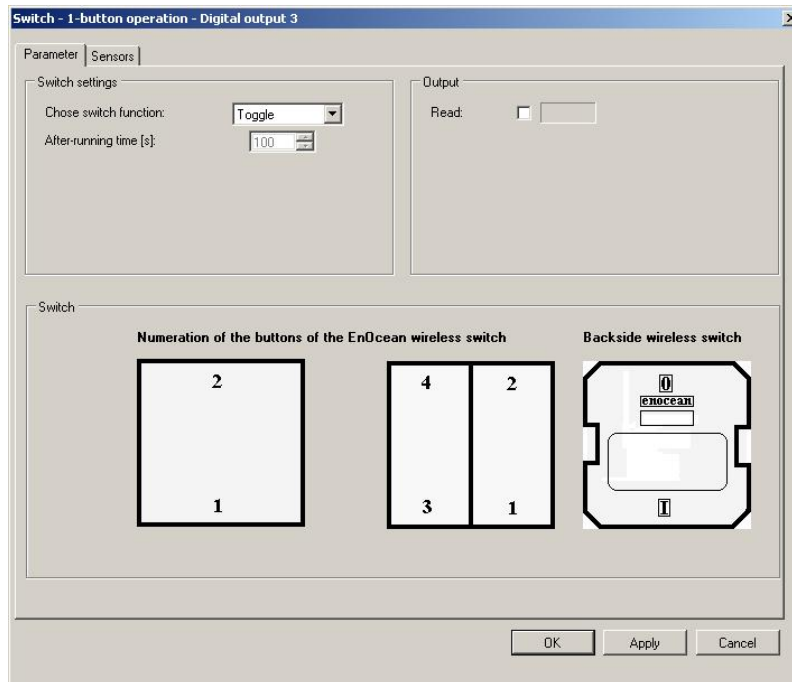
- Output
 - Relays is invertible
 - In the field “Output“ the current status of the output can be displayed by activating the hook mark.

4.4.5.2 Register Card Sensors

- Number of sensors
 - Up to 15 sensors can be selected and assigned to the output

4.4.6 Switching - 1 – Button Operation

In the output function “Switching – 1 - button operation” a button of a switch can switch the digital output (On – Off).



Picture 4-23: Switching – 1- Button operation

4.4.6.1 Register Card Property

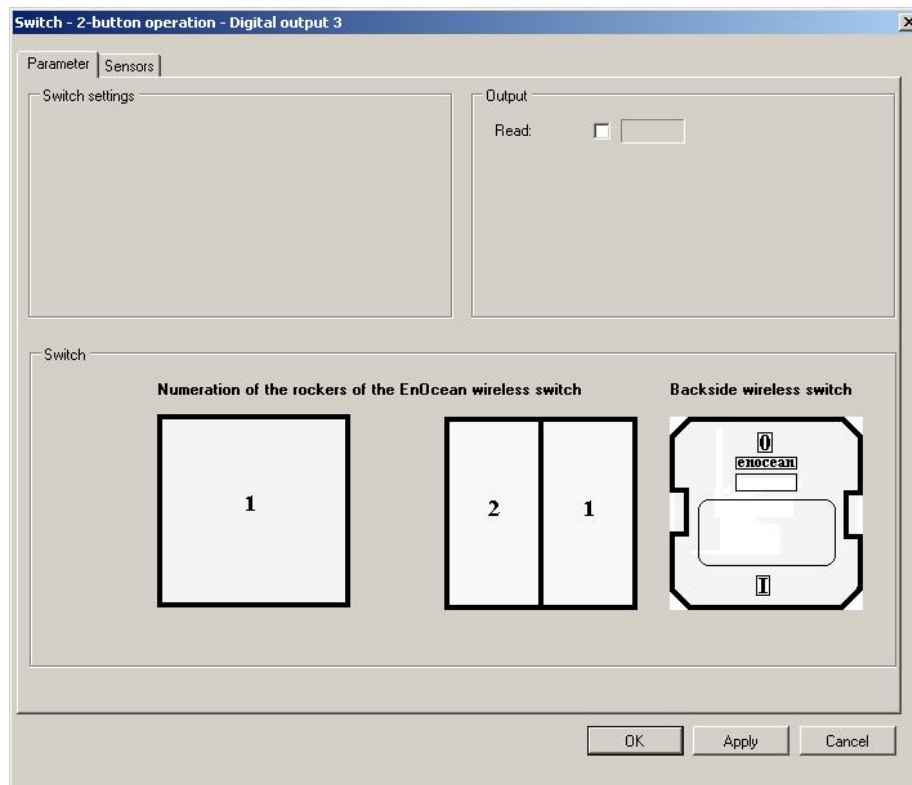
- Selection of switch function
 - Toggle
 - Relay is toggled with each button actuation
 - Buttons
 - Relay reswitches after a button actuation and after expiration of the after-running time.
- Output
 - In the field “Output“ the current status of the output can be displayed by activating the hook mark.

4.4.6.2 Register Card Sensors

- Number of sensors
 - Up to 15 buttons can be selected and assigned to the output.

4.4.7 Switching - 2 – Button Operation

In output function “Switching - 2 – button operation” a rocker of a switch is switching the digital output on and off.



Picture 4-24: Switching - 2 – button operation

4.4.7.1 Register Card Property

- Output
 - In the field “Output” the current status of the output is displayed by activating the hook mark.

