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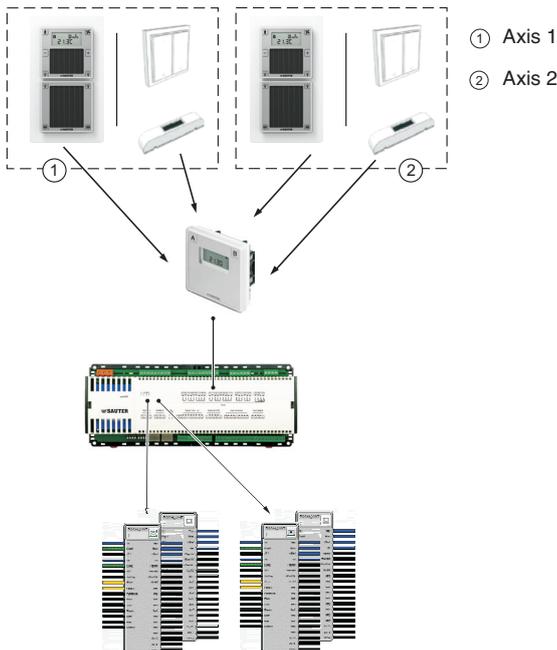
## 1 Overview

These operating instructions describe how to set up the SAUTER EnOcean wireless solution. The first part is designed as a quick guide. The second part contains background information and other special features. Additional information can be found on PDS 94.015, as well as the product data sheet and operating manual for the wireless transmitters that are used.

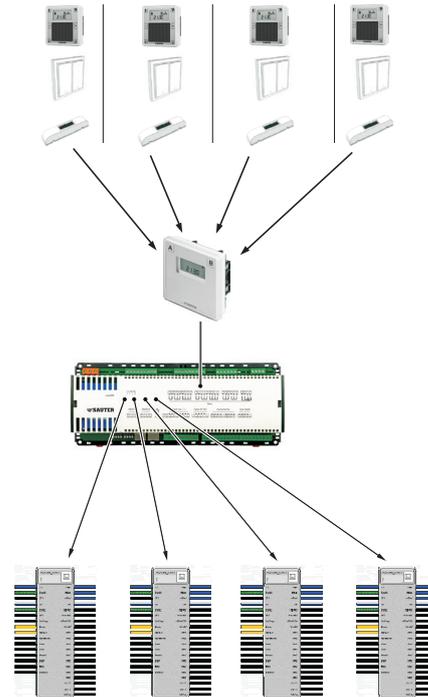
## 2 Operating principle

The data points of an EnOcean transmitter (operating unit, window contact etc.) are mapped on an ecoMod580 channel (1...4). Each ecoMod580 channel is represented on a corresponding ROOM\_UNIT firmware module (room operating unit ID 1...4) in the ecos 5.

### 2.1 ecos502 with 2 segments

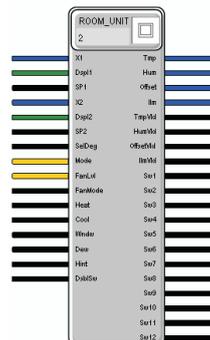


### 2.2 ecos502 with 4 segments



### 2.3 ROOM\_UNIT firmware module

The ecos 5 ROOM\_UNIT firmware module is the software interface to the ecoMod580. The room unit ID corresponds to the channel number on the ecoMod580.



The ecoUnit 1 room operating units behave in a similar way to the wired room operating units. The data received from the transmitters is represented on the ROOM\_UNIT firmware module in the ecos 5. Window contacts and switches are evaluated using the (Sw) 1...12 buttons of the ROOM\_UNIT module.

### 3 Quick guide to programming transmitters

The procedure for programming an EnOcean transmitter consists of 8 steps. Other details on the profile number and transmitter type are included in the subsequent sections. Carry out the steps in the order shown in the table.

#### 3.1 Preparing the ecoMod580 for programming

	Action	Description
1. Activate programming mode		<ul style="list-style-type: none"> <li>You can activate programming mode within 10 seconds of switching on.</li> <li>All the digits flash.</li> </ul>
		<ul style="list-style-type: none"> <li>Programming mode is active.</li> <li>Digit 1 flashes: SAUTER profile no. -</li> <li>The last set value is displayed.</li> </ul>
2. Set the profile		<ul style="list-style-type: none"> <li>Select the SAUTER profile number:                             <ul style="list-style-type: none"> <li>1 - ecoUnit 1</li> <li>2 - window contact window handle switch</li> </ul>                             For more details see section 4.6.                         </li> </ul>
		<ul style="list-style-type: none"> <li>Confirm the profile number.</li> </ul>
3. Set the transmitter type		<ul style="list-style-type: none"> <li>Select the SAUTER type:                             <ul style="list-style-type: none"> <li>0.1 - ecoUnit141...146</li> <li>0.1 - window contact</li> <li>0.2 - switch</li> <li>0.6 - window handle</li> <li>1.0 - ecoUnit110</li> </ul>                             For more details see section 4.6.                         </li> </ul>
		<ul style="list-style-type: none"> <li>Confirm the transmitter type</li> </ul>
4. Set the memory position		<ul style="list-style-type: none"> <li>Select the memory position:                             <ul style="list-style-type: none"> <li>0 - ecoUnit 1</li> <li>1...12 - for window contact, switch etc. (appears in the ecos5 via the ROOM_UNIT firmware module as SW1...12).</li> </ul> </li> </ul>
		<ul style="list-style-type: none"> <li>Confirm the memory position</li> </ul>

	Action	Description
5. Set the channel number		<ul style="list-style-type: none"> <li>Select the channel number:                             <ul style="list-style-type: none"> <li>0 - no channel, i.e. not used</li> <li>1,2,3 - channel 1...3</li> <li>Auto - channel 4</li> </ul>                             The channel number corresponds to the ID of the ROOM_UNIT firmware module                         </li> </ul>
		<ul style="list-style-type: none"> <li>Confirm the channel number                             <ul style="list-style-type: none"> <li>The selected memory position is free</li> <li>The selected memory position is already assigned</li> </ul>                             Continue with step 6. The memory position is deleted.                         </li> </ul>
6. Enable programming mode		<ul style="list-style-type: none"> <li>Enable transmitter programming mode.</li> </ul>

#### 3.2 Programming the ecoUnit 1 room operating unit

	Action	Description
7. Transmit the programming telegram		<ul style="list-style-type: none"> <li>The ecoUnit 1 room operating unit sends a programming telegram to the ecoMod580 interface:                             <ul style="list-style-type: none"> <li>☼ Programming successful</li> <li>☼ Err2...9, A...C Programming failed</li> </ul> </li> <li>For details on programming devices from other manufacturers, see the documentation for those devices. Many devices have a programming button inside.</li> </ul>
8. Save the transmitter ID		<ul style="list-style-type: none"> <li>The transmitter (EnOcean device ID) that has just been programmed is saved.</li> <li>The programming of the transmitter is complete.</li> <li>Channel number 0 flashes to indicate that the next device can be programmed.</li> </ul>
Next steps	Program another transmitter of the same type Program a transmitter of a different type 	<ul style="list-style-type: none"> <li>Continue with step 5 'Set the channel number'</li> <li>Continue with step 2 'Set the profile'</li> </ul> <p><b>NOTE:</b> It is advisable to program transmitters of the same type in succession.</p>
	Finish programming 	The ecoMod580 switches to normal mode. It automatically quits programming mode if no buttons are pressed for 15 minutes

**NOTE:**

If the wrong sensor was programmed, this can be corrected by programming the correct sensor.

