Deseo KNX

Manual

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1. Introduction

Deseo is designed to control all the different functions in one single room in a very simple and intuitive way, through the integrated 1.7” oled display.

With one single touch, it is possible to operate any lighting circuit, control different scenes, operate the central music system, control the sunscreens, or operate the heating, air conditioning and ventilation using the built-in thermostat.

The innovative tactile technology, typical for basalte products, allows all these functions with extreme ease of use in a sleek and refined design.

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2. Installation

Use a standard European back box with screws to mount the Deseo switch. The distance between the screws must be 60mm. The screws must be installed vertically.

Using screws that are too big might hinder the mounting of the Deseo front cover onto the Deseo switch. When mounted, the Deseo front cover should hide the Deseo switch completely. If not, the connection to the Deseo front cover might not work properly, which will result in a reduced sensitivity of the switch!

When fixing the screws, do not apply too much force since this will deform the plastic surrounding opening F. Doing so might hinder the installation of the Deseo front cover onto the Deseo switch!

The minimal depth required for the Deseo switch KNX is 24mm. Additional depth should be reserved for connecting the device.

Connect the 29V of the switch with a DC power supply between 18V and 36V.
Each device has a power consumption of 20mA in standby mode, with a peak of 50mA (1.2 Watt).
Please take into account that the power consumption at start-up can be higher.
Make sure that the power supply is well grounded and correctly dimensioned!
Prefer an over-dimensioned power supply, please reserve 2W for each device.

Make sure that the temperature sensor is on the bottom side of the switch.

Before installing the front cover, shut down the power supply of the switch.
The device can be powered up after the installation of the front cover.

Make sure that the power is down for at least 30 seconds to allow correct calibration.

The small opening in the front cover is specially made for the temperature sensor.
Make sure that the opening is at the bottom side of the switch.

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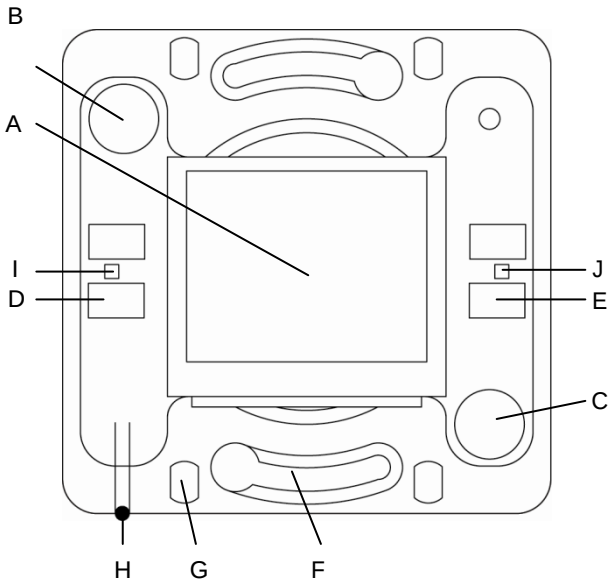
2.1 Identifying the parts

2.1.1 Front view of the electronics

A 1.7” OLED-display
B Touch sensor up
C Touch sensor down
D Touch sensor left
E Touch sensor right
F Opening to screw the device into the wall box
G Guide for the Deseo front cover
H Temperature sensor
I Led left
J Led right



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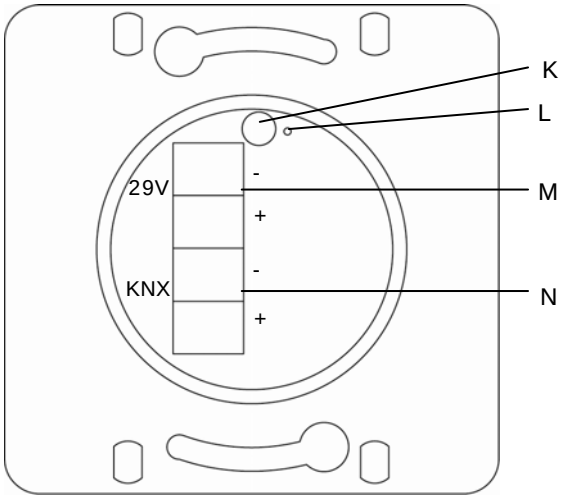
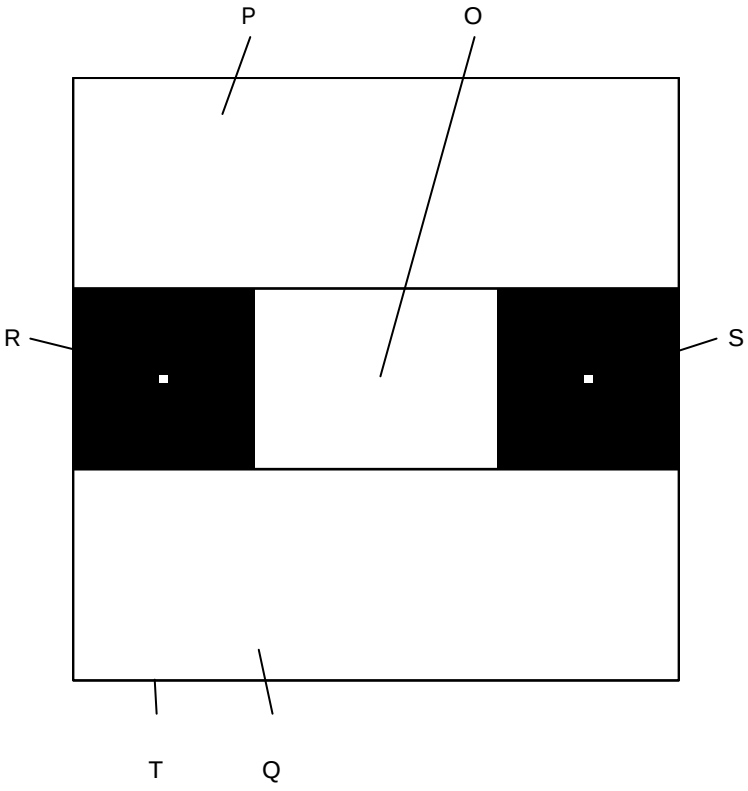
2.1.2 Rear view of the electronics

K Programming button
L Programming led
M External power supply
N KNX connector



2.1.3 Front cover

O Display
P Touch sensor up
Q Touch sensor down
R Touch sensor left
S Touch sensor right
T Opening temperature sensor



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3. General

The Deseo device has 4 touch sensitive areas which are used to navigate through the menus.
The display shows only what will be controlled.
All the pages and texts can be modified using ETS.

Note: This manual is accurate starting from build number 32.13.3.

3.1 Navigation

3.1.1 Navigation controls

Deseo has four touch sensitive fields: The UP, DOWN, LEFT and RIGHT buttons.

Any touch surface can be used to wake the display. This will show the first active page.
Normally this is the start page, if the start page is not active, the first main menu item will be displayed.
If there is only one main menu item enabled, the first page of this menu will be displayed.

Use the UP and DOWN buttons to browse through the main menus.

At the desired main menu, use the RIGHT button to browse through the menu items. Use the LEFT button to go back to the main menu.
Touching the LEFT sensor from the main menu will force the display to return to the start screen.
If the start screen is disabled, the first active main menu item will be shown.
Please refer to 3.1.2 Navigation structure.

At the desired function menu item, use the UP and DOWN button to control the current function.
Labels at the top and bottom of the screen will provide more information about the current function of the UP and DOWN button.

The white led's on the left and right sides indicate whether or not the LEFT and RIGHT button are enabled.

The text on the start screen and the main menus are displayed in a blue font.
The text on the function pages is displayed in a white font.

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Touching the upper and lower surface of the device simultaneously will trigger the multitouch event.
Please refer to 3.1.3 Multitouch.

After some time, the display will go into standby-mode.
Please refer to 3.2 Screen standby.

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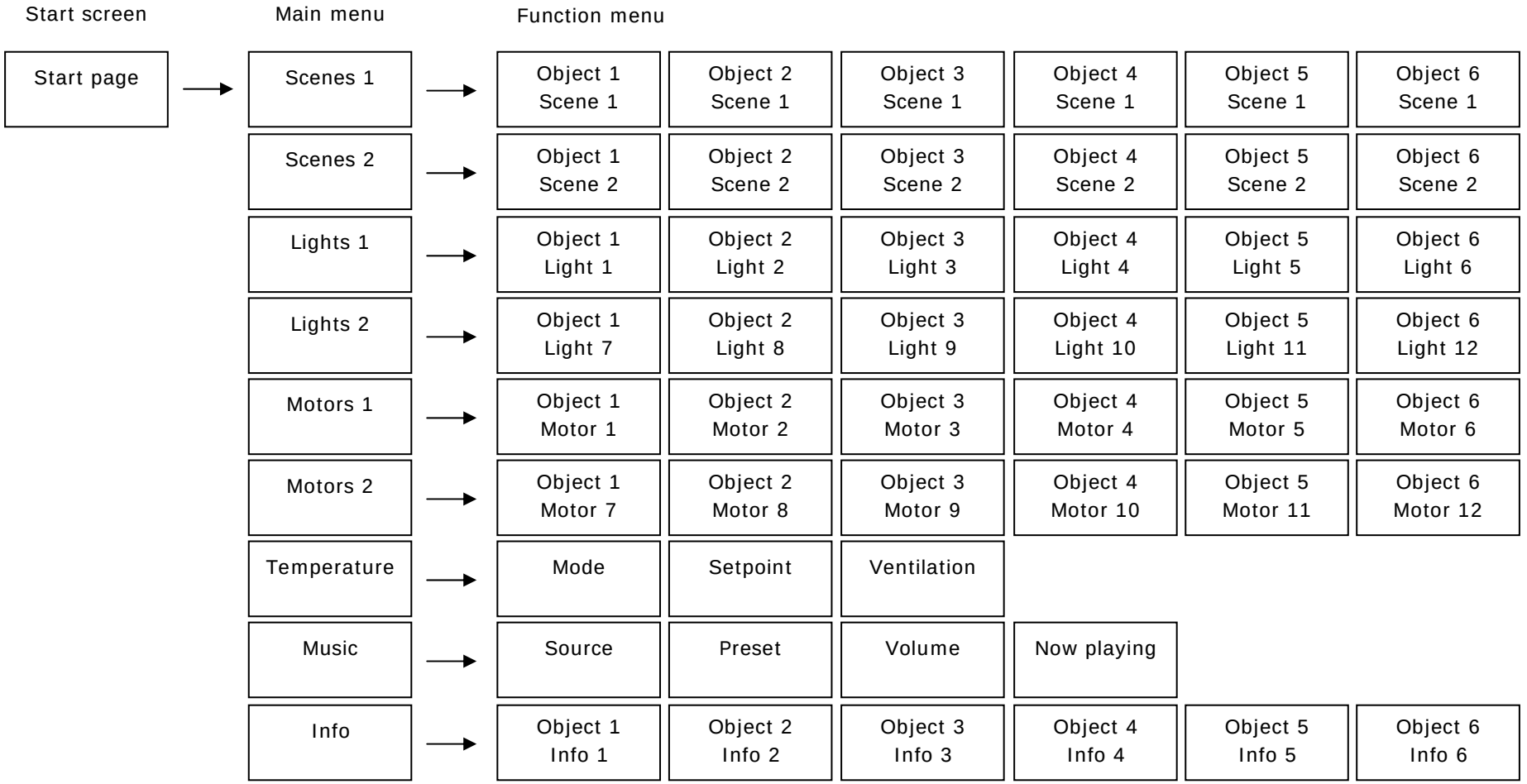
3.1.2 Navigation structure



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3.1.3 Multitouch

A multitouch event occurs when the user simultaneously touches the upper and lower surfaces of the device. This function allows the user to trigger an action without browsing the menus.

Typically, the multitouch is used to switch on and off the lights when a person enters or leaves the room.

The installer can set text fields which are displayed shortly when multitouch occurs.

The multitouch logic can also be triggered by a communication object (communication object 200). This action will not be shown on the display of the Deseo, it will only trigger its functionality.