4.4.7.2 Register Card Sensors

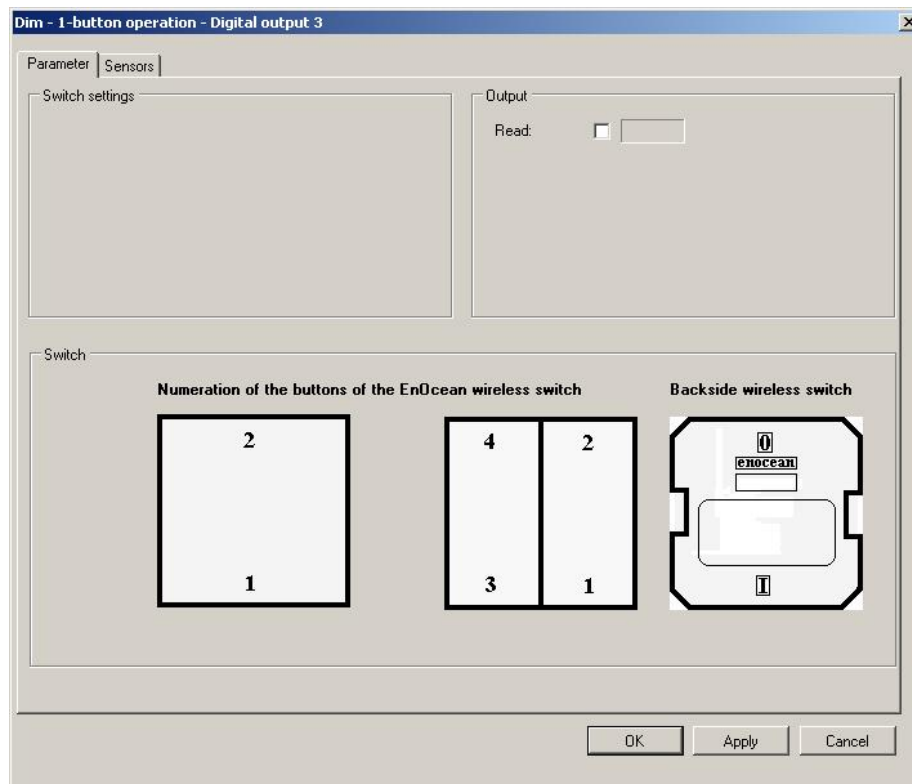
- Number of sensors
 - Up to 15 buttons can be selected and assigned to the output

4.4.8 Dimming – 1 – Button Operation Type1

Dimming is only available on SRC-ADO Type 1.

By means of this function, a button can be assigned for dimming to a relay for switching-on /-off. A button is automatically combined with the dimming function of the analogue output if the button is assigned to the analogue and digital output.

Settings must be made on the analogue output. The configuration of the dimming function is made when selecting the analogue output.



Picture 4-25: Dimming - 1 – Button Operation

4.4.8.1 Register Card Property

- Output
 - In the field "Output" the current status of the output is displayed by activating the hook mark.

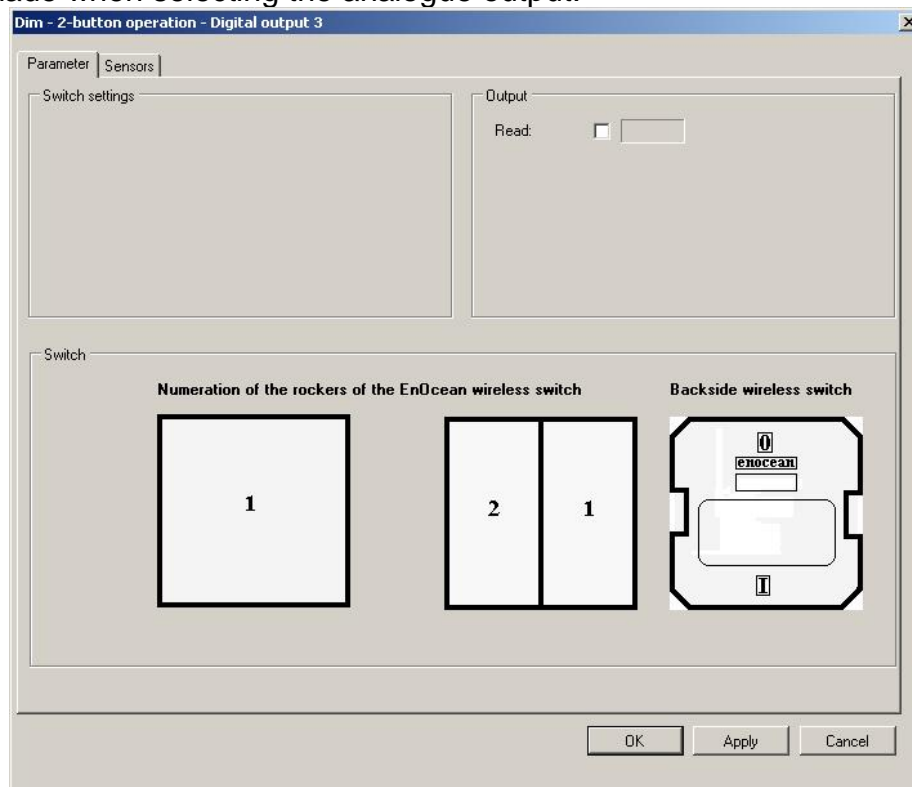
4.4.8.2 Register Card Sensors

- Number of sensors
 - Up to 15 buttons can be selected and assigned to the output.

4.4.9 Dimming – 2 – Button Operation Type1

Dimming is only available on SRC-ADO Type 1

By means of this function a rocker can be assigned for dimming to a relay for switching-on /off. A rocker is automatically combined with the dimming function of an analogue output if the rocker is assigned to the analogue and digital output. The configuration of the dimming function is made when selecting the analogue output.