## 4 Start-up

### 4.1 Connection to ecos 5

The wireless interface must be connected to the ecos 5 using a 4-core cable. The wireless interface must be disconnected from the power while it is being connected. Up to 4 ecoUnit 1 devices and several other EnOcean transmitters can be assigned to a wireless interface. The room operating unit transmits its information to the ecoMod580 wireless interface. For more information on the room operating unit see the product data sheet PDS 94.011.

Mixed operation with wired devices (ecoUnit 3) is possible.

**System limitation**

Mixed mode	ecoMod580	ecoUnit 3
Yes	1	1 to 2
No	1	0

**Address of the wireless interface**

The wireless interface can be coded for up to 4 address ranges (channels). Up to 16 EnOcean devices can be recorded in each address range. The EnOcean ID is saved in the wireless interface during programming.

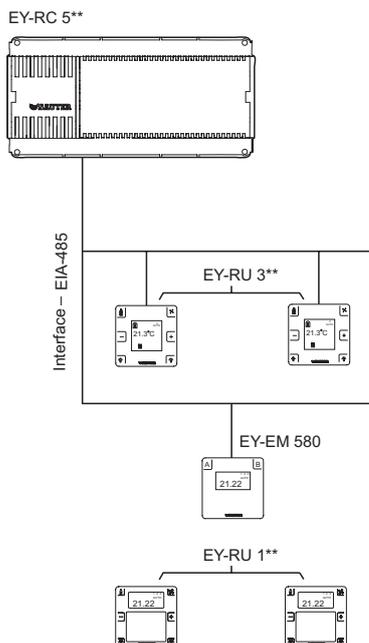
### 4.2 Summary of functions

The wireless interface is both a transmitter and a receiver for EnOcean wireless signals.

The ecoMod580 receiver is connected to the ecos 5 via a TIA-485 interface (SLC protocol) and behaves towards the ecos 5 like a device for 1 to 4 ecoUnit 3 room operating units.

- In mixed mode (wired/wireless), each channel address may only occur once.
- Each channel corresponds to the data content of an ecoUnit 3 room operating unit (ROOM\_UNIT firmware module).
- Up to 16 (address 0...F) different transmitter types (profiles) can be programmed on one channel. The transmitter programming process (assigning an EnOcean transmitter to the receiver) takes place on the relevant ecoUnit channel.
- If a telegram from a transmitter that has been programmed is received, the "snowflake" symbol on the LCD flashes briefly.

**Example of use**



**Bi-directional mode**

The wireless interface works in conjunction with the ecoUnit141...146 in bi-directional mode.

**Programming / addressing**

Put the ecoMod580 into programming mode, then manually cause the operating unit (transmitter) to send a programming telegram.

If the ecoMod580 is not in programming mode, no operating unit can be assigned to it. Any programming telegram that may have been sent has no effect.

As long as no EnOcean ID has been assigned to an ecoMod580 channel, this channel cannot be addressed, which means it does not respond to an ecos data query. This guarantees mixed mode with a wired ecoUnit 3.

The settings described above are stored in a table in the ecoMod580. For each channel there are 16 entries, i.e. a total of 4 x 16 = 64 entries.

### 4.3 ecoMod580 programming mode, key operation

Section 3 is a quick guide to the programming procedure. In this section, each step of the programming procedure is described in detail. Programming mode can be activated within 10 seconds of switching on the device. The ecoMod580 automatically quits programming mode if no entry is made for 15 minutes.

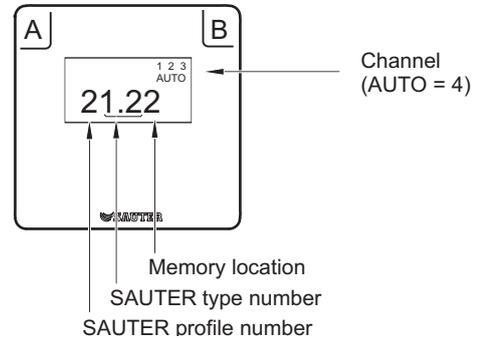
A device is programmed once step 7 has been completed with 'Confirm'. Procedures which are interrupted early are aborted.

**Increasing/decreasing values using the button**

The numbers do not stop at an upper or lower limit, but roll over.

Example: 00-01-02-...97-98-99-00-01-02- and backwards  
0-1-2-...c-d-e-f-0-1- and backwards