To control the multitouch, the device has to know the feedback of the lights.
For this, there are 8 communication objects (communication objects 8-15) to couple the feedback of the lights controlled by the multitouch.
When one or more feedback objects are active (1), the multitouch will send the “off” command.
When all feedback objects are inactive (0), the multitouch will send the “on” command.

3.2 Screen standby

To reduce power consumption and prolong display life, the display shuts down after a prolonged time of inactivity. This time can be configured with ETS.

The device automatically wakes up when one or more buttons are touched or when the screen wake object is activated (if enabled).

After 60 seconds, the display always goes back to the start screen. It only turns off after the timeout.

If the timeout is shorter than one minute, the display will switch off, but touching a surface during this minute will show the last active screen.

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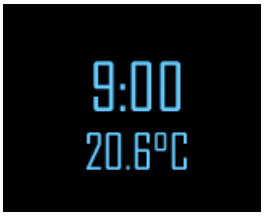
4. Menu pages

4.1 Start page

The start page is the main entry, shown when the device wakes up. The page can display a variety of useful elements like time, date, text, temperature.



In ETS, a predefined combination of elements can be set:

- Time and date
- Time and temperature
- Time and variable text
- Fixed text and temperature
- Fixed text and variable text

Remark: If this page is disabled, the first page shown will be the first active menu page.

4.1.1 Time

The device contains an internal clock that can be set with the according communication object (communication object 185). The time format can be set either in 12h or 24h notation.

Accuracy is however limited. The time should be updated on a regular base and after each restart of the device with the according communication object.
After restarting, the Deseo will show the time 9:00.

4.1.2 Date

The date can be set in various date formats (dd-mm-yyyy), (mm-dd-yyyy) and (yyyy-mm-dd). This date can be set with the according communication object (communication object 186).

The date should be updated on a regular base and after each restart of the device with the according communication object.
After restarting, the Deseo will show the date 31/12/2011.

4.1.3 Temperature

The device contains an internal temperature sensor. If an external sensor is used, the weighting of the internal and external values can be set in order to calculate the current actual value.

The displayed temperature is limited between 0°C and 99.9°C or 0°F and 150°F.

The temperature units (°C or °F) can be configured.

4.1.4 Variable text

The page can display variable text, coming from a 14-byte communication object. When the imported text does not fit on the display, the last characters are discarded.

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4.1.5 Fixed text

A fixed text line can be added to the start page. The text can be entered in ETS.
A maximum of 9 characters can be displayed. If the text does not fit on the display, the last characters are discarded.

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4.2 Scenes

There are 2 scene pages, with up to 6 scenes per page.
For every page there is one communication object.

A scene page allows a user to recall a scene, saved in an actuator or another external memory location. It consists of a scene name and a square indicator at the bottom of the screen.

When the “down” button is pressed, the scene is recalled and a white line appears under the scene label for 2 seconds.

When scene save is enabled, the user can save the current light settings in the selected scene using the “up” button. If the button is pressed for at least 3 seconds, a “save” label appears at the top of the screen and the settings are saved.

Each scene optionally contains a blocking function allowing the user to block certain external functions while a scene is active.
The blocking object is sent out simultaneously with the scene number.
This can be used for example to block a motion detector.

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4.3 Lights

There are 2 light pages of 6 light objects each.
Each light object can be switched or dimmed.

4.3.1 Switched light page

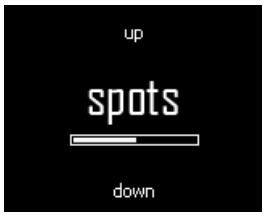
The switched light page shows the name of the corresponding light circuit, an “on” label at the top and an “off” label at the bottom, defining the function of the buttons. It allows the user to switch on and off light circuits using a single 1-bit communication object. A line underneath the light label gives a visual indication of the status of the circuit.

When the “up” button is pressed, the light is switched on and a white line appears under the lights label. Every time the button is pressed the on command will be sent, even if the light was already on.

When the “down” button is pressed, the light is switched off and the white line disappears under the lights label. Every time the button is pressed, the off command will be sent, even if the light was already off.

When feedback data is received, the indicator will be updated.

4.3.2 Dimmed light page



A dimmed light page shows the name of the corresponding light circuit, a slider, an “up” label at the top and a “down” label at the bottom, defining the function of the buttons. It allows the user to switch on and off light circuits using a 1-bit communication object and to dim the circuit using a 4-bit communication object. It offers a visual indication of the status of the circuit using a 1 byte communication object.

When the “up” button is pressed shortly (less than 1 second), the light is switched on using a 1-bit communication object. The slider increases to maximum.

When the “down” button is pressed shortly (less than 1 second), the light is switched off using a 1-bit communication object. The slider decreases to minimum.

When the “up” button is pressed longer than 1 second, the light dims up using a 4-bit communication object. The slider increases as long as the button is pressed.

When the “down” button is pressed longer than 1 second, the light dims down using a 4-bit communication object. The slider decreases as long as the button is pressed.

If a value is sent to the “light n value feedback (input)”, the slider is updated with this value. Feedback values can be either 0-100% or 0-255.

For an intuitive look and feel, the ramp time of the slider has to be equal to the ramp time of the dimmer. This ramp time of the slider can be set into the parameters of the device.

Remark: The feedback will not be updated while the slider is moving.

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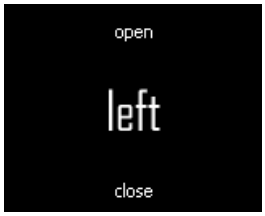
4.4 Motors



There are 2 motor pages with 6 motor objects each.

A motor page allows the user to control blinds, shutters, curtains, etc. The page consist of a label with the name of the selected motor and an “open” label at the top and a “close” label at the bottom of the screen, defining the function of the buttons.

Each motor page has a set of four 1-bit communication objects:

- Up – short
- Up – long
- Down – short
- Down – long

For ease of use, 2 types of behaviour can be set:

- Short / long press behaviour
- Short press behaviour

4.4.1 Short / long press behaviour

This setting is the most straightforward.
When a button is pressed shortly, the corresponding “shortpress” object is activated. The motor will be activated for a short period, allowing moving in steps.
When a button is pressed longer than 2 seconds, the corresponding “longpress” object is activated. The motor will be activated until the motor reaches the end position.

4.4.2 Short press behaviour

This setting is more convenient for controlling curtains and screens. It does not require the use of long and short presses.

When a button is pressed, the corresponding “longpress” object is activated. A second press within the activation time of the motor will issue a “shortpress”, stopping the motor.

For the correct operation of this function, the time required to open the curtain or blind fully, has to be defined in ETS.

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4.5 Temperature

The temperature control includes 3 main items:

- Temperature mode page
- Setpoint page
- Ventilation page

4.5.1 Temperature mode page

The mode page allows the user to set the mode of the thermostat function. The user can choose mode “Comfort”, “Standby” and “Economy”.

A 4th mode “Building protection” cannot be chosen by the user but will be activated when the thermostat’s functions are inhibited due to an external event (e.g. an open window)

When the “up” button is pressed, the mode is set to a higher setting. When the highest setting is reached, the square indicator on the top of the screen disappears and the “up” button is disabled.

When the “down” button is pressed, the mode switches to a lower setting. When the lowest setting is reached, the square indicator on the bottom of the screen disappears and the “down” button is disabled.

For each mode there is a 1-bit communication object. The mode is also available through a 1-byte communication object, where the value represents the mode:

1: Comfort
2: Standby
3: Economy
4: Building protection

Any input on the input communication objects overwrites the current mode setting.

When a 0 to 1 transition is received on a 1-bit object, or an appropriate value on the 1-byte object, the mode state is overwritten and the screen is updated.

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4.5.2 Temperature setpoint page

When the “up” or “down” button is pressed, the setpoint increases/decreases in steps of 0.5°C (1°F) or to the nearest 0.5°C (1°F) step in case it is send external.

When the “up” or “down” key is held for longer than 1.5 seconds, the setpoint will increase/decrease every 0.5 seconds until the button is released.

When the upper limit is reached, the ‘+’ sign on the top of the display disappears and the upper button is disabled.
When the lower limit is reached, the ‘-’ sign on the bottom of the display disappears and the lower button is disabled.
The temperature setpoint limits are set in the ETS temperature menu.

The output functionality depends on the setting of the thermostat (internal / external mode).

External mode

When the external mode is selected, the thermostat will be controlled by an external logic.

Deseo will only send its setpoint (communication object 96: Setpoint comfort – Output) as set on the display. Every update will trigger an update on the communication object.

By receiving an update on the setpoint (communication object 95: Setpoint comfort – Input), sent by another device, the Deseo will overwrite the internal setpoint and the screen will be updated, even if the temperature setpoint is beyond the upper or lower limit.

Remark: When a value is sent to the setpoint (input) communication object, the Deseo will not send a new actual setpoint (output) on the bus because this will occur an infinitive loop.

Internal mode

When the internal mode is activated, the functionality of the thermostat is regulated by the Deseo.

There are 4 different types of thermostat regulations:

- Heating
- Cooling
- Heating/Cooling (manual)
- Heating/Cooling (automatic)

A symbol for heating or cooling is displayed to indicate the current heating/cooling mode. In 2 state and PWM mode, the symbol will be brighter when the heating/cooling output is activated.

In the internal mode, there are 2 communication objects which reflect the setpoint, an actual setpoint and a comfort setpoint.
The comfort setpoint is the setpoint in the comfort mode.
The actual setpoint is the setpoint value depending on the current mode (comfort/standby/economy).

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At reception of an update on the input setpoint (communication object 95), sent by another device, the Deseo will overwrite the internal setpoint and the screen will be updated, even if the temperature setpoint is beyond the upper or lower limit.
The value is comfort based and will be recalculated using the current mode and temperature offsets between the modes.

Remark: When a value is sent to the setpoint (input) communication object, the Deseo will send a new actual setpoint (output) on the bus.

For more information about the internal thermostat, refer to 6. Internal thermostat

4.5.3 Ventilation page

The ventilation can be configured with 2 states (High, Low) or with 3 states (High, Mid, Low)

When the “up” button is pressed, the ventilation state is set to a higher setting. When the highest setting is reached, the square indicator on the top of the screen disappears and the “up” button is disabled.

When the “down” button is pressed, the ventilation state is set to a lower setting. When the lowest setting is reached, the square indicator on the bottom of the screen disappears and the “down” button is disabled.

The output (communication object 121-123) is only updated when the modified ventilation state is stable for 1.5 seconds or when the ventilation page is left. In that case, any active state will become inactive first and the new state will be activated 0.5 seconds later.

When a 0 to 1 transition is received on any ventilation feedback object, the ventilation state is overwritten and the screen is updated.

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4.6 Music

To control the music, the user can control the source, preset and the volume.

There is also an additional page that shows the 'now playing' information. Additionally, next and previous controls can be shown on this page.

4.6.1 Music source page

When the "up" button is pressed, the next music source is selected. When the highest setting is reached, the square indicator on the top of the screen disappears and the "up" button is disabled. If the music was off, the first source will be selected and the music system will be switched on.

When the "down" button is pressed, the previous music source is selected. When the lowest setting is exceeded, the music is turned off, the square indicator on the bottom of the screen disappears and the "down" button is disabled.

A source is selected if the source is on the display for 1.5 seconds, or when the source page is left.

When a source is selected, the corresponding communication object will send the numeric value corresponding to that source. In addition, the selection of a source will send a 1-bit communication object.
Furthermore, a 1-bit communication feedback object can show if the music is on or off.

Any appropriate value on the corresponding communication object of the source feedback will select the relevant source and update the screen.

4.6.2 Music on / off

The method used for switching the music system on and off can be configured using ETS.

Off = 0, on = 1

This setting is the most straightforward and sends a high level on the music on/off communication object for switching on and a low level for switching off the music.

Off = 0, on = 1, when off send 'source' 1 second later

This setting is equal to the previous but will additionally send the source number 1 second after the on command, allowing the sound system to power up.

Off = 1

This setting sends a high level for the music system to switch off.

Remarks:
When a 1 is received on the music on/off feedback communication object, the last active source is activated and the music on command is issued.
When a 0 is received, the source feedback will be set to off, and if any sound related screen is active, the screen will return to the start page.