Picture 4-26: Dimming - 2 – Button Operation

4.4.9.1 Register Card Property

- Output
 - In the field “Output“ the current status of the output can be displayed by activating the hook mark.

4.4.9.2 Register Card Sensors

- Number of sensors
 - Up to 15 buttons can be selected and assigned to the output

4.4.10 Blind

In the output function “Blind” a rocker can control a blind up and down. The function for the blinds can only be selected on the outputs DO1 respectively DO3 in the main menu. The outputs DO2 respectively DO4 are automatically be used for the blind function.

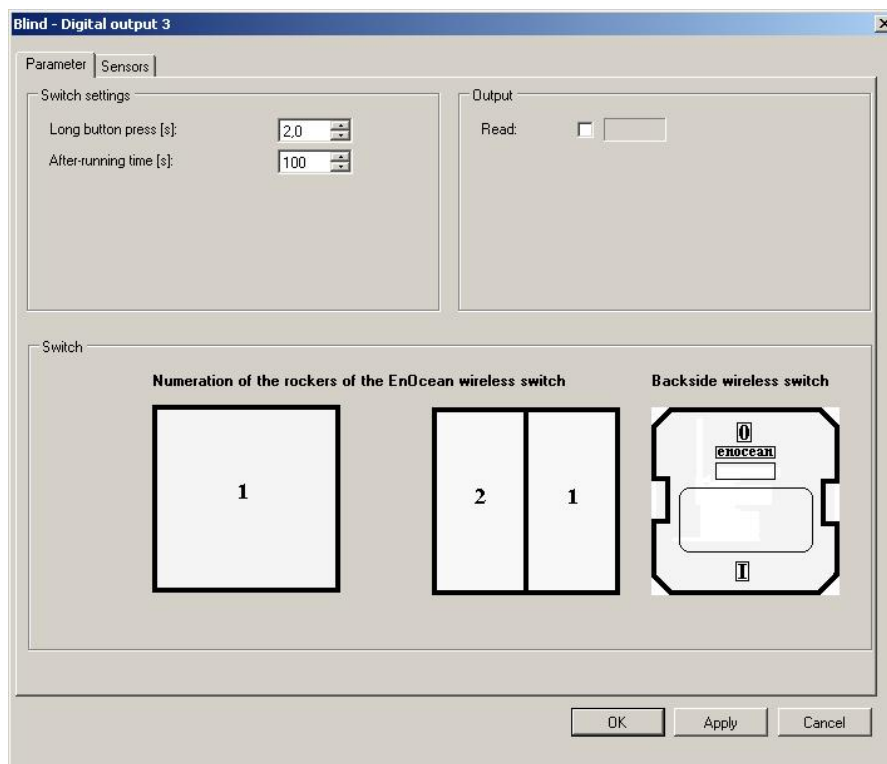
A rocker is effecting 2 relay outputs. The button (Δ) affects output DO1 respectively DO3. The button (∇) affects output DO2 respectively DO4. The outputs are locked against each other by the software, so that always only one relay is switched.

4.4.10.1 Register Card Property

- Long button actuation
 - Short button actuations are for the fine adjustment of the lamellas
 - A long button actuation starts the automatic run and controls the blind for the running-after time continuously in the direction open respectively close.
 - The automatic run can be stopped by a renewed button actuation.
- Output
 - In the field “Output” the current status of the output can be displayed by activating the hook mark.

4.4.10.2 Register Card Sensors

- Number of sensors
 - Up to 15 buttons can be selected and assigned to the output



Picture 4-27: Blind

4.4.11 Shutter

In the output function “Shutter“ a rocker can control a shutter up and down. The shutter function can only be selected on the outputs DO1 respectively DO3 in the main menu. The outputs DO2 respectively DO4 are automatically used for the shutter function.

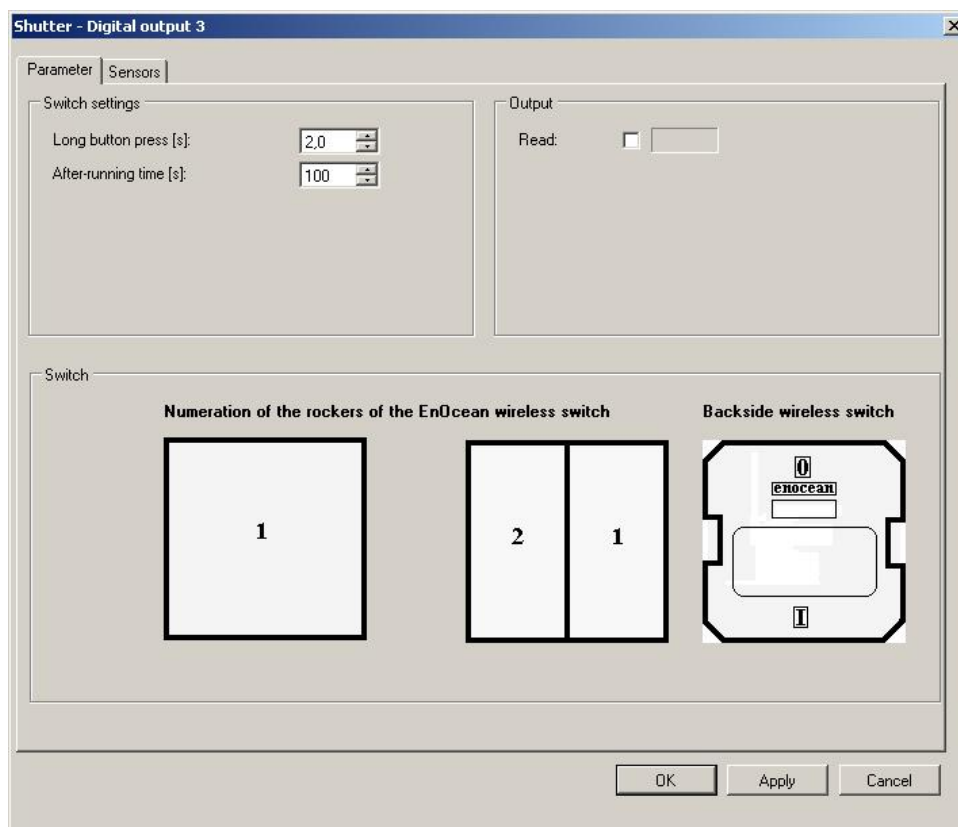
A rocker is effecting on 2 relay outputs. The button (Δ) affects output DO1 respectively DO3. The button (∇) affects output DO2 respectively DO4. The outputs are locked against each other by the software, so that always only one relay is switched.