**ecoMod580 display layout**



#### 4.4 Programming procedure

Step	Description
1.	Switch to programming mode <ul style="list-style-type: none"> <li>• Press B for at least 3 seconds. Programming mode is activated and all digits flash with the value = 0.</li> <li>• Press B again briefly to enter programming mode. Only digit 1 (SAUTER profile number) flashes.</li> </ul> Default = most recently set value.
2.	Set the SAUTER profile number <ul style="list-style-type: none"> <li>• You can now choose the SAUTER profile by pressing B (up) and 1 (down); see section 4.6.</li> <li>• Press A for 3 seconds to confirm the selected SAUTER profile. Digit 1 then appears continuously.</li> </ul> After this, digits 2 and 3 (SAUTER type number) flash. Default = most recently set value.
3.	Set the SAUTER type number <ul style="list-style-type: none"> <li>• You can now choose the SAUTER profile by pressing B (up) and 1 (down); see section 4.6.</li> <li>• Press A for 3 seconds to confirm the SAUTER type. Digits 2 and 3 then appear continuously.</li> </ul> Digit 4 then flashes, which is the memory position (0..F, the following sections describe how the memory position is mapped on the ROOM_UNIT module). Default = most recently set value.
4.	Set the memory position <ul style="list-style-type: none"> <li>• You can now choose the memory position by pressing B (up) and 1 (down).</li> <li>• Press A for 3 seconds to confirm the memory position. Digit 4 then appears continuously.</li> </ul> The ecoUnit channel number (0) then flashes. Default = most recently set value.
5.	Set the channel <ul style="list-style-type: none"> <li>• You can now choose the channel number (1, 2, 3, AUTO) by pressing B (up) and A (down). AUTO corresponds to channel number 4, while 0 means no channel.</li> <li>• Press A for 3 seconds to confirm the channel. Digits 1, 2, 3 or AUTO then appear continuously.</li> </ul> The ecoMod580 wireless interface is now ready for programming a transmitter. Memory position assignment display: <ul style="list-style-type: none"> <li>• If the selected memory position is empty, the "man outside house" symbol appears in the display.</li> <li>• If the selected memory position is already occupied, the "man inside house" symbol appears in the display.</li> </ul>
6.	6. Enable programming mode <ul style="list-style-type: none"> <li>• Press B for at least 3 seconds to switch the device to programming mode. Any address that was previously programmed is deleted. The "man outside house" symbol flashes.</li> </ul>
7.	Transmit the programming telegram <p>On ecoUnit1 devices, press 1 for 5 seconds to generate the programming telegram.</p> <p><b>NOTE:</b>                      Other devices generally have a programming button; on the ecoUnit 1 this is button 1 (the button on the top left, which corresponds to the occupancy button on the ecoUnit144...146), which must be pressed for 5 seconds.</p> <p>If programming is successful, the "Man inside house" symbol appears on the wireless interface. The "snowflake" symbol on the wireless room operating unit indicates that programming was successful. Error codes for failed programming and other information can be found in the PDS EY-RU110..146.</p> <p>If an incorrect address location or an incorrect sensor is programmed, you can correct this by repeating the programming procedure from step 6.</p>
8.	Confirm <p>When you confirm the programmed transmitter (press A for at least 3 seconds), the EnOcean ID is permanently saved. The channel setting (0) then flashes and you can program the same setting (profile / type / memory position) on another channel.</p> <ul style="list-style-type: none"> <li>• You can now choose the channel number (1, 2, 3, AUTO) by pressing B (up) and A (down).</li> </ul> Then continue with step 6 of the programming procedure. If you leave the channel setting as 0 and press A for at least 3 seconds, you then come to step 2, which means you can set a new profile. Continue with step 2 of the programming procedure
...	...more <ul style="list-style-type: none"> <li>• Within the next 15 minutes, you can start more programming processes without having to power up the device again (see step 1)</li> </ul>
9.	Quit programming mode <ul style="list-style-type: none"> <li>• Automatically after 15 minutes with no entry or buttons pressed, or manually by pressing A for longer than 5 seconds.</li> <li>• The programming of a transmitter is only completed when you press A to confirm.</li> </ul>

#### NOTE:

Each transmitter ID exists only once on each channel. If a sensor ID is assigned to the same channel on another memory position (button), the previous assignment is deleted. The most recent entry is valid.

However, a transmitter ID can be assigned to several channel (1, 2, 3, AUTO). This is done by programming the transmitter separately on each channel. All the data points received from the transmitters are mapped on the ROOM\_UNIT firmware module.

#### 4.5 Delete the saved transmitter ID

##### Delete the transmitters on a single memory position

Carry out the entire programming procedure from step 1 to step 6. Then skip step 7 "Send programming telegram" and go straight to step 8 "Confirm".

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**NOTE:**

All the transmitters that have been programmed to the selected memory position are deleted.

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##### Deleting all the transmitters / memory presets (0...F) of an individual channel

Carry out the entire programming procedure from step 1 to 4. Select the following parameters:

- Profile = 0
- Type = 0
- Memory position = 0

Then select the channel and press B for at least 3 seconds.

##### Deleting all assigned transmitters / memory presets in the device (on all channels).

Carry out the entire programming procedure from step 1 to step 4. Select the following parameters:

- Profile = 0
- Type = 0
- Memory position = 0

Select channel 0 and press B for at least 3 seconds.

**4.6 SAUTER profiles for ecoMod580**

SAUTER profile**, type	Description	Permitted memory position	Channel	Meaning of memory position																								
1 0.1	ecoUnit141...146 room operating unit	0...0xF	1...4	Memory position sets priority*																								
1 1.0	Room operating unit without humidity, ecoUnit141...146 unidirectional	0...0xF	1...4	Memory position sets priority*																								
1 1.1	Room operating unit with contact input	0...0xF	1...4	Memory position sets priority*, contact input on button 11 (output SW11) on ROOM_UNIT module.																								
1 1.2	Room operating unit with humidity	0...0xF	1...4	Memory position sets priority*																								
4 0.1	Multi-sensor	0...0xF	1...4	Memory position sets priority*, motion detector mapped on button 8 (output SW8) on ROOM_UNIT module.***																								
3 0.1	Only sensor, temperature Valid from device index F (ecoMod580): eccoUnit110, ecoUnit141...146 unidirectional (only the temperature is transferred)	0...0xF	1...4	Memory position sets priority*																								
3 0.2	Only sensor, light	0...0xF	1...4	Memory position sets priority*																								
3 0.3	Motion detector (only sensor)	1...0xC	1...4	Motion detector mapped on buttons 1...12 (output SW1...SW12) on ROOM_UNIT module.																								
2 0.1	Window contact	1...0xC	1...4	Window contact mapped on buttons 1...12 (output SW1...SW12) on ROOM_UNIT module. Window open: 1 / window closed: 0																								
2 0.2	2 buttons	3, 7,8,9,0xA,0xB	1...4	<table border="0"> <thead> <tr> <th>Memory position</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>SW3/ SW4</td> </tr> <tr> <td>7</td> <td>SW7/ SW12</td> </tr> <tr> <td>8</td> <td>SW8/ SW11</td> </tr> <tr> <td>9</td> <td>SW9/ SW10</td> </tr> <tr> <td>0xA</td> <td>SW7/ SW9</td> </tr> <tr> <td>0xB</td> <td>SW12/SW10</td> </tr> </tbody> </table>	Memory position	Output	3	SW3/ SW4	7	SW7/ SW12	8	SW8/ SW11	9	SW9/ SW10	0xA	SW7/ SW9	0xB	SW12/SW10										
Memory position	Output																											
3	SW3/ SW4																											
7	SW7/ SW12																											
8	SW8/ SW11																											
9	SW9/ SW10																											
0xA	SW7/ SW9																											
0xB	SW12/SW10																											
2 0.4	4 buttons	3, 7, 8,0xA	1...4	The two pairs of buttons are mapped on two pairs of outputs on the ROOM_UNIT module: <table border="0"> <thead> <tr> <th>Memory position</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>SW7/SW12, SW3/SW4</td> </tr> <tr> <td>7</td> <td>SW8/SW11, SW7/SW12</td> </tr> <tr> <td>8</td> <td>SW9/SW10, SW8/ SW11</td> </tr> <tr> <td>0xA</td> <td>SW7/SW9 , SW12/SW10</td> </tr> </tbody> </table>	Memory position	Output	3	SW7/SW12, SW3/SW4	7	SW8/SW11, SW7/SW12	8	SW9/SW10, SW8/ SW11	0xA	SW7/SW9 , SW12/SW10														
Memory position	Output																											
3	SW7/SW12, SW3/SW4																											
7	SW8/SW11, SW7/SW12																											
8	SW9/SW10, SW8/ SW11																											
0xA	SW7/SW9 , SW12/SW10																											
2 0.6	Window handle	1...3, 7...9	1...4	A window handle provides the information whether the window is OPEN/CLOSED or tilted, with each status mapped on one output of the ROOM_UNIT module. This means a window handle occupies a pair of outputs on the module. <table border="0"> <thead> <tr> <th>Memory position</th> <th>Output</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td>OPEN/CLOSED</td> <td>tilted</td> </tr> <tr> <td>1</td> <td>SW1</td> <td>SW6</td> </tr> <tr> <td>2</td> <td>SW2</td> <td>SW5</td> </tr> <tr> <td>3</td> <td>SW3</td> <td>SW4</td> </tr> <tr> <td>7</td> <td>SW7</td> <td>SW12</td> </tr> <tr> <td>8</td> <td>SW8</td> <td>SW11</td> </tr> <tr> <td>9</td> <td>SW9</td> <td>SW10</td> </tr> </tbody> </table>	Memory position	Output			OPEN/CLOSED	tilted	1	SW1	SW6	2	SW2	SW5	3	SW3	SW4	7	SW7	SW12	8	SW8	SW11	9	SW9	SW10
Memory position	Output																											
	OPEN/CLOSED	tilted																										
1	SW1	SW6																										
2	SW2	SW5																										
3	SW3	SW4																										
7	SW7	SW12																										
8	SW8	SW11																										
9	SW9	SW10																										