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4.6.3 Music preset page

When presets are enabled, this page allows the user to set the preset for the selected source.

The up and down key are used to navigate through the list of presets. When the last preset is exceeded, the first preset is presented again, forming an infinite loop.

A preset is selected if the preset is on the display for 1.5 seconds, or when the preset page is left.

When a preset is selected, the corresponding communication object will send the corresponding selected numeric value.

When preset feedback is disabled, each time the preset page is entered, there is no preset selected and the preset title is displayed. The previous preset value will not be overwritten as long as no new preset is selected.

When preset feedback is enabled, the preset value is preserved on re-entry of the preset menu. When an appropriate value is received on the corresponding communication object, the preset will be updated to the corresponding settings, and the screen will be updated.

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4.6.4 Music volume page

To control the volume of the system, there are 4 possible ways:

- Volume page with no feedback
- Volume page with slider (0-100)
- Volume page with slider (0-255)
- Volume page with 14-byte object

Remark: This page cannot be disabled.

4.6.4.1 Volume page with no feedback

This type of page, which requires no feedback, consists of a volume label with adjustable text and two icons that represent the up and down buttons.

When the upper button is pressed, the 4-bit communication object (communication object 150) sends the increase command (0x9) as long as the button is touched. When the button is released, the break command (0x0) is sent. Another option is a 1-bit communication object (communication object 148) which is active as long as the button is pressed.

When the lower button is pressed, the 4-bit communication object (communication object 150) sends the decrease command (0x1) as long as the button is touched. When the button is released, the break command (0x0) is sent. Another option is a 1-bit communication object (communication object 149) which is active as long as the button remains pressed.

4.6.4.2 Volume page with slider (0-100)

This type of page generates the same output as the page without feedback. In addition, the page shows a slider which is sliding up while the up button is pressed and sliding down while the down button is pressed.
When a feedback value is received on the corresponding communication object (communication object 151), the slider is updated with this value. A value of 100 represents a full slider. Any value greater than 100 results in a full slider.

For an intuitive look and feel, the ramp time of the slider has to be equal to the ramp time of the sound system.

Remark: The feedback will not be updated while the slider is moving.

4.6.4.3 Volume page with slider (0-255)

This type of page generates the same output as the volume page without feedback.
In addition, the page shows a slider which goes up while the up button is pressed and down as long as the down button is pressed.
When a feedback value is received on the corresponding communication object (communication object 151), the slider is updated with this value. A value of 255 represents a full slider.

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For an intuitive look and feel, the ramp time of the slider has to be equal to the ramp time of the sound system.

Remark: The feedback will not be updated while the slider is moving.

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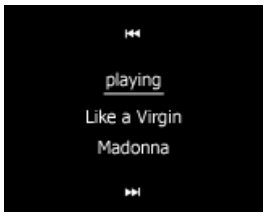
4.6.4.4 Volume page with 14-byte object

This type of page generates the same output as the volume page without feedback.
In addition, the page shows a text element.
When a feedback value is received on the corresponding communication object (communication object 152), the displayed text will be updated with this value.

4.6.5 Playing page



This type of page allows the user to read extra information about the track played by the sound system. It contains a title, 1 or 2 information lines and optional controls to change to the next or previous track.

The title is a string that can be defined in ETS for each source.

The information lines for track title and artist can be provided by a set of eight 14-byte communication objects, 2 for each possible source (communication object 153 to 160). When a text value is received on one of the two available communication objects for that page, the information lines will be updated.

The controls, which are optional, allow the user to start the next or the previous track for the current source. The output mode for the controls can be set in ETS.
The next or previous command can be issued with two 1-bit communication objects (communication object 189/190/192/193/195/196/198/199), or through one 8-bit communication object (communication object 188/191/194/197). In that case, a command value for both commands needs to be set in ETS.
When controls are enabled, the playing page will show a previous and next icon at the top and bottom of the screen.

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4.7 Info

The info page can display useful information which is available on the bus in many formats. The information is read only.

The page consists of a name and a value, optionally with units. The values can be 1-bit, 1-byte, 2-bytes or 14-byte data. For each page, a respective communication object is available.

For 1-bit data, a label for false and a label for true can be configured.

For numeric data, a variety of units are available.

If the text does not fit on the display, the last characters are discarded. This is why there are 2 font sizes, small and large.

In case there is not much information to show, the large font can be selected. When it is necessary to display more text, the small font can be selected.

Using the “info screen pointer”, an info page can be displayed without browsing through the menu. To use this feature, write a value (1 to 6) to the communication object to show page 1-6.
This feature is especially useful for high priority messages like alarms.

To avoid that the device goes into standby after timeout, it is possible to cyclically write to the menu pointer object to keep the screen awake.

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5. General functions

5.1.1 Displayed text

All the text fields of the device can be defined within ETS.
When an invalid character is filled in, the device will replace this character by a point (.).
If the device expects a text value input but it is empty, it will show 3 points (…).

5.1.2 Touch sensor calibration

The touch sensors need calibration to compensate for environment changes. At start-up, this calibration is performed automatically. Internal drift compensation will track slow variations.

Quick changes in the environment (installation or removal of front cover) will necessitate recalibration. In most cases automatic recalibration is performed without user intervention.

When manual recalibration is required, the user can force this by touching one or more buttons for 20 seconds. The device will restart and calibration is performed.

Another option is to use a communication object to trigger the recalibration.

While calibrating, the software build number will be shown on the display.

Remark:
Do not touch the front cover during recalibration because this can lead to insensitive sensors!

5.1.3 Cleaning object

The cleaning object allows the user to clean the surface of the device without activating the touch buttons.

As long as there is a 1 on the corresponding communication object, the screen shows the Basalte logo and the buttons are disabled.
To release the screen, write value 0 to the communication object. After the release, the display returns to the start-up screen.

5.1.4 State polling

At start-up, Deseo polls all relevant communication objects for their status. To reduce bus load, only 1 state is requested per second. All irrelevant communication objects are skipped.

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6. Internal thermostat

6.1 Functions (heating / cooling)

The internal room temperature controller can control the temperature of 1 room. The device supports 4 operating options:

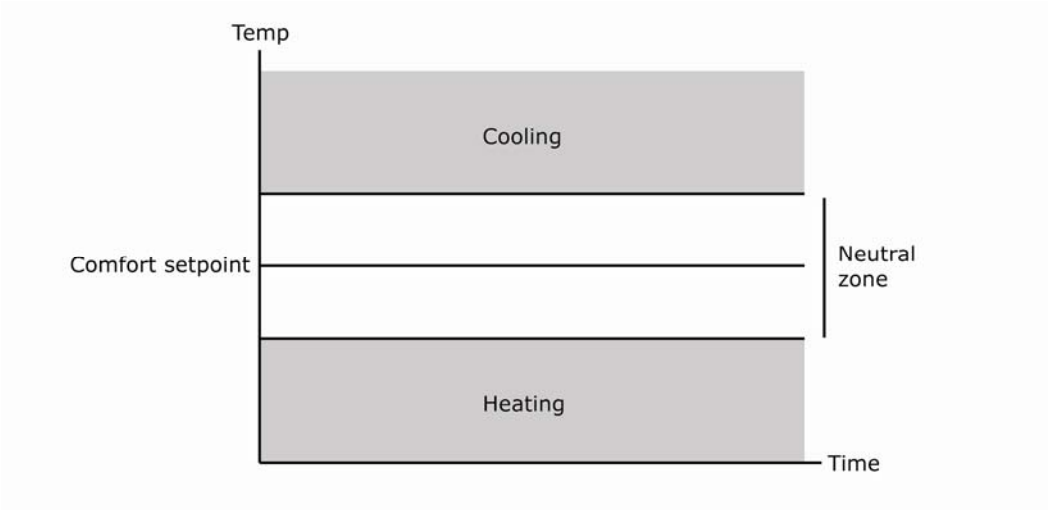
- Heating
- Cooling
- Heating and cooling manual
- Heating and cooling automatic

In automatic and manual mode, the actual mode is indicated with an icon in the temperature setpoint page.

In manual mode, the function is controlled by a communication object

In Automatic mode, the function is automatically set by the controller.
Heating mode is activated if the temperature falls below comfort setpoint – neutral zone / 2.
Cooling mode is activated if the temperature rises above comfort setpoint + neutral zone / 2.

This neutral zone can be set between 2 and 6.



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6.2 Modes

In each option, the controller can work in 4 modes. Each mode has a setpoint assigned to it.

- Comfort: To be activated when people are present in the room. The temperature is set to a comfortable value. This value is a reference for the calculation of all other setpoint values.
- Standby: To be activated when the room is not in use. The temperature is set to a standby value which allows energy saving.
- Economy: To be activated when a room is not in use for a longer period (e.g. at night). The temperature is set to a low value.
- Building protection: When a window is opened, normal operation is suspended. The temperature is kept between critical values, preventing freezing and/or overheating.

Only the first 3 modes can be selected by the user. “Protection” is a mode that will automatically be activated when a window is opened (if enabled).

6.2.1 Manual and automatic mode selection

The normal operating modes: “comfort”, “standby” and “economy” can be selected using the mode menu or by the according communication objects.

If enabled, the mode can be overridden to “protect” if a window is open.

The mode can also be automatically defined using a presence object.

6.2.1.1 Presence object

The presence object allows the user to automatically switch to the appropriate mode, depending on the presence in a room.
When the presence object is active, the mode is set to comfort.

When the presence object is inactive, the mode changes to standby or economy, depending on the settings.

6.2.1.2 Window object

When the window object is enabled, normal operation of the thermostat is suspended if the object is active. The mode automatically changes to Protect. The user cannot override this setting and can no longer manually set other temperature related parameters. If a temperature related screen was active, the active screen is left and the start screen appears.
In Building protect mode, only frost protection and/or overheating protection are active, keeping room temperature between critical values.

If the window object returns to low, the thermostat resumes normal operation with the previously active settings.

The window object can be configured to be activated on high or low.

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6.3 Setpoint

For each function there is a setpoint assigned to each mode.
The function “heating and cooling automatic” share the same setpoint for “heating comfort” and “cooling comfort”.
The function “heating and cooling manual” has 2 different setpoint values, one for “heating comfort” and one for “cooling comfort”.

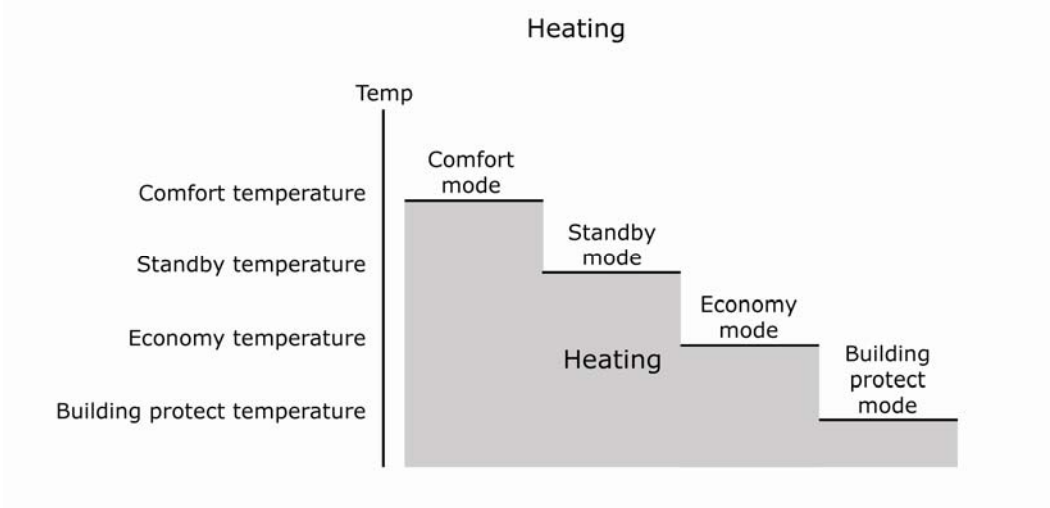
The setpoint for “standby” and “economy” mode are derived from the “comfort” setpoint.
This deviation, called an offset, for “standby” and “economy” can be set into the parameters of ETS. This deviation is kept constant against the changes to the comfort setpoint.