4.4.11.1 Register Card Property

- Long button actuation
 - A short button actuation starts the automatic run and controls the shutters for the running-after time continuously in the direction open respectively close.
 - The automatic run can be stopped by a renewed button actuation
 - A long button actuation is designed for the manual adjustment of the shutter
- Output
 - In the field “Output“ the current status of the output is displayed by activating the hook mark.

4.4.11.2 Register Card Sensors

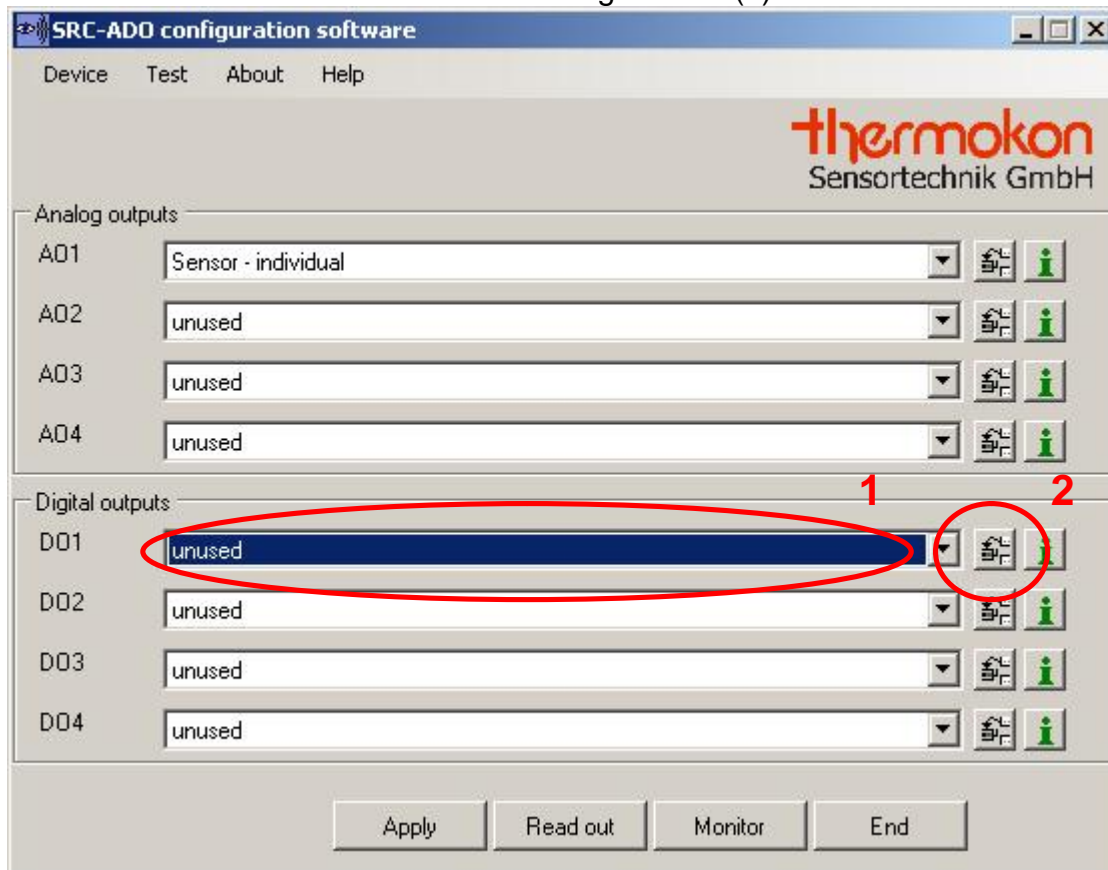
- Number of sensors
 - Up to 15 buttons can be selected and assigned to the output



Picture 4-28: Shutter

4.5 Clearing an Output

For clearing an output no sensor should be assigned to the output. In the register card sensors there should be no hook mark. For clearing an output, select “Not used” (1) in the main menu. Then use button “sensor configuration” (2).