\* The device with the higher memory position takes priority. The ROOM\_UNIT firmware module only displays analogue values of the device with the highest priority (highest memory position), e.g. temperature, offset or brightness value.

\*\*If several EnOcean transmitters are programmed to the same memory position (same channel), the switching information is given a logical OR link. If an ecoUnit 1 operating unit has already been programmed to the same channel, the memory positions 1,2,5,6 may not be assigned other EnOcean transmitters, because these are assigned the occupancy, fan and setpoint corrections for ecoUnit 1. A simultaneous assignment, for example with window contacts, would lead to undefined states.

**NOTE:**

EnOcean switches for light or blinds are always 2-button rockers, which send a signal to the RoomUnit module when they are pressed and when they are released. A 1-rocker switch corresponds to 2 buttons and a 2-rocker switch corresponds to 4 buttons.

On the ecoMod580, only the permitted memory positions can be set for the selected profile.

\*\*\* Valid from device index F:

If the multi-sensor is operated in parallel with the ecoUnit1 wireless room operating unit and is mapped higher, the temperature, motion and brightness are only transmitted from the multi-sensor. If the room operating unit is mapped higher, its temperature is transferred. Brightness and motion come from the multi-sensor.

## 4.7 Assigning EEP profiles to SAUTER profiles

SAUTER profile Type	EnOcean Equipment Profile (EEP*)	Definition of non-assigned data points	Comments
<b>ROOM_UNIT bi-directional (SAUTER ecoUnit141..146)</b>			
1 0.1	EEP: D2-00-01		Unidirectional: EEP: A5-10-01
<b>ROOM_UNIT without humidity</b>			
1 1.0	EEP: A5-10-01		Temperature + setpoint + fan + occupancy button (e.g. SAUTER ROOM_Unit ecoUnit110 unidirectional)
	EEP: A5-10-02		Temperature + setpoint + fan + day/night slide switch
	EEP: A5-10-03	Data transfer according to EEP profile: A5-10-01	Temperature + setpoint
	EEP: A5-10-04	Data transfer according to EEP profile: A5-10-01	Temperature + setpoint + fan
	EEP: A5-10-05	Data transfer according to EEP profile: A5-10-01	Temperature + setpoint + occupancy button
	EEP: A5-10-06	Data transfer according to EEP profile: A5-10-01	Temperature + setpoint + day/night slide switch
	EEP: A5-10-07	Data transfer according to EEP profile: A5-10-01	Temperature + fan
	EEP: A5-10-08	Data transfer according to EEP profile: A5-10-01	Temperature + fan + occupancy button
	EEP: A5-10-09	Data transfer according to EEP profile: A5-10-01	Temperature + fan + day/night slide switch
	EEP: A5-10-0C	Data transfer according to EEP profile: A5-10-01	Temperature + occupancy button
	EEP: A5-10-0D	Data transfer according to EEP profile: A5-10-01	Temperature + day/night slide switch
<b>ROOM_UNIT without humidity with contact input</b>			
1 1.1	EEP: A5-10-0A		Temperature + setpoint + digital input (DB_0.BIT_0)
	EEP: A5-10-0B	Data transfer according to EEP profile: A5-10-0A	Temperature digital input (DB_0.BIT_0)
<b>ROOM_UNIT with humidity</b>			
1 1.2	EEP: A5-10-10		Temperature + humidity + setpoint + occupancy button
	EEP: A5-10-11		Temperature + humidity + setpoint + day/night slide switch
	EEP: A5-10-12	Data transfer according to EEP profile: A5-10-0A	Temperature + humidity + setpoint
	EEP: A5-10-13	Data transfer according to EEP profile: A5-10-0A	Temperature + humidity + occupancy button
	EEP: A5-10-14	Data transfer according to EEP profile: A5-10-0A	Temperature + humidity + day/night slide switch
<b>Multi-sensor</b>			
4 0.1	EEP: A5-08-01		Light 0...510 lx + temperature + motion detector
	EEP: A5-08-02		Light 0...1020 lx + temperature + motion detector
	EEP: A5-08-03		Light 0...1530 lx + temperature + motion detector
<b>Only sensor</b>			
3 0.1	EEP: A5-02-01		Temperature sensor -40...0 °C (1 byte)
	EEP: A5-02-02		Temperature sensor -30...10 °C (1 byte)
	EEP: A5-02-03		Temperature sensor -20...20 °C (1 byte)
	EEP: A5-02-04		Temperature sensor -10...30 °C (1 byte)
	EEP: A5-02-05		Temperature sensor 0...40 °C (1 byte)
	EEP: A5-02-06		Temperature sensor 10...50 °C (1 byte)
	EEP: A5-02-07		Temperature sensor 20...60 °C (1 byte)
	EEP: A5-02-08		Temperature sensor 30...70 °C (1 byte)
	EEP: A5-02-09		Temperature sensor 40...80 °C (1 byte)
	EEP: A5-02-0A		Temperature sensor 50...90 °C (1 byte)
	EEP: A5-02-0B		Temperature sensor 60...100 °C (1 byte)
	EEP: A5-02-10		Temperature sensor -60...20 °C (1 byte)
	EEP: A5-02-11		Temperature sensor -50...30 °C (1 byte)
	EEP: A5-02-12		Temperature sensor -40...40 °C (1 byte)
	EEP: A5-02-13		Temperature sensor -30...50 °C (1 byte)
	EEP: A5-02-14		Temperature sensor -20...60 °C (1 byte)
	EEP: A5-02-15		Temperature sensor -10...70 °C (1 byte)
	EEP: A5-02-16		Temperature sensor 0...80 °C (1 byte)
	EEP: A5-02-17		Temperature sensor 10...90 °C (1 byte)
	EEP: A5-02-18		Temperature sensor 20...100 °C (1 byte)
	EEP: A5-02-19		Temperature sensor 30...110 °C (1 byte)
	EEP: A5-02-1A		Temperature sensor 40...120 °C (1 byte)
	EEP: A5-02-1B		Temperature sensor 50...130 °C (1 byte)
	EEP: A5-10-01		Only the temperature is transferred Temperature (e.g. Sauter ROOM_Unit ecoUnit110, ecoUnit141...146 unidirectional)
3 0.2	EEP: A5-06-01		Light sensor 300...60,000 lx
	EEP: A5-06-02		Light sensor 0...1024 lx
3 0.3	EEP: A5-07-01		Motion detector
<b>Window contact</b>			
2 0.1	EEP: D5-00-01		Inverted bit