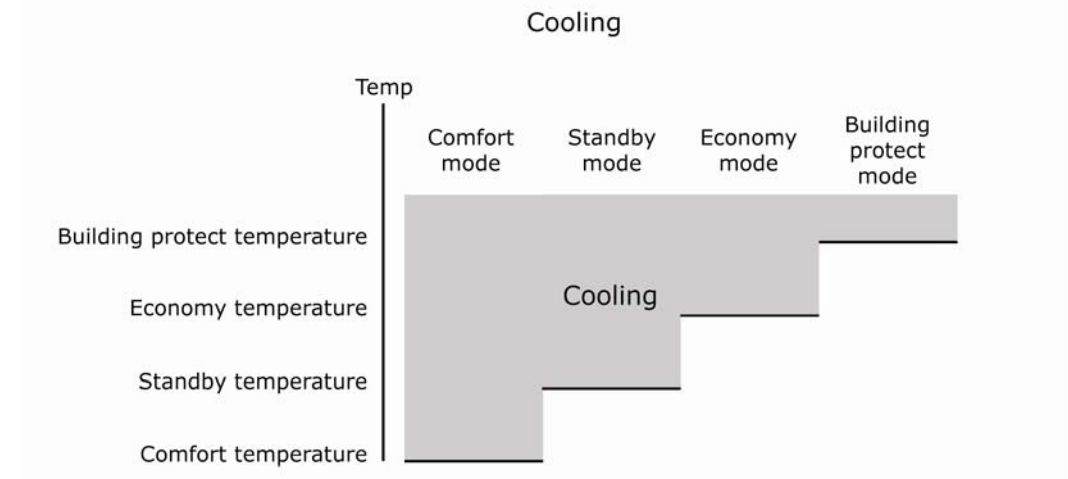
The setpoint for “building protect” is a fixed setpoint for the heating and cooling mode.

When external logic is used, there is only 1 setpoint, not linked to mode or function.

When the up or down button is pressed, the setpoint increases/decreases in steps of 0.5°C or 1°F or to the nearest 0.5°C of 1°F step.

When the up or down key is held for longer than 1.5 seconds, the setpoint will increase/decrease every 0.5 seconds.





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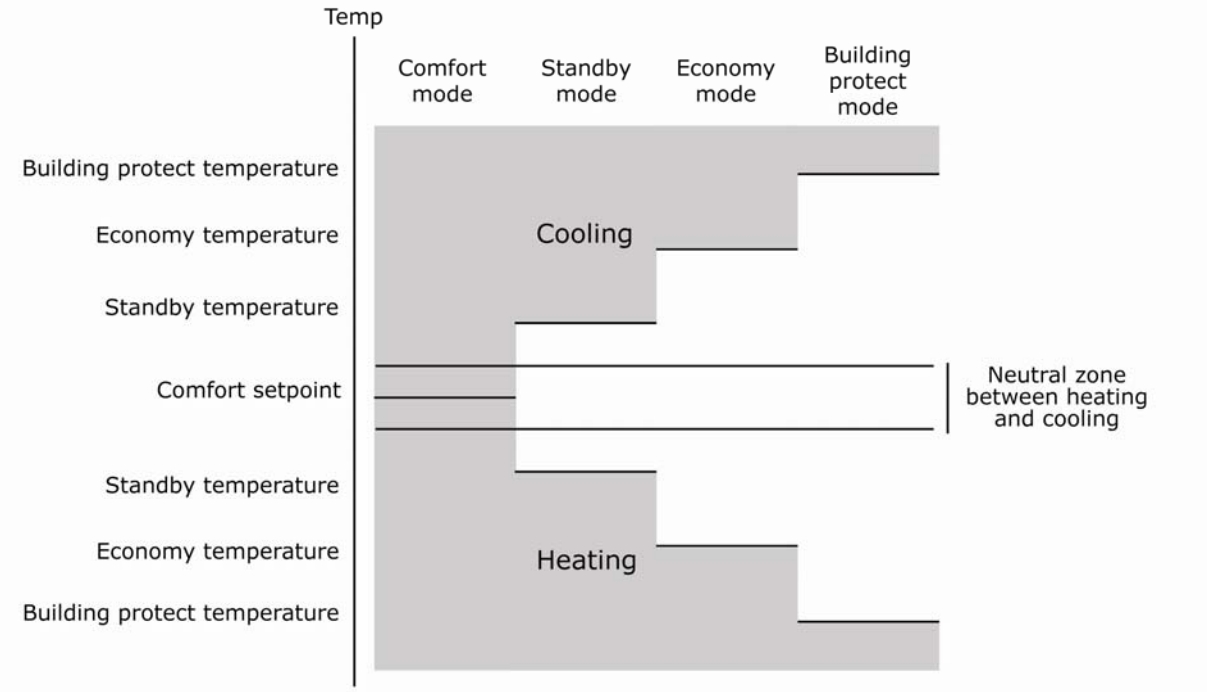
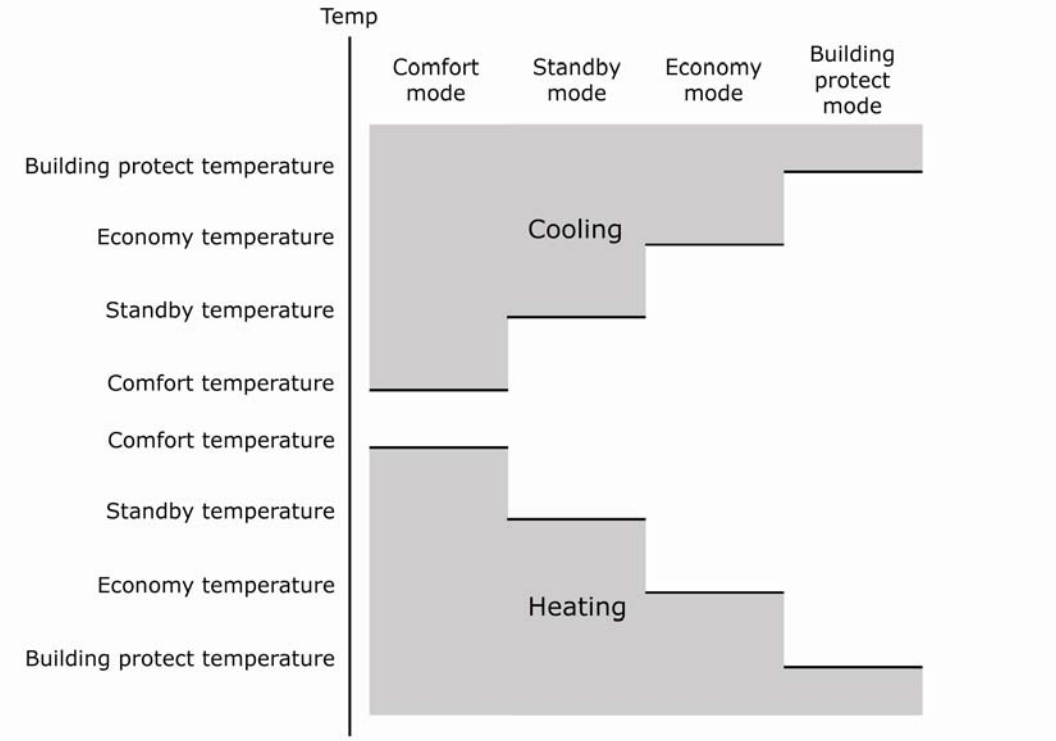
Heating and Cooling (Automatic)



Heating and Cooling (Manual)



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6.4 Temperature control method

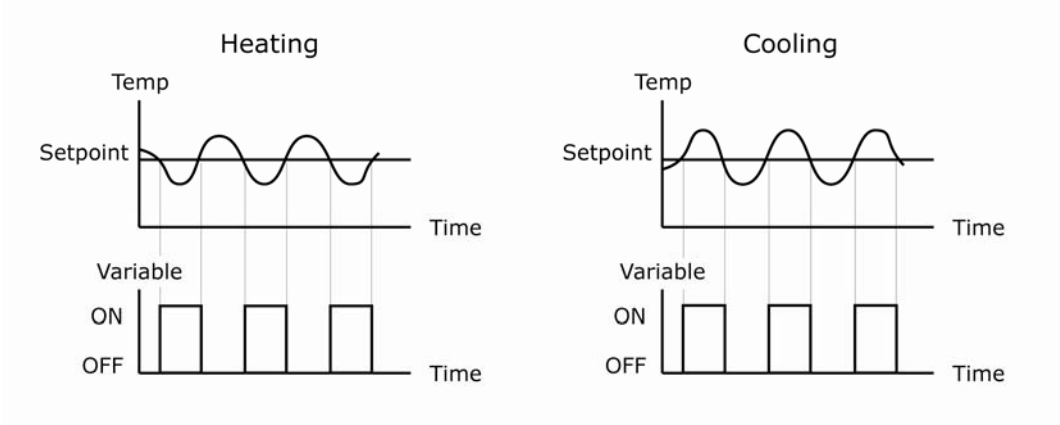
6.4.1 2-point control method

This is a very simple controller method, suitable for slow responding cooling and heating systems. It addresses the actuator with 1 bit output variable. No proportional value is calculated.

This type of method results is a significant temperature fluctuation.

For heating:
When the temperature rises above the setpoint, the actuator is deactivated.
When the temperature falls below setpoint – hysteresis, the actuator is activated.
The hysteresis is a value that can be set between 10 and 60.

For cooling:
When the temperature falls below above the setpoint, the actuator is deactivated.
When the temperature rises below setpoint + hysteresis, the actuator is activated.
The hysteresis is a value that can be set between 10 and 60.



6.4.2 PI control

PI control is a feedback control method that combines proportional and integral actions.

The proportional action provides smooth control without overshoot or oscillation. This action's output is proportional to the temperature deviation. When the temperature deviation is equal to the proportional band, the output is 100%.

The integral action's output is proportional to the time over which the deviation occurred. This action output reaches the same level as the proportional action after a specified time: the reset time.

The integral action automatically corrects offset, created by the proportional action.
To avoid windup, the I-action is limited.

The proportional band and reset time are adjustable in ETS.

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6.5 Temperature control output

In case of a 2-point controller, there is a single 1-bit output for the actuator. No parameterization is required.

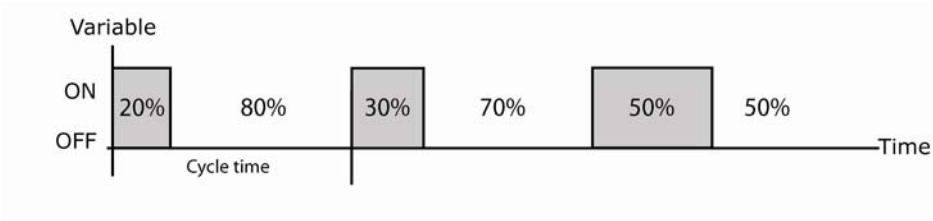
In case of a PI controller, the controller output type can be set to PWM or Continuous.

6.5.1 PWM

A PWM output uses a single 1 bit output. By adjusting the pulse / pause ratio, averaged over time, it behaves like a proportional output.

Output values smaller than 10% are discarded and values exceeding 90% result in pulse / pause ratio of 100%.
In this regard, please keep in mind that the valve needs a certain time to open or close.
The time to open or close the valve should be at least 10% of the cycle time.

The PWM period (duration of 1 pulse + 1 pause) can be parameterized.



When the PWM output is 0%, only the falling edge is sent every cycle.
When the PWM output is 100%, only the rising edge is sent every cycle.

6.5.2 Continuous

A continuous output uses a 1-byte unsigned output and directly reflects the proportional output of the PI controller. The output value is updated every 20 seconds or when de value is changed by more than 5%.