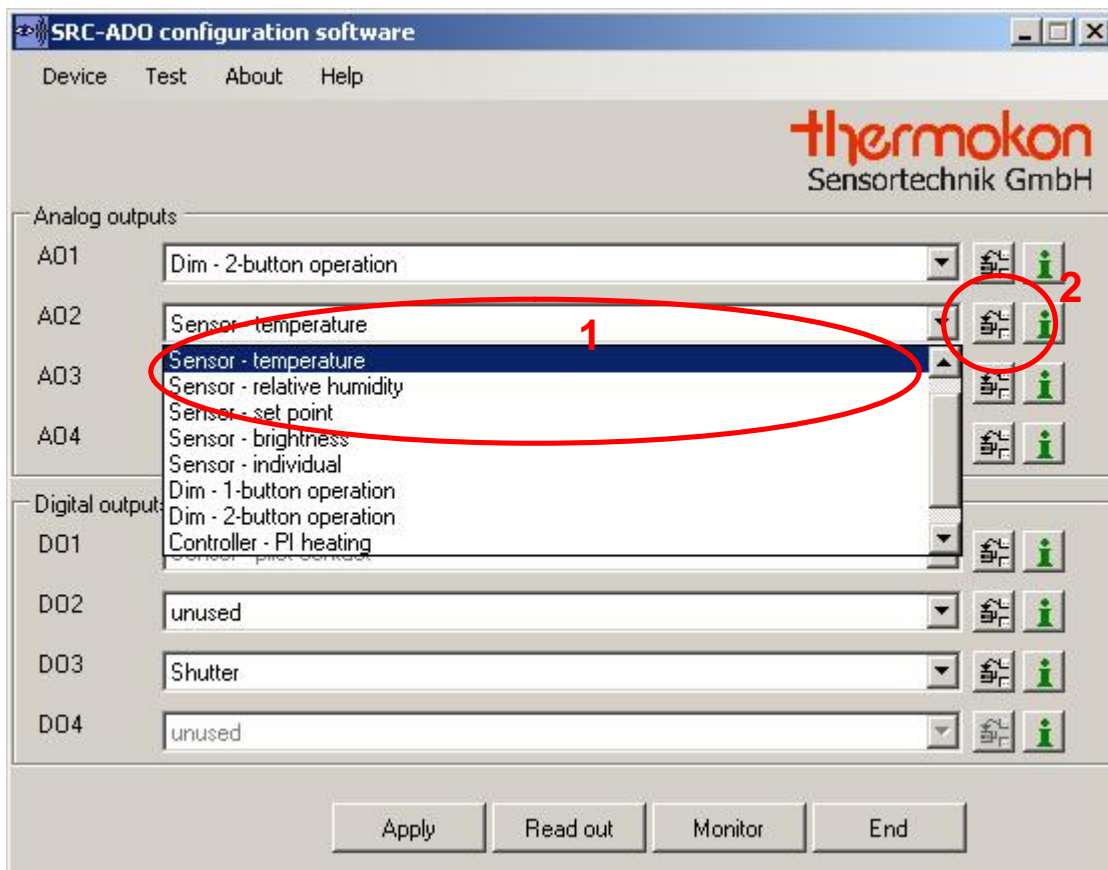


Picture 4-29: Deleting Output

5 Configuration Examples

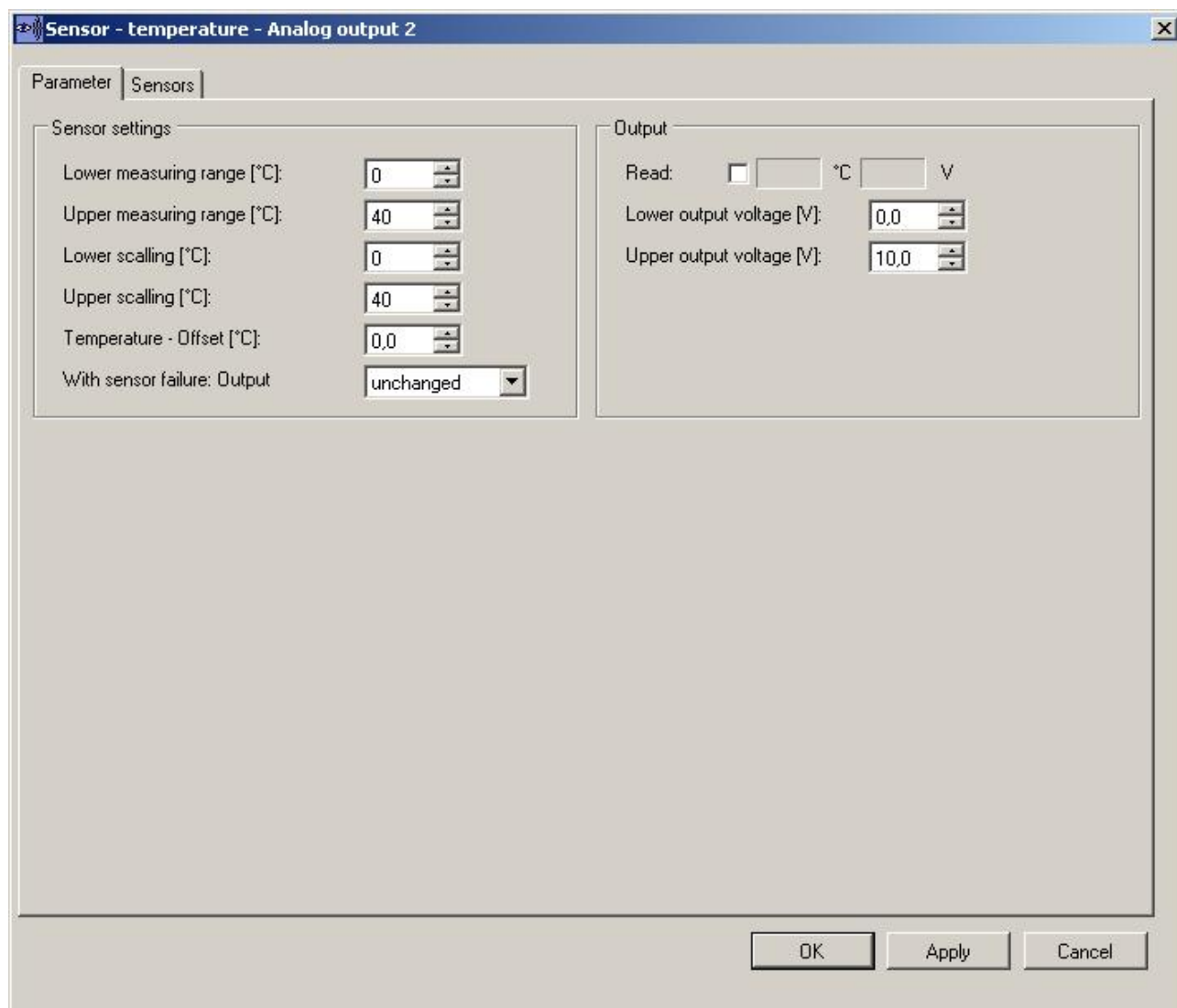
5.1 Sensor Temperature on AO1

Select the requested function, here „Sensor Temperature AO1“, in the output function list(1).



Picture 5-1: Selection Sensor Temperature AO1

The output must be configured and a sensor must be assigned to the output. Therefore, actuate the button “configure output” (2).

**Picture 5-2: Property**

In the property "rider" a scaling of the sensor is possible.