\* Profile designations as in version 2.61

SAUTER profile Type	EnOcean Equipment Profile (EEP*)	Definition of non-assigned data points	Comments
	<b>2 buttons (1 rocker)</b>		
2 0.2	EEP: F6-02-01		Only the first two buttons of the EEP profile are mapped.
	EEP: F6-02-02		USA: upside-down
	<b>4 buttons (2 rockers)</b>		
2 0.4	EEP: F6-02-01		
	EEP: F6-02-02		USA: upside-down
	<b>Window handle</b>		
2 0.6	EEP: F6-10-00		Window handle

**NOTE:**

This information applies to the multi-sensor and for "only sensor".

The temperature value is transmitted as a byte value of 255..0 and must be converted for the temperature control and display.

The byte value is calculated by multiplying the "Tmp" output value of the ROOM\_UNIT module in Case Engine by 100.

Room temperature = absolute value measurement range - ((absolute value measurement range x 100 / 255) x Tmp output value ROOM\_UNIT) + initial value measurement range

Example for sensor with EEP A5-02-04, -10°C...30°C, Tmp output value of ROOM\_UNIT=0.85:

Room temperature = (40 - ((40 x 100 / 255) x Tmp output value of ROOM\_UNIT) -10) °C

Room temperature = (40 - (15.686 x 0.85) -10) °C = 16.67 °C

Each SAUTER profile and type comprises a group of EnOcean profiles. The maximum number of data points of all EnOcean profiles in this group are mapped in the SAUTER profile. If devices are then programmed to a SAUTER profile that do not support all the data points, default values are shown in the ROOM\_UNIT module for the missing data points.

Example: A device with EEP:A5-10-03 is programmed to SAUTER profile 1 1.0. The EM580 thus transfers the data points of temperature and setpoint from the external device to the ROOM\_UNIT module. The EM580 adds default values for fan and occupancy.

Missing data points on the external device are transferred according

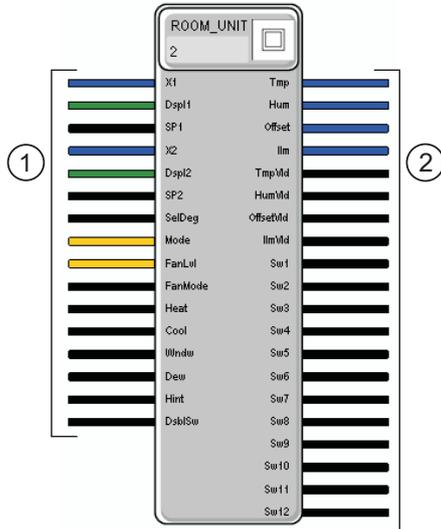
to the main profile during mapping. The availability of the assigned analogue transmitter signals are monitored (analogue values = valid).

**Example:** If there are no transmitters for temperature, setpoint correction, humidity or brightness or they have not transmitted any values for more than approximately 120 minutes, the valid data point in the ROOM\_UNIT firmware module is masked. Binary switching information is OR-linked during multiple mapping. So that an open window can be detected if multiple window contacts are mapped (SAUTER profile 2, type 1), the received bit is inverted by the ecoMod580. An open window is represented by the ecos 5 as "1".

## 5 Mapping

### 5.1 The ROOM\_UNIT firmware module

A detailed explanation of the firmware module can be found in the SAUTER CASE Engine context-sensitive help. Here we shall give an overview of the module and the subsequent mapping process.

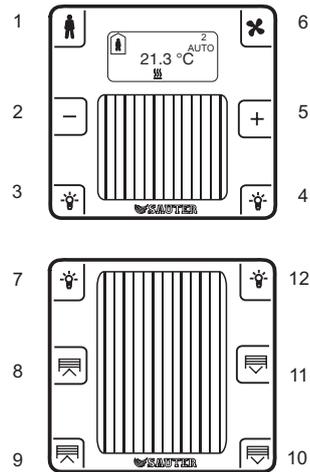


- ① Control of the room operating device display.
- ② Measured values and switching information of the assigned EnOcean devices.

The ROOM\_UNIT module must be configured in Case Engine according to the devices that have been programmed to it. The SAUTER profiles 1 0.1; 1 1.0; 1 1.1; 1 1.2; 4 0.1; 3 0.1; 3 0.2 are mapped directly on the ROOM\_UNIT module according to the labelling of the outputs.

The SAUTER profiles for binary switching information such as window contacts, buttons etc. are mapped according to the selected memory location to the outputs SW1...SW12.

For the SAUTER EY-RU1xx room operating units with EY-SU106 switching unit, switches 1-12, as shown below, are mapped to the outputs SW1...SW12.



### A) Standard application

No multiple assignment of memory positions and no overlap of data points from different transmitters.

Device	SAUTER profile	SAUTER type	Memory position	ROOM_UNIT module output
ecoUnit144 (without EY-SU106)	1	0.1	0	Xi on Tmp output with TmpVld (temperature valid signal) dXs on Offset with OffsetVld Occupancy button on SW1 dXs- button on SW2 dX+ button on SW5 Fan button on SW6
Light, 1 rocker (2 buttons)	2	0.2	3	Light 0: SW3 Light 1: SW4
2 blinds, 2 rockers (4 buttons)	2	0.4	8	Blind 1 (up/down): SW9/SW10 Blind 2 (up/down): SW8/SW11
Window magnet contact	2	0.1	7	SW7
Motion detector	3	0.3	C	SW12
Light sensor	3	0.2	D	Ilm with the range: 300...30,000 lx and the IlmVld (light sensor value valid) signal.