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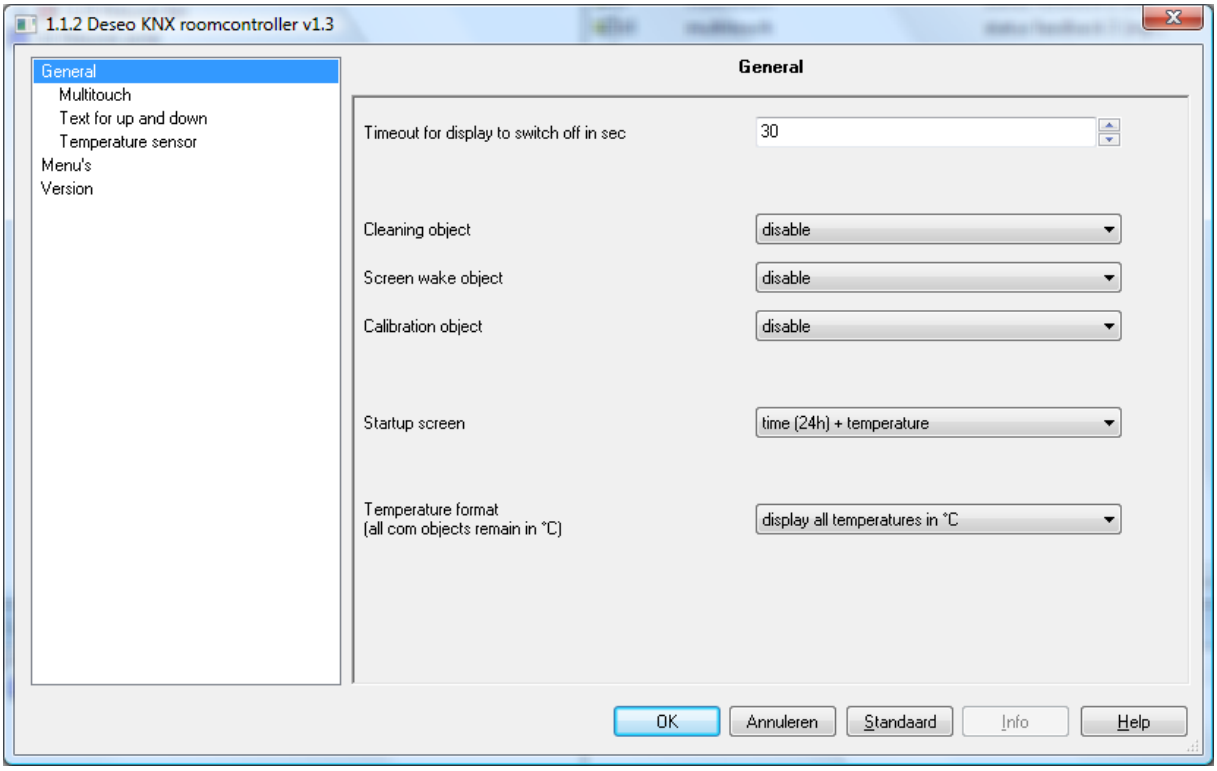
7. Configuration of parameters

7.1 General



Parameter	Description
Timeout for display to switch off in sec	This parameter sets the time that the display will remain active after the last use. Settings: Range: 10 – 120 seconds (default: 30 seconds)
Cleaning object	This parameter allows to enable/disable the touch sensors with a communication object. Settings: Disable (default) Enable Communication objects: 0: cleaning object

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Screen wake object	This parameter allows waking the screen with an external communication object. Settings: Enable Disable (default) Communication objects: 1: screen wake Behaviour: The display becomes active when 0 to 1 transition is received on the according communication object. This is a similar behaviour of touching a touch sensor when the device is into standby.
Calibration object	This parameter allows calibrating the device with an external communication object. Settings: Enable Disable (default) Communication objects: 2: calibration Behaviour: The touch sensors of the device start to calibrate on a rising edge of the communication object. While calibrating, the display shows the status of the calibration process and the software build number into the device.
Start-up screen	This parameter allows to define the start screen text Settings: Disable (default) Time (24h) + temperature Time (12h) + temperature Time (24h) + date (dd.mm.yyyy) Time (24h) + date (mm.dd.yyyy) Time (24h) + date (yyyy.mm.dd) Time (12h) + date (mm.dd.yyyy) Time (12h) + date (dd.mm.yyyy) Time (12h) + date (yyyy.mm.dd) Text + temperature (fixed text + temperature) Time (24h) + 14 byte object (time + variable text) Time (12h) + 14 byte object (time + variable text) Text + 14 byte object (fixed text + variable text) Communication objects: 185: time 186: date 187: start screen (text input)
Temperature format	This parameter allows changing the temperature format Settings: Display all temperature in °C (default) Display all temperature in °F

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7.1.1 Multitouch

Parameter	Description
Multitouch function	This parameter enables or disables the multitouch function. To achieve a toggle function, the status of the light circuits in the room can be fed back to the status feedback objects. Settings: Enable Disable (default) Communication objects: 8-15: multitouch – status feedback n (input) Behaviour: When one or more feedback objects are active, the multitouch will send the “off” command. When all feedback objects are inactive, the multitouch will send the “on” command.
Mode	This parameter sets the mode of text which has to be displayed when a multitouch occurs. Settings: No text display Text display (default)
Text ‘on’	This parameter sets the displayed text for the ‘on’ command of the multitouch (default: room on).
Text ‘off’	This parameter sets the displayed text for the ‘off’ command of the multitouch (default: room off).
Output	This parameter defines the “on” and “off” command of the multitouch. Settings: 1 bit on/off(default) Scene on / scene off Scene on / all off Remark: Scene numbers between 1 and 64 Communication objects: 4: multitouch - on/off (output) 5: multitouch - scene number (output) 6: multitouch - all off (output)
Scene number ‘on’	This parameter defines the scene number for scene on. Settings: Value between 1 and 64
Scene number ‘off’	This parameter defines the scene number for scene off. Settings: Value between 1 and 64

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Scene blocking object	This parameter enables or disables the additional scene blocking object corresponding with the multitouch output. Settings: Blocking (default) No blocking Communication objects: 7: multitouch - blocking object (output) Behaviour: The blocking object is set to 1 as long as the scene is active.
Multitouch external trigger object	This parameter enables or disables the multitouch external trigger object. Settings: Enable (default) Disable Communication objects: 200: multitouch - external trigger (input) Behaviour: This function makes it possible to trigger the multitouch command from an external device, for example from a Sentido. The rising edge of the communication object triggers the multitouch command.

7.1.2 Text for up and down

Parameter	Description
Scene save	This parameter sets the text displayed when saving a scene.
Switch object up	This parameter sets the text displayed as up command on a light switching page.
Switch object down	This parameter sets the text displayed as down command on a light switching page.
Dim object up	This parameter sets the text displayed as up command on a light dimming page.
Dim object down	This parameter sets the text displayed as down command on a light dimming page.
Motor object up	This parameter sets the text displayed as up command on a motor page.
Motor object down	This parameter sets the text displayed as down command on a motor page.

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7.1.3 Temperature sensor

Parameter	Description
Compensation for int. temperature sensor	This parameter makes it possible to compensate the measured temperature. Settings: From -5°C to +5°C with steps of 0.5°C Behaviour: The temperature shown on the device or set on the bus, is the compensated temperature.
Send internal temperature value (°C)	With this parameter, it is possible to enable or disable to send the temperature on the bus. When enabled, there are 2 ways to send the temperature on the bus, cyclic by time or when on a change of the temperature. Settings: Disable (default) Cyclic Delta temp Communication objects: 92: temperature - internal value (output) *Remark:* *Please consider a delay of about 20 minutes until you have the correct value.* *After 20 minutes you can compare the measured value with a measurement in the room with a digital temperature sensor to get the compensation value.*
Use int./ ext. temperature sensor	With this parameter it is possible to set the way of measuring the temperature. The device can use the internal temperature sensor or an external temperature sensor from another device. It is also possible to combine the internal and external temperature sensor. (This can be used e.g. to measure the average temperature of the Deseo and another device) Settings: Internal sensor (default) 80% internal sensor + 20% external sensor 60% internal sensor + 20% external sensor 50% internal sensor + 20% external sensor 40% internal sensor + 20% external sensor 20% internal sensor + 20% external sensor external sensor Communication objects: 92: temperature - internal value (output) 94: temperature - external sensor (input)

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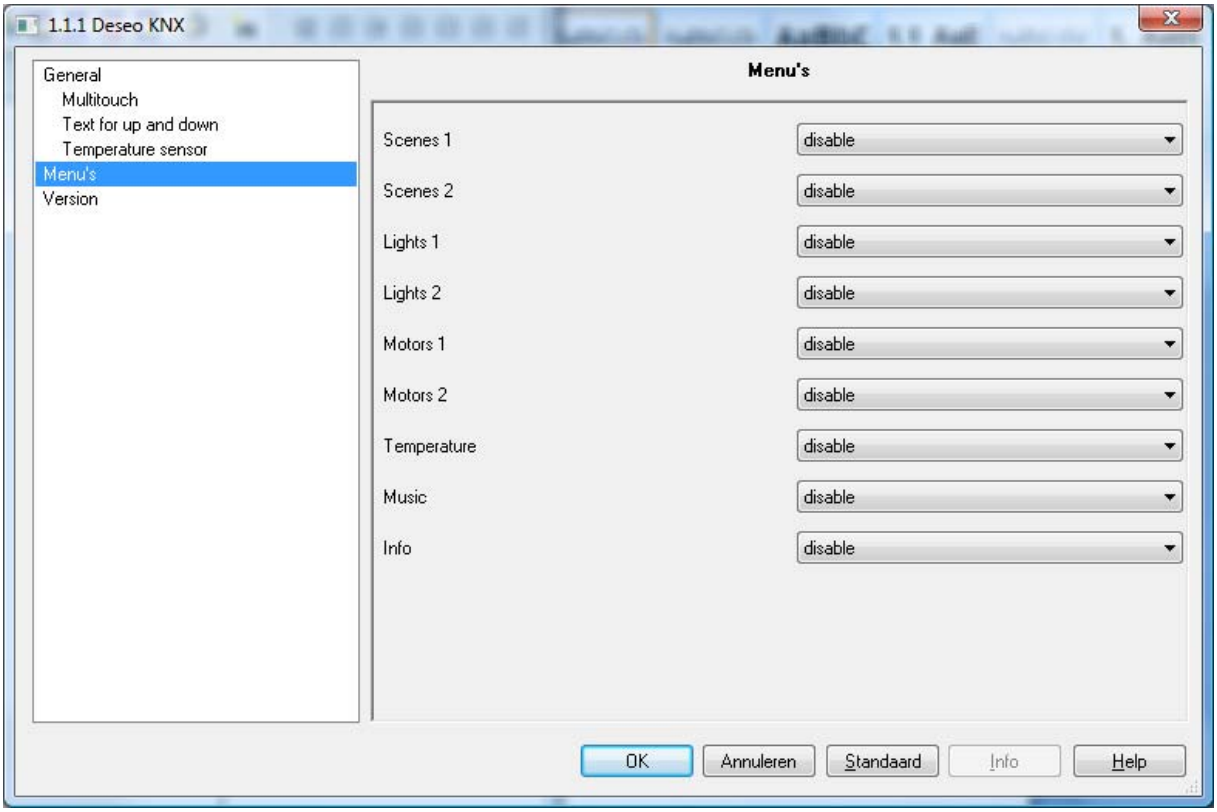
7.2 Menu's



Parameter	Description
General	On the page with menus, it is possible to enable or disable each menu page.
Scenes 1	This parameter enables or disables the 'Scenes 1' pages. Settings: Enable Disable (default) Communication objects: 16: Scene 1 - scene number (output) 18: Scene 1 - blocking object(output)
Scenes 2	This parameter enables or disables the 'Scenes 2' pages. Settings: Enable Disable (default) Communication objects: 17: Scene 2 - scene number (output) 19: Scene 2 - blocking object (output)

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Lights 1	This parameter enables or disables the ‘Lights 1’ pages. Settings: Enable Disable (default)
Lights 2	This parameter enables or disables the ’Lights 2’ pages. Settings: Enable Disable (default)
Motors 1	This parameter enables or disables the ‘Motors 1’ pages. Settings: Enable Disable (default)
Motors 2	This parameter enables or disables the ‘Motors 2’ pages. Settings: Enable Disable (default)
Temperature	This parameter enables or disables the ‘Temperature’ pages. Settings: Enable Disable (default)
Music	This parameter enables or disables the ‘Music’ pages. Settings: Enable Disable (default)
Info	This parameter enables or disables the ‘Info’ pages. Settings: Enable Disable (default) Behaviour: These info pages only can show the data but cannot control anything.