If no parameters should be amended, it can be changed in the rider "sensors".

5.2 Digital output – “Sensor individual” e.g. Fan – output

If the fan stage should be output to the relays the function Sensor individual must be used 3 times for each stage.

Stage 1:

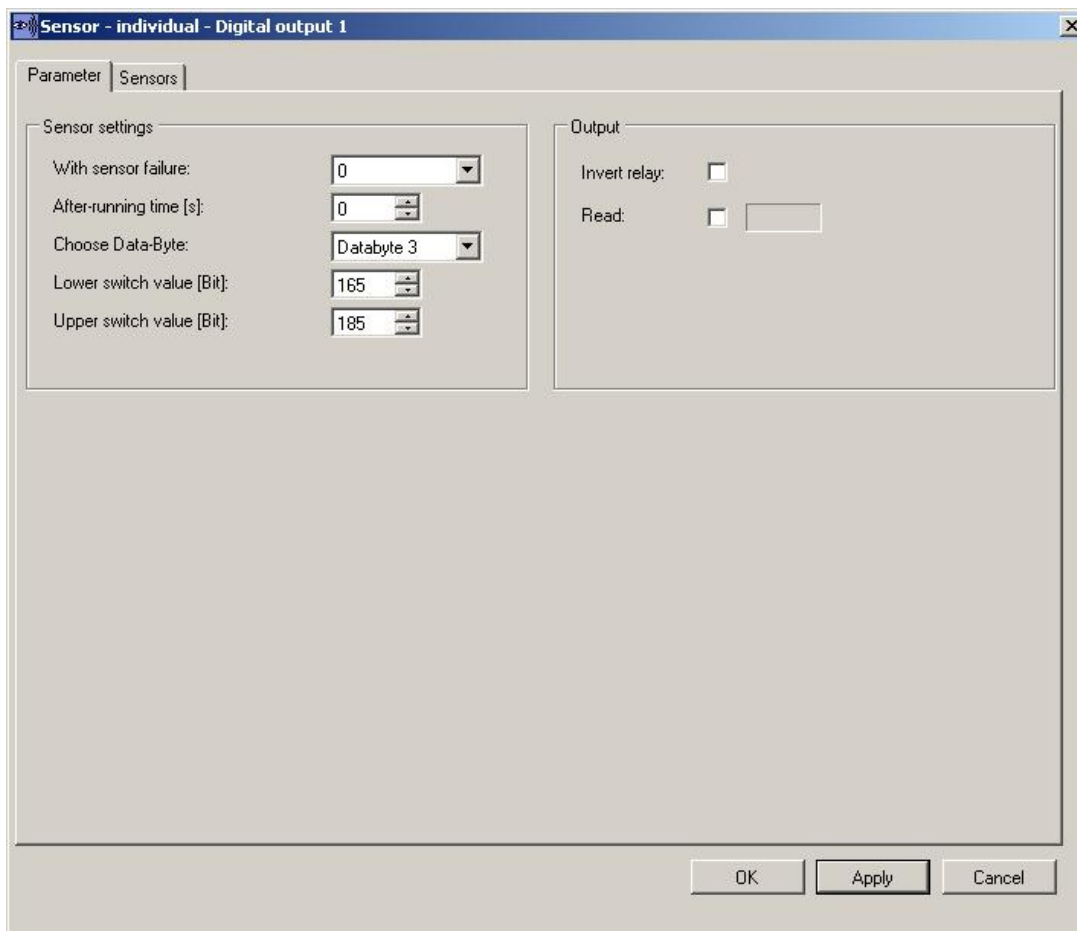
- Data byte 3
- Lower switch value [Bit] = 165
- Upper switch value [Bit] = 185

Stage 2:

- Data byte 3
- Lower switch value [Bit] = 145
- Upper switch value [Bit] = 165

Stage 3:

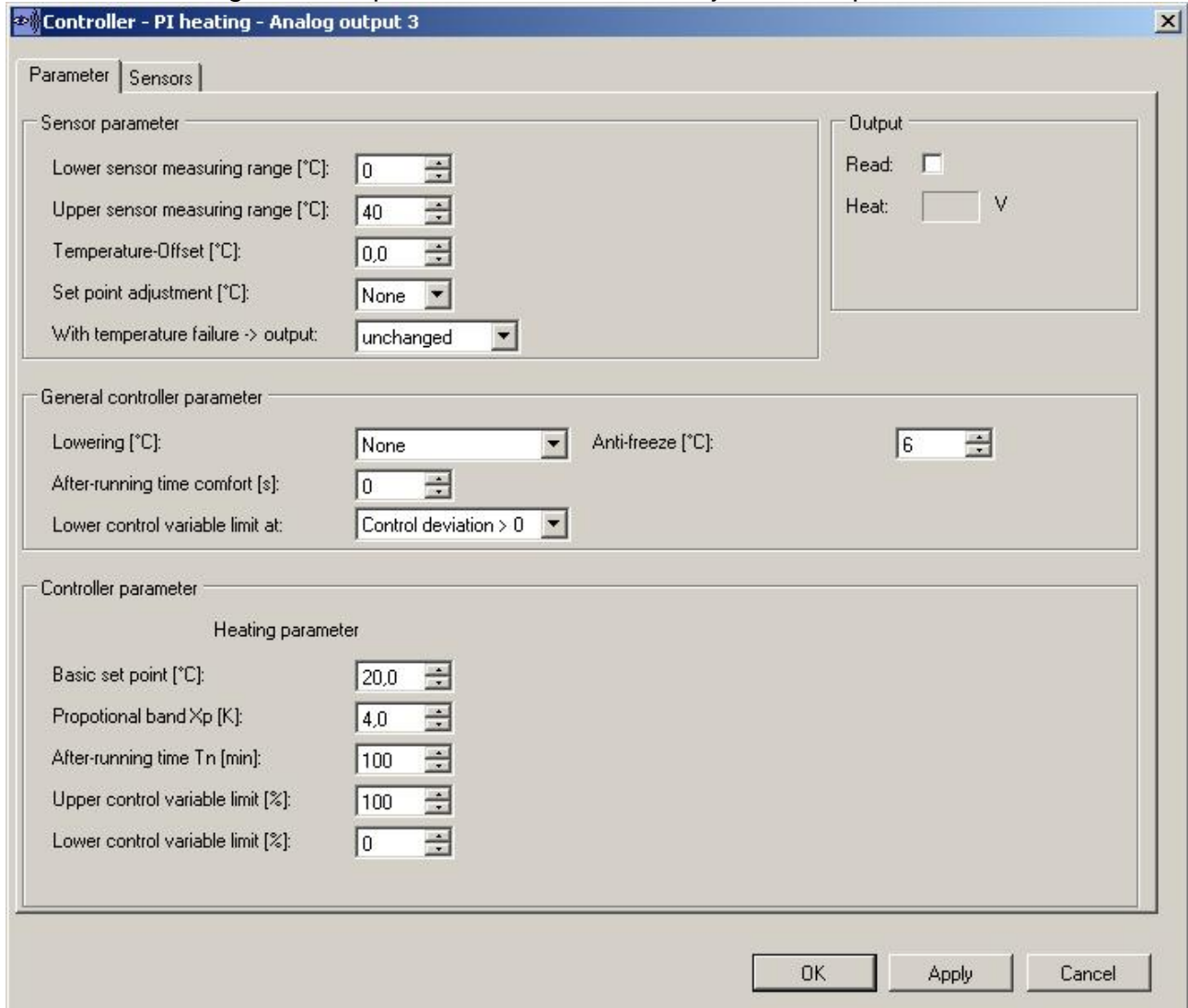
- Data byte 3
- Lower switch value [Bit] = 130
- Upper switch value [Bit] = 145



Picture 5-3: Relay output – fan stages

5.3 Control: Heating-PI on AO2

In order to build up a control circuit, the requested function must be assigned to the output. Afterwards, change into the parameter window and adjust the required function.