### B1) Application with overlapping data points from different transmitters

The ecoUnit144 and the additional temperature and humidity sensor overlap. Because the additional sensor is mapped to a higher memory position, it takes priority.

Device	SAUTER profile	SAUTER type	Memory position	Comments
ecoUnit144 (with EY-SU106)	1	0.1	0	Xi, dXs, occupancy, dX-, dX+ not available. These are overwritten by the sensor to memory position D. Fan button on SW6, buttons 7...12 on SW3,4,7...12
Temperature and humidity	1	1.2	D	Temperature on Tmp with TmpVld (temperature valid), humidity on Hum with HumVld, dXs on Offset with OffsetVld, occupancy on SW1
Window magnet contact 1	2	0.1	3	SW3
Motion detector	3	0.3	4	SW4
Light (2 buttons)	2	0.2	7	SW7/SW12 with buttons 7 and 12 of the ecoUnit106 OR-linked
Blind (4 buttons)	2	0.4	8	SW8/SW11 and SW9/SW10 with buttons 8,11 and 9,10 of the ecoUnit106 OR-linked.

### B2) Application with overlapping data points from different transmitters

The ecoUnit146, the ecoUnit110 and the additional multi-sensor (temperature, brightness, motion) overlap. Because the ecoUnit110 is mapped on the highest memory position, it has priority and determines the temperature for room control. So that dXs, fan and occupancy are not overwritten by the ecoUnit146, the ecoUnit110 is programmed as "only sensor". For the window contact, the memory position not only determines the priority, but also the button with which the window open/closed status can be evaluated.

#### NOTE:

The overlap function described here is available from device index F of the EY-EM580F001.

Device	SAUTER profile	SAUTER type	Memory position	Comments
ecoUnit146 (without EY-SU106)	1	0.1	1	Temperature, dXs, fan, occupancy and buttons 3 and 4 are transferred.
Multi-sensor	4	0.1	0	Light and motion (on button 8) are transferred by the multi-sensor, but not temperature
Window magnet contact	2	0.1	7	Window contact is evaluated via button 7 on the ROOM_UNIT module
ecoUnit110	3	0.1	2	Temperature transferred as "only sensor"

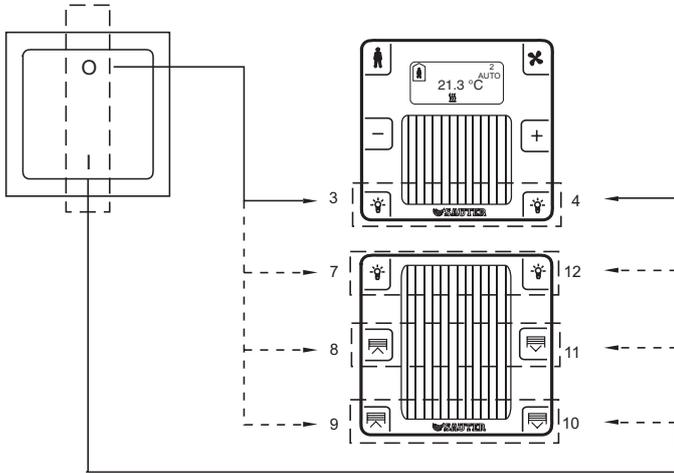
\*The temperature value is transmitted as a byte value of 255..0 and must be converted for the temperature control or display. The byte value is calculated by multiplying the "Tmp" output value of the ROOM\_UNIT module in Case Engine by 100.  
The following conversion formula applies to the ecoUnit110 as "only sensor":

$$\text{Room temperature} = 40 - (4000/255) \times \text{Tmp output value of ROOM\_UNIT}$$

C) Mapping examples for switches

Mapping of a 2-button EnOcean switch with EY-RU146 (version 1)

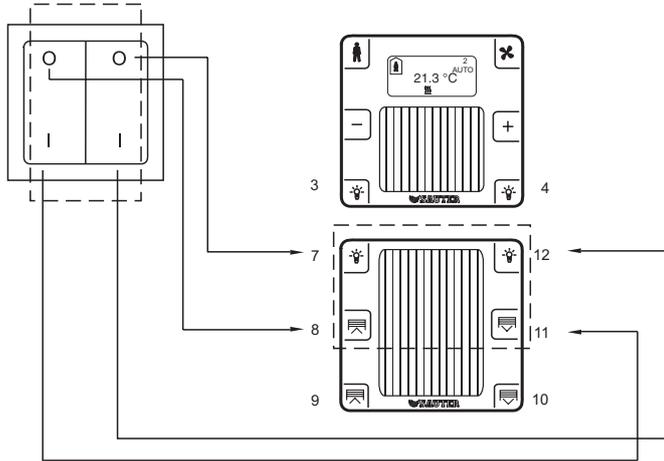
SAUTER profile type: 2 0.2  
 The switch can be mapped to one of memory positions 3,7,8 or 9. This means the pair of buttons of the switch appears on the ROOM\_UNIT module on SW3/SW4, SW7/SW12, SW8/SW11 or SW9/SW10. The switch is then OR-linked to the corresponding pair of buttons on the EY-RU146 or EY-SU106.



**NOTE:**  
 For a better understanding, turn the EnOcean button 90° anticlockwise and imagine it on the ecoUnit or switching unit.

Mapping of a 4-button EnOcean switch with EY-RU146 (version 3)

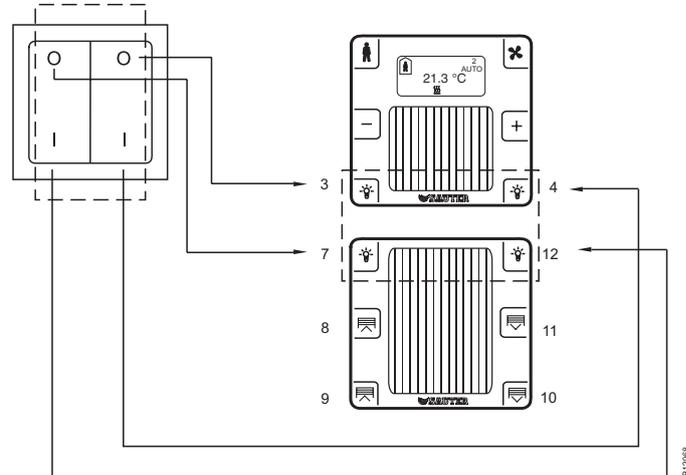
SAUTER profile type: 2 0.4  
 The switch can be mapped to memory position 7. This means the two pairs of buttons of the switch appear on the ROOM\_UNIT module on SW7/SW12 and SW8/SW11. There is an OR-link to the switches of the EY-SU106.