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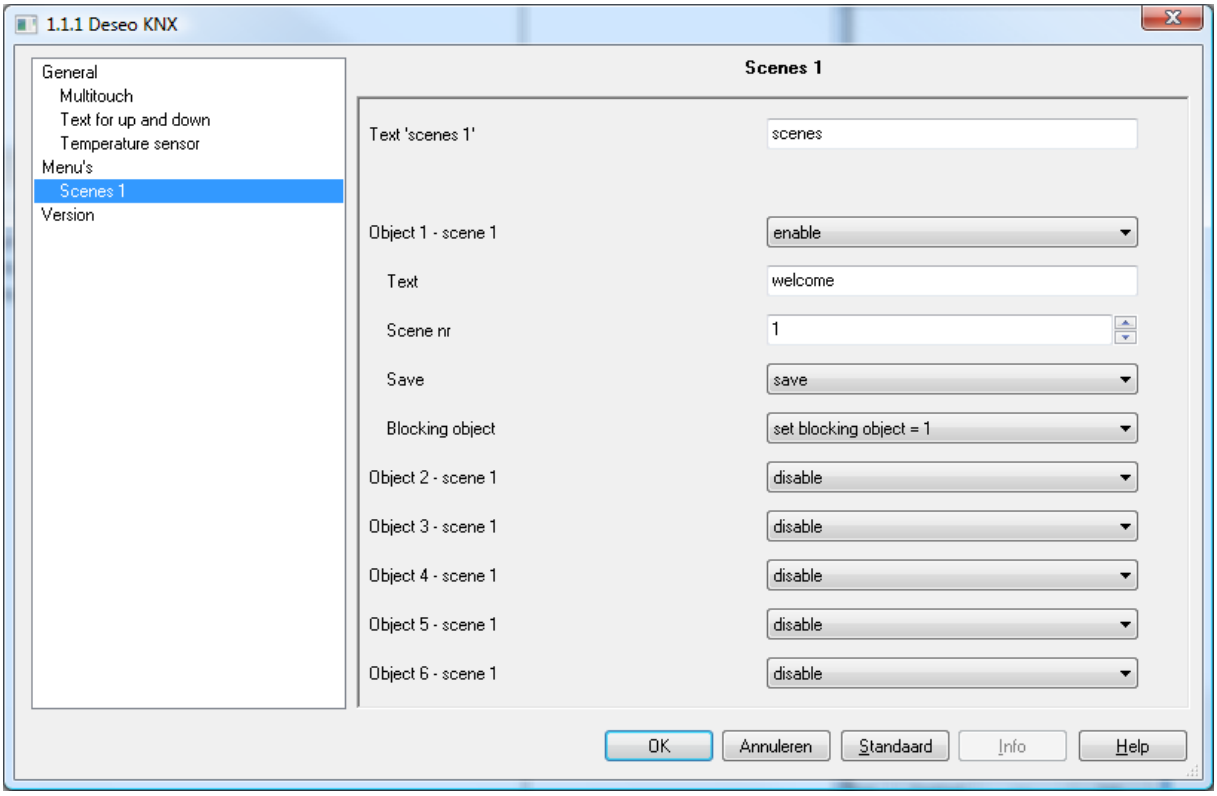
7.2.1 Scenes



Parameter	Description
Text 'scenes n'	The name of the main menu items of this page can be set with this parameter.
Object n – scene n	This parameter enables or disables the scene object. It is possible to control 2x 6 scenes. For each main menu item there are 6 scenes. These 6 scenes use the same communication object. <u>Communication objects:</u> 16: Scene 1 - scene number (output) 17: Scene 2 - scene number (output) 18: Scene 1 - blocking object (output) 19: Scene 2 - blocking object (output)
Text	This parameter sets the displayed text for each scene object.
Scene nr	The scene number that has to be sent for the selected scene can be set with this parameter. <u>Settings:</u> Value between 1 and 64

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Save	This parameter enables or disables the scene save function. Settings: Save No save Behaviour: If this function is enabled, the scene will be saved if the user presses the upper touch sensor for at least 3 seconds.
Blocking object	This parameter enables or disables the blocking object. Settings: Doesn't influence blocking object Set blocking object = 1 (default) Set blocking object = 0 Communication objects: 18: scene 1 - blocking object (output) 19: Scene 2 - blocking object (output) Behaviour: The blocking object is sent out simultaneously with the scene number.

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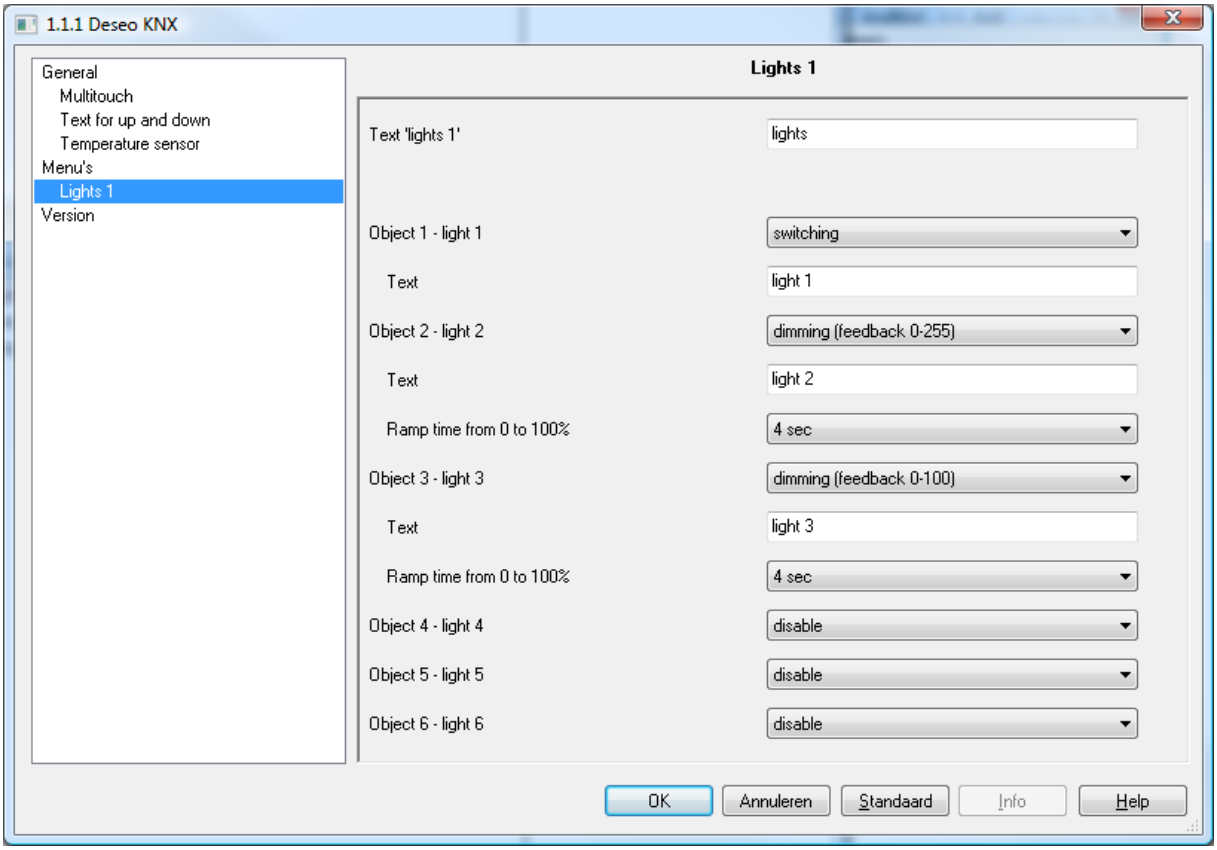
7.2.2 Lights



Parameter	Description
Text 'lights n'	The name of the main menu items of this page can be set with this parameter.
Object n – light n	This parameter enables or disables the light objects. It is possible to control 12 different light objects. Each light object can be switching or dimming. <u>Settings:</u> Disable Switching Dimming (feedback 0-100) Dimming (feedback 0-255) <u>Communication objects:</u> 20-31: light n – on/off (output) 32-43: light n – status feedback (input) 44-55: light n – dim up/down (output) 56-67: light n – value feedback (input)
Text	This parameter sets the displayed text for each light object.

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Ramp time from 0 to 100%	This parameter sets the time that the slider needs to go from the minimum to the maximum (off too completely on). This parameter is only available when the light object is dimmed. Settings: From 2 sec to 10 sec with steps of 0.5 sec (default 4 sec)

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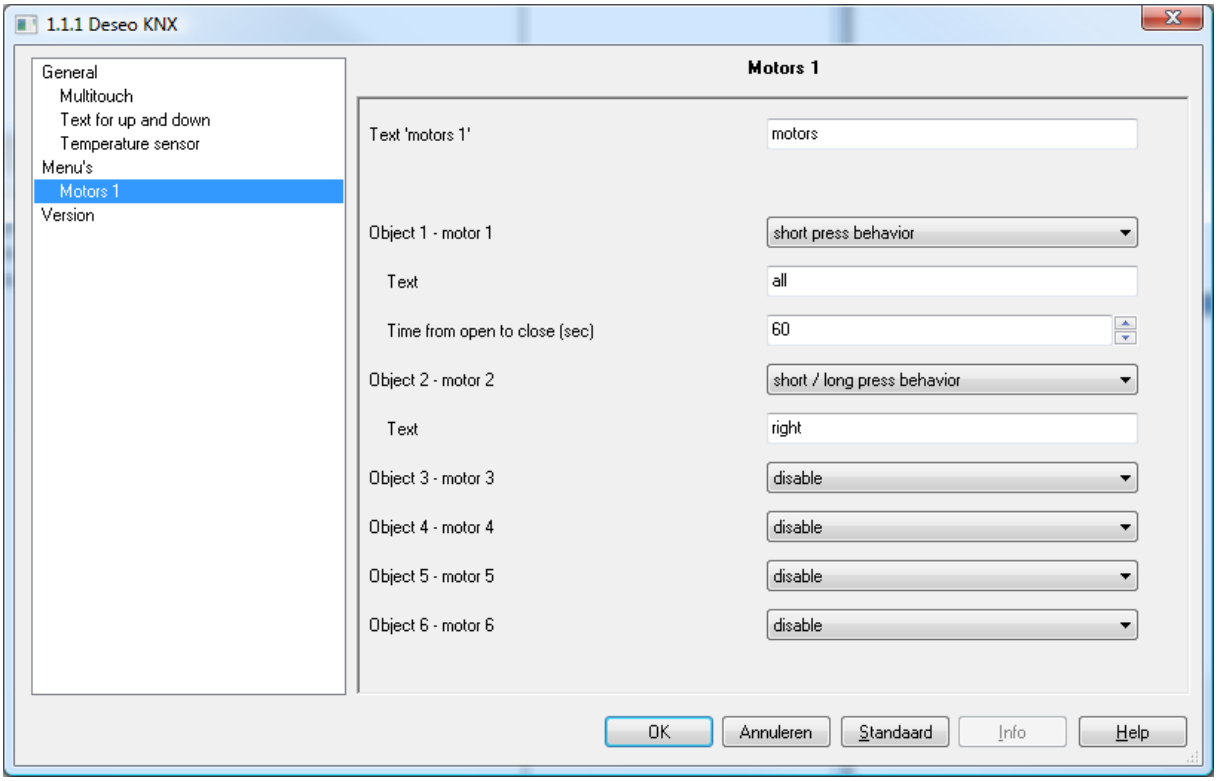
7.2.3 Motors