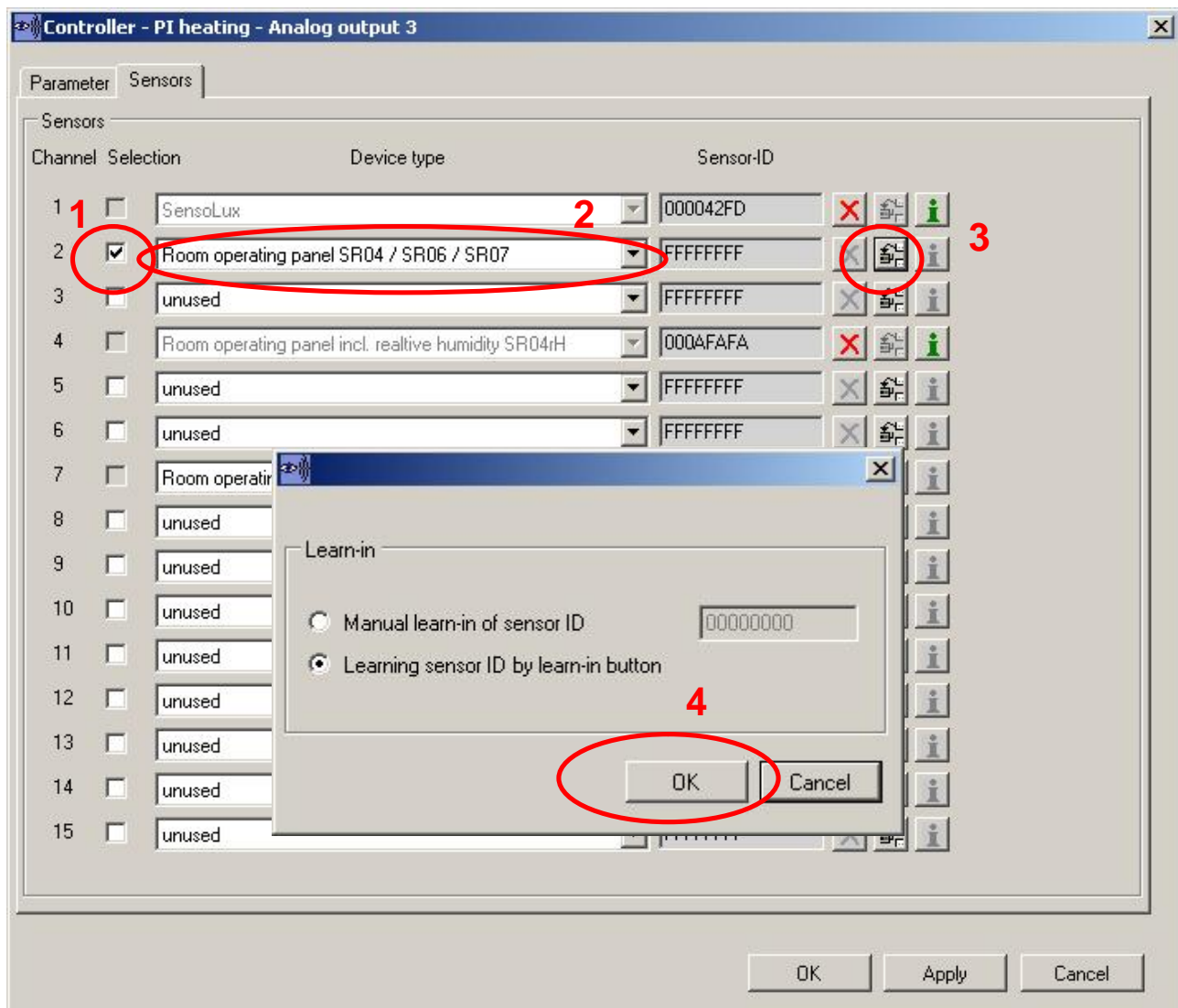
Picture 5-4: Heating PI on AO2

A local set point relocation of $\pm 3K$ was selected. That is to say, the set point can be adjusted from $17 - 23^{\circ}C$. The energy stop function was selected, so that window contacts can be assigned to the output. If a window is opened, the control variable amounts to 0% as long as the anti-freeze limit is achieved.

If the anti-freeze is under-run, the control variable is 100%. Moreover a lowering for night operation of 4K was selected.

5.4 Learning-In of Sensors

After the properties of the output are set, the sensors must be assigned to the output. A sensor is allocated to the output by setting a hook mark in the field “selection”. It is only possible to assign suitable sensors to the output. Thus, it is not possible to allocate a key to a temperature output.



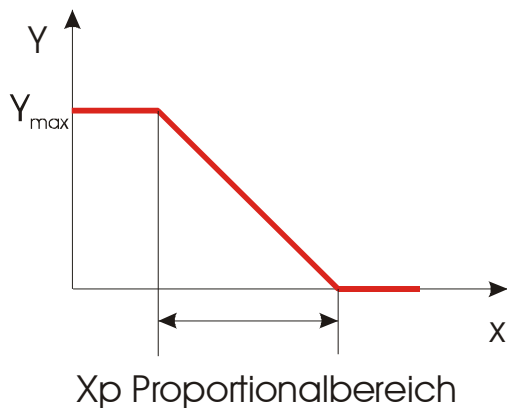
Picture 5-5: Learning-in of Sensors

Select the device type (2) and actuate the button „learning-in of sensors“ (3). Now the window “learning-in of sensors” appears and a sensor can be learned-in, accordingly (4).

6 Controller Adjustment

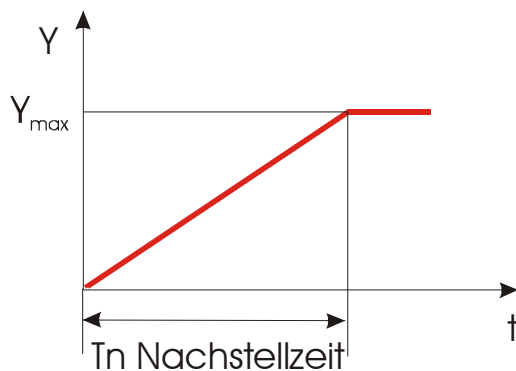
In this chapter some controller definitions are listed.

6.1 Xp Proportional Range



X_p is the proportional range between controller difference and control variable (difference between actual value and set point).

6.2 Tn Integral Time



T_n describes the integral range. The integral range is the time which an I-controller needs to achieve the same control variable change, this is effected instantly by a PI-controller due to its P-part.

6.3 Typical Controller Settings

Hot water heating:	$X_p=5K$ / $T_n=150\text{min}$
Under floor heating:	$X_p=5K$ / $T_n=240\text{min}$
Electric heating:	$X_p=4K$ / $T_n=90\text{min}$
Fan heating:	$X_p=4K$ / $T_n=90\text{min}$

7 Version Change

Version 3.0

- Devices including hardware version 1 and 2 cannot be configured by the software version 3.0. Please use software version 2.

Version 3.1

- Checking firmware of SRC-ADO type 1 and type 2