**NOTE:**  
 For a better understanding, turn the EnOcean button 90° anticlockwise and imagine it on the ecoUnit or switching unit.

Mapping of a 4-button EnOcean switch with EY-RU146 (version 2)

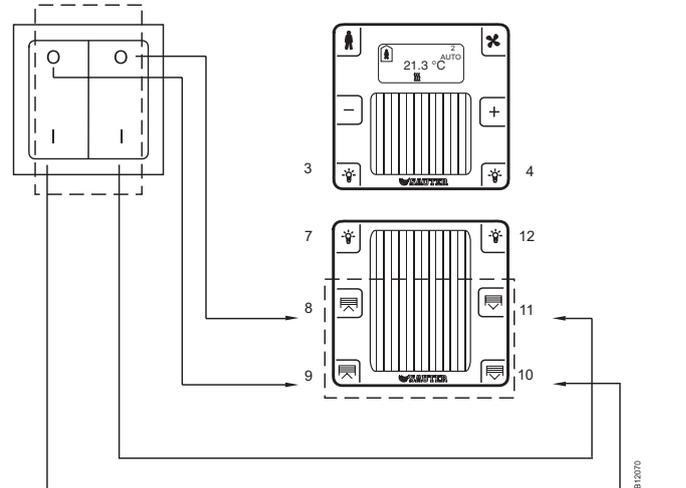
SAUTER profile type: 2 0.4  
 The switch can be mapped to memory position 3. This means the two pairs of buttons of the switch appear on the ROOM\_UNIT module on SW3/SW4 and SW7/SW12. There is an OR-link to the switches of the EY-RU146 or EY-SU106.



**NOTE:**  
 For a better understanding, turn the EnOcean button 90° anticlockwise and imagine it on the ecoUnit or switching unit.

Mapping of a 4-button EnOcean switch with EY-RU146 (version 4)

SAUTER profile type: 2 0.4  
 The switch can be mapped to memory position 8. This means the two pairs of buttons of the switch appear on the ROOM\_UNIT module on SW9/SW10 and SW8/SW11. There is an OR-link to the switches of the EY-SU106.



**NOTE:**  
 For a better understanding, turn the EnOcean button 90° anticlockwise and imagine it on the ecoUnit or switching unit.

Mapping of a 2-button EnOcean switch with EY-RU146 (version 5)

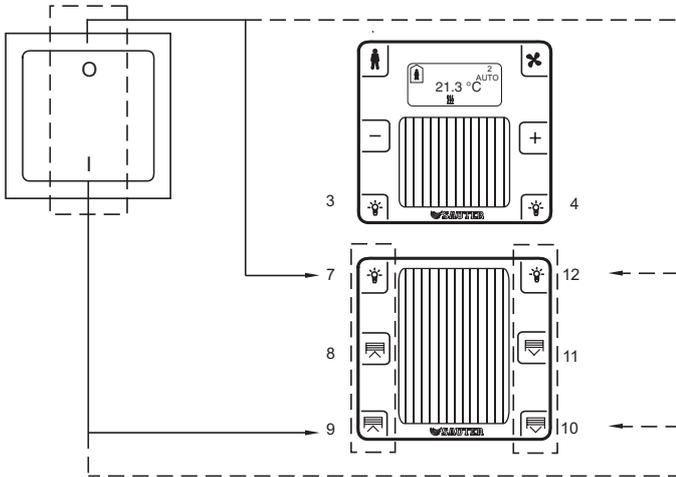
SAUTER profile type: 2 0.2

Mapping can take place to memory position [...]10. This means the pair of buttons of the switch appears on the ROOM\_UNIT module on SW7/SW9.

There is an OR-link to the switches of the EY-RU146.

Alternative mapping can take place to memory position 12. This means the pair of buttons of the switch appears on the ROOM\_UNIT module on SW12/SW10.

There is an OR-link to the switches of the EY-RU146.



**NOTE:**

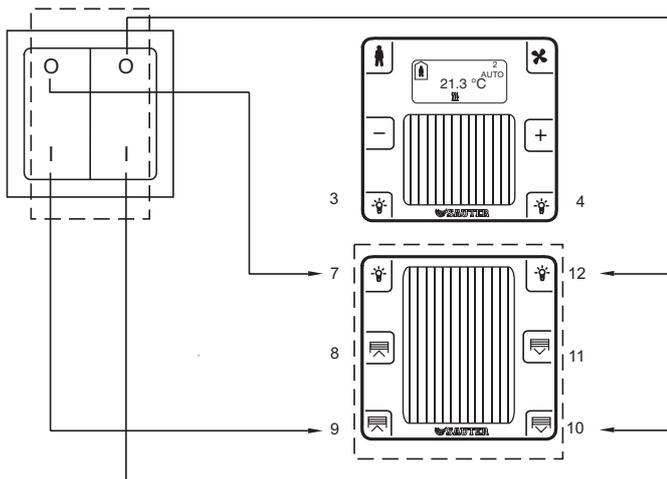
Imagine the EnOcean button on the switching unit.

Mapping of a 4-button EnOcean switch with EY-RU146 (version 6)

SAUTER profile type: 2 0.4

Mapping can take place to memory position 10. This means the two pairs of buttons of the switch appear on the ROOM\_UNIT module on SW7/SW9 and SW12/SW10.

There is an OR-link to the switches of the EY-RU146.



**NOTE:**

Imagine the EnOcean button on the switching unit.

**5.2 Priorities for multiple mapping**

Up to 16 transmitters can be assigned to each ecoMod580 channel. An ecoMod580 has 4 channels, which means it can accommodate 64 different transmitters. The limit is the I/O mix of the ROOM\_UNIT module.

If there are multiple assignments to a data point, i.e. more than one transmitter mapped to a memory position (SAUTER ROOM\_UNIT I/O mix), the procedure is as follows:

- Binary switch information is OR-linked. This can be used, for example, to link several window contacts to detect whether at least one window in a facade is open. For this reason, the window contact is represented on the ROOM\_UNIT module with 1 for window open and 0 for window closed.
- OR-linking all switch information mapped on a memory position can be used to install and teach in additional switch points in the room without changing the ecos program.
- Multiple mapping of a transmitter, i.e. a room operating unit or a switch actuator is mapped on more than one channel, is also possible with the ecoMod580. This means a switch actuator can switch several rows of lights, for example.
- With analogue values, the value is transferred to the ecos which was programmed to the higher memory position (0...0xF). If there is no analogue value on the device with the higher priority, then the next one down has priority.
- If an ecoUnit 1 is programmed, memory positions 1, 2, 5 and 6 on the same channel may not be occupied by other EnOcean transmitters. The reason for this is that memory positions 1, 2, 5 and 6 are assigned to the occupancy, fan and setpoint correction functions on ecoUnit 1. A simultaneous assignment, for example with window contacts, would lead to undefined states.