Parameter	Description
Text 'motors n'	The name of the main menu items of this page can be set with this parameter.
Object n – motor n	This parameter enables or disables the motor objects. Settings: Disable Short / long press behaviour Short press behaviour Communication objects: 68-79: motor n – open/close (output) 80-91: motor n – open/close step (output)
Text	This parameter sets the displayed text for each motor object.
Time from open to close (sec):	This parameter sets the time that the motor needs to go from the minimum to the maximum. This parameter is only available when the option 'short press behaviour' is selected. Settings: Value between 10 and 240 seconds (default 60)

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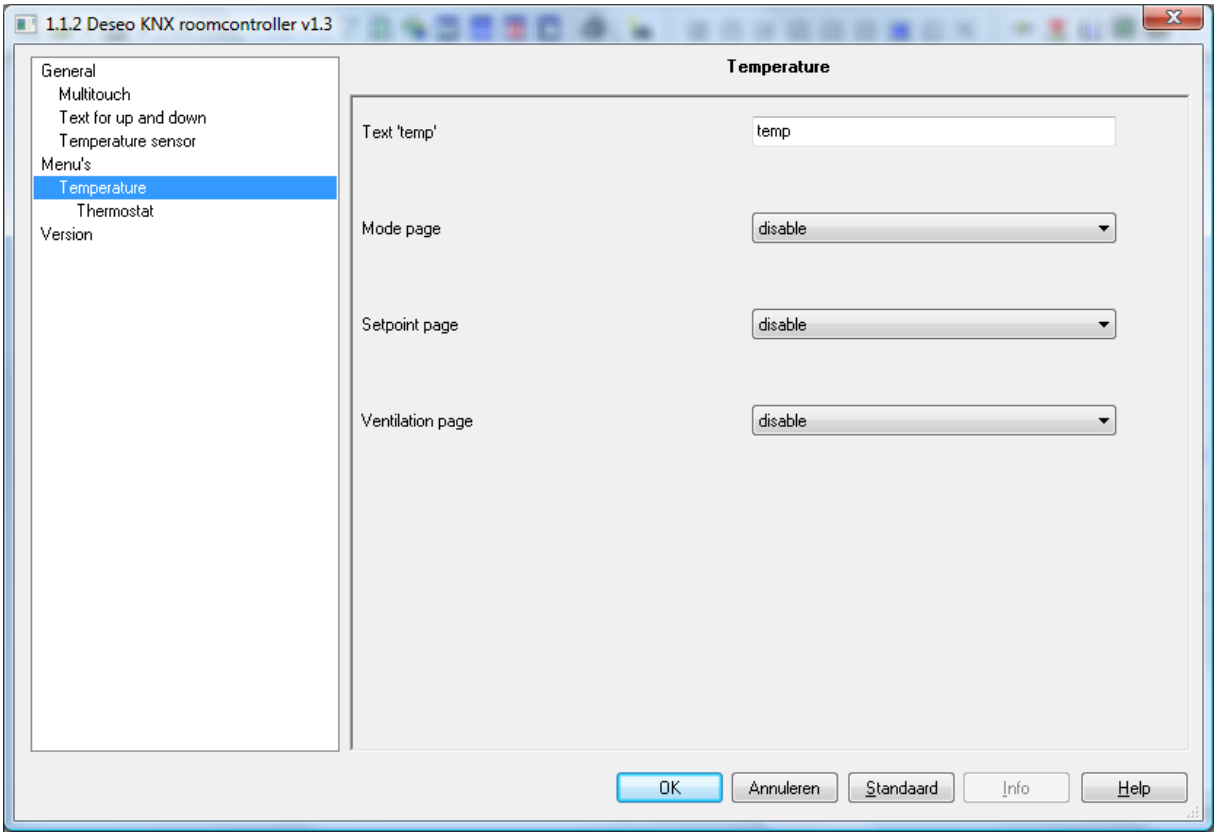
7.2.4 Temperature



Parameter	Description
Text 'temp'	The name of the main menu items of this page can be set with this parameter.
Mode page	This parameter enables or disables the mode page. Settings: Enable Disable Communication objects: 99: thermostat – mode (input) 100: thermostat – mode comfort (input) 101: thermostat – mode standby (input) 102: thermostat – mode economy (input) 103: thermostat – mode protected (input) 104: thermostat – mode (output) 105: thermostat – mode comfort (output) 106: thermostat – mode standby (output) 107: thermostat – mode economy (output) 108: thermostat – mode protected (output)

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Setpoint page	This parameter enables or disables the setpoint page. Settings: Enable Disable Communication objects: 95: thermostat – setpoint (comfort) (input) 96: thermostat – setpoint (comfort) (output) 97: thermostat – actual setpoint (output)
Ventilation page	This parameter enables or disables the ventilation page. Settings: Enable Disable Communication objects: 121: ventilation – mode high (output) 122: ventilation – mode mid (output) 123: ventilation – mode low (output) 124: ventilation – mode high (input) 125: ventilation – mode mid (input) 126: ventilation – mode low (input)

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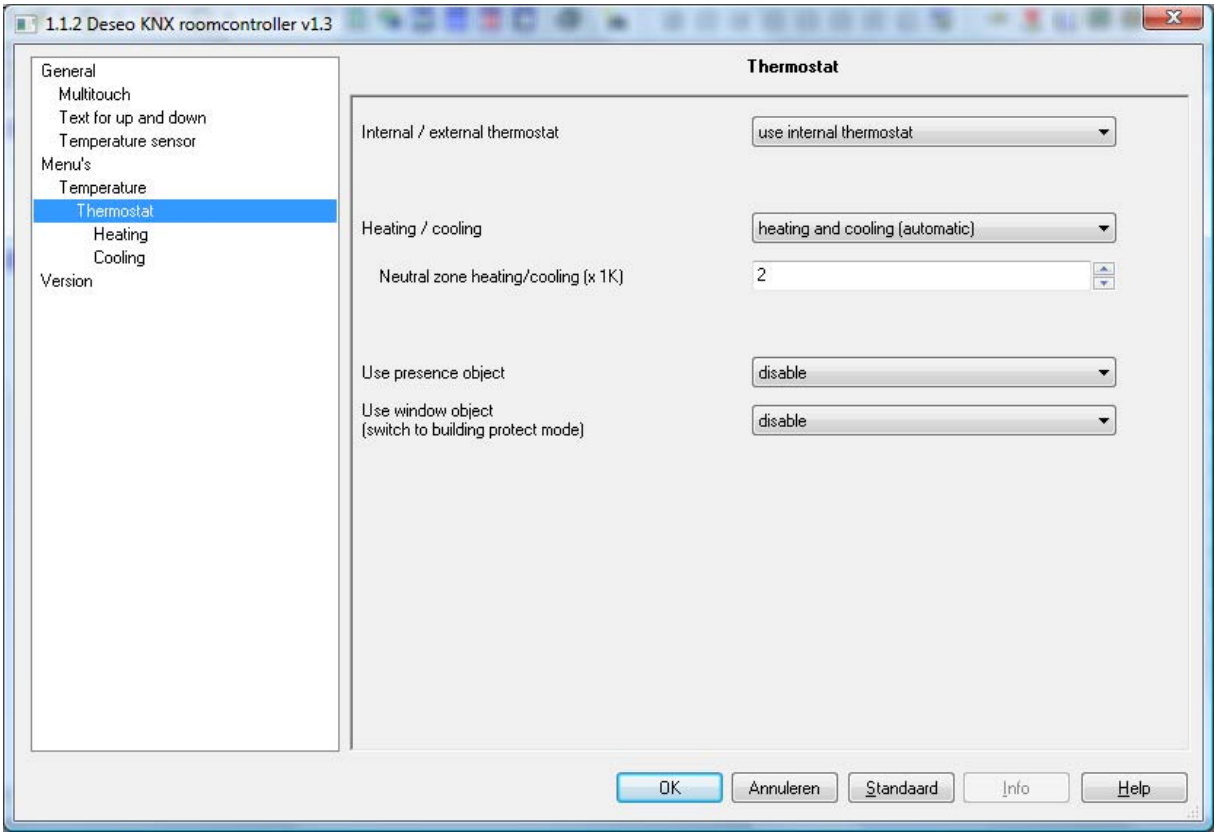
7.2.4.1 Thermostat



Parameter	Description
Internal / external thermostat	This parameter sets the type of logic to control the thermostat (internal or external logic). Settings: Use internal thermostat Use external thermostat Communication objects: 93: thermostat – setpoint (input) 95: thermostat – setpoint (comfort)(input) 96: thermostat – setpoint (comfort)(output) 97: thermostat – actual setpoint (output) 99: thermostat – mode (input) 100: thermostat – mode - comfort (input) 101: thermostat – mode - standby (input) 102: thermostat – mode - economy (input) 103: thermostat – mode - protected (input)
Default setpoint (°C)	This parameter sets the value of the default setpoint. This setpoint is used at start-up value for the heating/cooling page. Remark: When the device restarts the default setpoint will be back this value. The device does not save the last value.

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Heating / cooling	This parameter sets the type of the thermostat. Settings: Heating Cooling Heating and cooling (manual) Heating and cooling (automatic) Communication objects: 110: thermostat – cooling/heating mode (input) 111: thermostat – heating mode (output) 112: thermostat – cooling mode (output) 113: thermostat – heating active (output) 114: thermostat – cooling active (output)
Neutral zone heating/cooling (x1K)	This parameter sets the neutral zone for heating/cooling. Settings: Value between 2 and 6
Use presence object	This parameter enables or disables the presence object. Settings: Disable Switch between comfort and standby Switch between comfort and economy Communication object: 98: thermostat – presence object (input) Behaviour: The presence object allows the user to automatically switch to the appropriate mode, depending on the presence in a room.
Use window object (switch to building protect mode)	This parameter enables or disables the window object. Settings: Disable Open =1 Open = 0 Communication object: 109: thermostat – window open (input) Behaviour: On receiving a 1 on this communication object, the heating will go into the 'building protection' mode.

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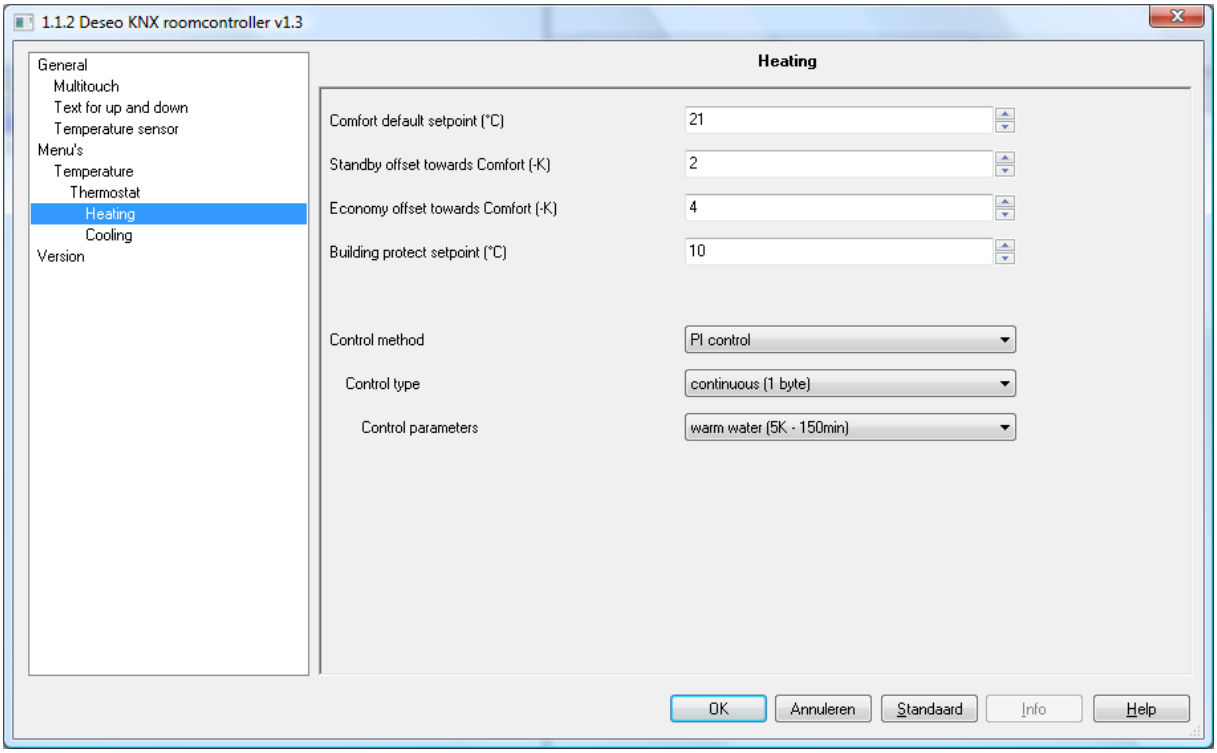
Heating