Example:

- ecoUnit 1 is mapped to assignment code "0".
- An external sensor provides the temperature and humidity values and is mapped to assignment code "3".

The temperature and humidity from the external sensor take priority.

This example inverted:

- ecoUnit 1 is mapped to assignment code "E".
- An external sensor provides the temperature and humidity values and is mapped to assignment code "d".

The temperature from the ecoUnit 1 has priority. There is no humidity on the ecoUnit 1, which means the humidity value from the external sensor has the next priority.

**5.3 Resetting the setpoint correction**

This feature is possible from device index F of the EY-EM580F001 together with the ecoUnit 1, EY-RU14\*F100 versions.

Operators of energy efficiency of buildings often want to be able to centrally reset the local setpoint correction made by room users at regular intervals, for example using a building management system.

The setpoint correction is reset using the X2 input of the ROOM\_UNIT firmware module. The illustration below shows an example application:

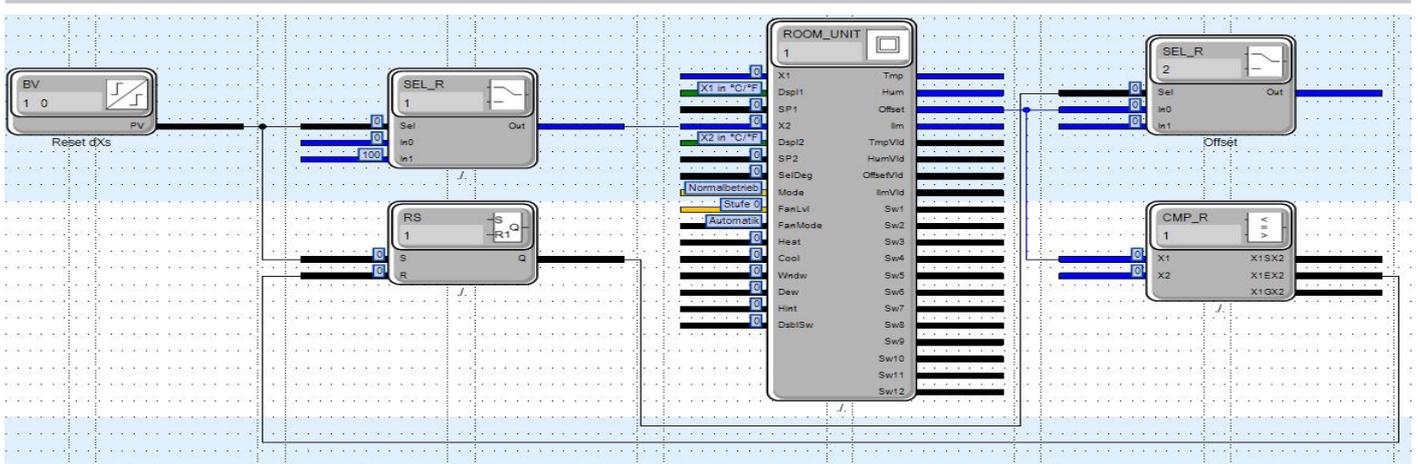


Fig. 1 Example application of CASE Engine "Reset dXs"

The assignment of the input value at X2 to the function is as follows:

Value <100: Setpoint correction dXs is not affected.  
User can change dXs on the room operating units

Value ≥100: Setpoint correction dXs is set to 0

**Note:**

Resetting the setpoint correction only works if the DspI2 input on X2 is set in °C/°F.

It is advisable to only apply the reset signal for dXs for a short time, for example 1 second, so that users can then adjust the setpoint as required afterwards. In the illustrated example application for CASE Engine "Reset dXs", a selector module with binary activation is used for this. Resetting is only possible via the BMS system using binary values object "Reset dXs".

The dXs values in the EY-RU14\* is not reset until the next bidirectional communication, in other words as soon as the display is activated. This is why in the example application shown, the output of the "Offset" selector is immediately set to 0, so that a temperature controller connected to it is immediately affected. After synchronisation with the room operating unit, the comparator immediately switches the selector back to the offset value (dXs) of the room operating unit.

**5.4 Features of communication between ecoUnit 1 and ecoMod580**

**Communication monitoring**

If there is no communication between ecoUnit 1 and ecoMod580, the message Err2 appears on the ecoUnit 1 display. This error message disappears again automatically once communication has been established. If there is no communication between ecos 5 and ecoMod580, the message Err2 appears on the ecoMod580 display. In this case there are no wireless telegrams to the ecoUnit 1. As a result, this error message is also shown in the ecoUnit 1 display.

**General communication**

To ensure optimal availability of the ecoUnit 1 operating unit even in poor lighting conditions, the display is switched off after every user intervention so as to save energy. The actual temperature is regularly transmitted according to the set transfer parameters.

The ecoUnit 1 is activated by pressing a button (1, 2, 5, 6). The data is also synchronised between the gateway and the wireless room operating unit. The display shows the current values from the ecos 5. When buttons 3, 4 and 7 to 12 are pressed, a PTM telegram is immediately sent to the ecos 5. The immediate reaction to these buttons is necessary, for example in order to control lights or blinds.

The values for setpoint correction, occupancy mode and the fan speed are first shown on the room operating unit via integrated rotating circuit and then sent to the ecos 5. Transmission does not take place until 3 seconds have passed without any buttons being pressed. After transmission, the room operating unit synchronises with the ecos 5 user program, which is harmonised with the rotating

circuit of the room operating unit.

If the display is deactivated for the occupancy mode or the fan speed, the corresponding buttons are also deactivated and cannot be used for anything else.

**Transmission of fan speed**

The fan speed of the ecoUnit 1 is transmitted as an absolute value to the ecoMod580 wireless interface. The wireless interface keeps sending pulses to the room automation station until the ecos feedback of the fan speed matches the absolute value.

**Transmission of occupancy mode**

The process takes place in the same way as for transmission of fan speed.

**Offline detection of individual transmitters/ecoUnits**

The values for a channel or for a room operating unit can come from a room operating unit or from several EnOcean devices. This means only one of the EnOcean devices can be unavailable.

The gateway sends the various available values (temperature, brightness, etc.) back to ecos 5 cyclically. If the sensor for the relevant value cannot be addressed, this value is no longer transmitted to ecos 5. The relevant valid output of the ROOM\_UNIT firmware module is marked, i.e. a "1" for valid values and a "0" for invalid values. The time until a value is logged off is approximately 120 minutes.

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