Parameter	Description
Comfort default setpoint (°C)	This parameter sets the default comfort setpoint. Settings: Value between 16 and 26
Standby offset towards Comfort (-K)	This parameter sets the offset for the standby setpoint towards the comfort setpoint into degrees Kelvin. Settings: Value between 1 and 6
Economy offset towards Comfort (-K)	This parameter sets the offset for the economy setpoint towards the comfort setpoint into degrees Kelvin. Settings: Value between 1 and 6
Building protect setpoint (°C)	This parameter sets the offset for the building protect setpoint towards the comfort setpoint into degrees Kelvin. Settings: Value between 5 and 10
Control method	This parameter sets the type of control method for the heating. Settings: 2 point control PI control

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Hysteresis (x 0.1 K)	This parameter sets the hysteresis value into degrees Kelvin. Settings: Value between 10 and 60
Control type	This parameter sets the type of control system for the heating system. Settings: Continuous (1 byte) PWM (1 bit) Communication objects: 115: thermostat – heating 2 point (output) 116: thermostat – heating PWM (output) 117: thermostat – heating continuous (output)
PWM cycle time (min)	This parameter sets the time for the PWM cycle into minutes. Settings: Value between 5 and 40
Control parameters	This parameter sets the type for the heating system. Settings: Warm water (5K – 150min) Floor heating (5K – 240min) Electric heating (4K – 100min) Blow convector (4K – 90min) A/C split (4K – 90min) Customised parameters
Proportional band (x0.1 K)	This parameter sets the band in which the output is proportional to the deviation between the actual temperature and the setpoint value. Settings: Value between 10 and 50
Integral time (min)	This parameter sets the time required to obtain the same output variable as for the proportional action when using only an integral action. Settings: Value between 5 and 240

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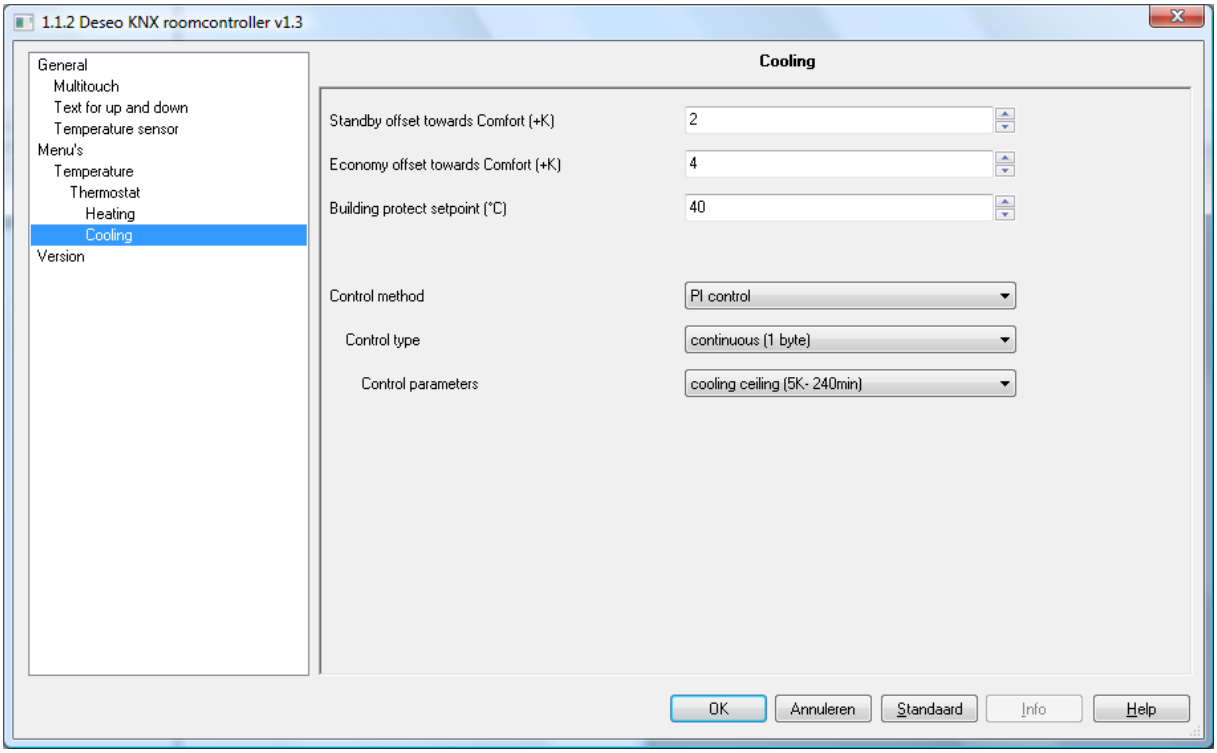
Cooling



Parameter	Description
Comfort default setpoint (°C)	This parameter sets the default comfort setpoint. Settings: Value between 16 and 26
Standby offset towards Comfort (+K)	This parameter sets the offset for the standby setpoint towards the comfort setpoint into degrees Kelvin. Settings: Value between 1 and 6
Economy offset towards Comfort (+K)	This parameter sets the offset for the economy setpoint towards the comfort setpoint into degrees Kelvin. Settings: Value between 1 and 6
Building protect setpoint (°C)	This parameter sets the offset for the building protect setpoint towards the comfort setpoint into degrees Kelvin. Settings: Value between 30 and 45
Control method	This parameter sets the type of control method for the cooling. Settings: 2 point control PI control

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Hysteresis (x 0.1 K)	This parameter sets the hysteresis value into degrees Kelvin. Settings: Value between 10 and 60
Control type	This parameter sets the type of control system for the cooling system. Settings: Continuous (1 byte) PWM (1 bit) Communication objects: 118: thermostat – cooling 2 point (output) 119: thermostat – cooling PWM (output) 120: thermostat – cooling continuous (output)
PWM cycle time (min)	This parameter sets the time for the PWM cycle into minutes. Settings: Value between 5 and 40
Control parameters	This parameter sets the type for the cooling system. Settings: Cooling ceiling (5K – 240min) A/C split (4K – 90min) Customised parameters
Proportional band (x0.1 K)	This parameter sets the band in which the output is proportional to the deviation between the actual temperature and the setpoint value. Settings: Value between 10 and 50
Integral time (min)	This parameter sets the time required to obtain the same output variable as for the proportional action when using only an integral action. Settings: Value between 5 and 240

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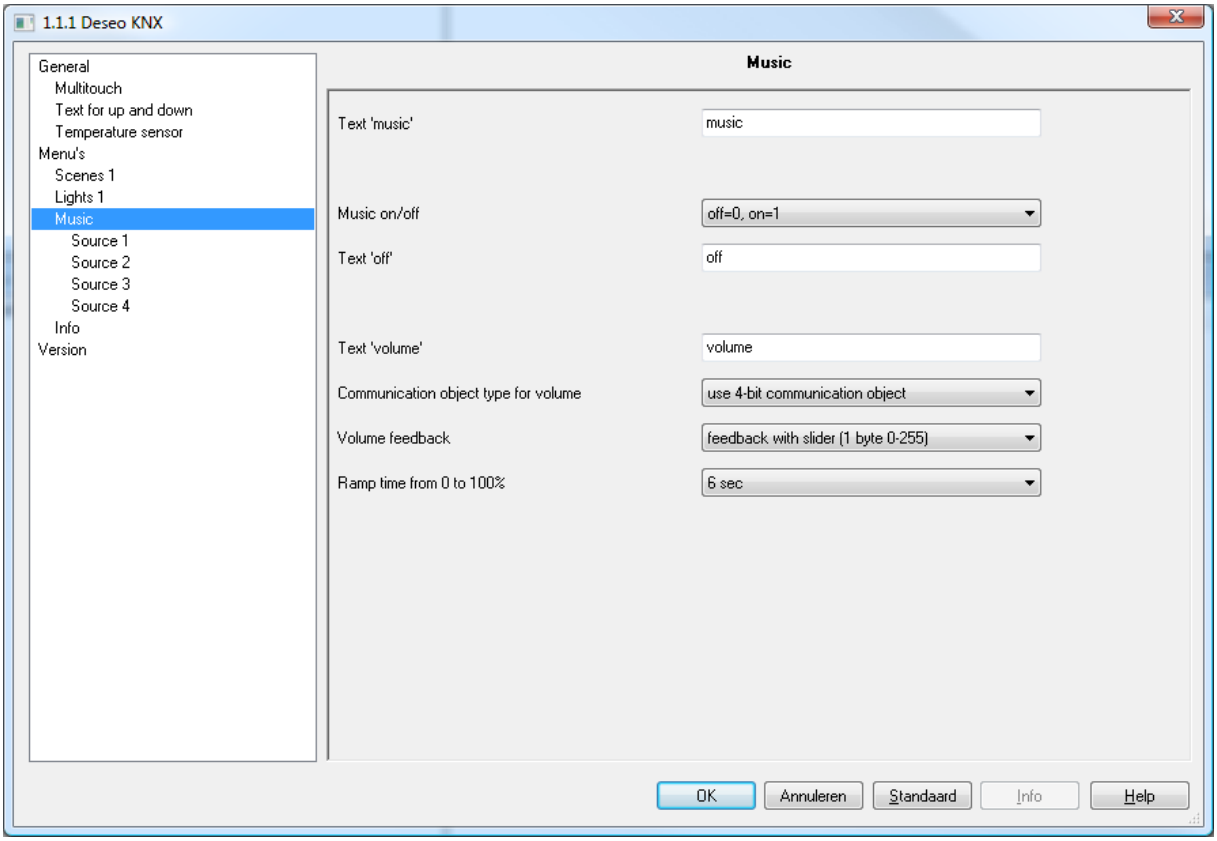
7.2.5 Music



Parameter	Description
Text 'music'	The name of the main menu items of this page can be set with this parameter.
Music on/off	This parameter sets the command to turn the music system on and off. Settings: Off=0, on=1 (default) Off=0, on=1, when off send 'source 1' second later Off=1 Communication objects: 127: music -on/off (output) 128: music -off (output) 129: music -on/off feedback (input) 130: music -source value (output) 131:music -source value feedback (input) 136-139: music - source x feedback (input) 148: music -volume up (output) 149: music - volume down (output) 150:music - volume up/down (output) 153-160: music source x – playing text line x (output)
Text 'off'	The displayed text for turning off the music can be set with this parameter (default: off).

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Text 'Volume'	The displayed text for the volume control can be set with this parameter (default: volume).
Communication object type for volume	This parameter defines the data type for volume control. The volume can be controlled by a 4-bit communication object or by 2 different 1-bit communication objects. Settings: Use 4-bit communication object (default) Use two 1-bit communication objects (up/down) Communication objects: 148: music -volume up (output) 149: music - volume down (output) 150:music - volume up/down (output)
Volume feedback	This parameter sets the feedback type of the volume system. Settings: No feedback Feedback with slider (1 byte 0-100) Feedback with slider (1byte 0-255) Feedback with 14 byte object Communication objects: 151: music - volume feedback (input) 152: music - volume feedback (input) Behaviour: Communication object 151 needs a 1 byte value to fill the slider on the screen. Communication object 152 needs a 14 byte value where the music system can send his value to. This value will be displayed.
Ramp time from 0 to 100%	This parameter sets the time that the slider needs to go from minimum to maximum (off too completely on). This is only available if the option 'feedback with slider' is selected. Settings: From 3 sec to 12 sec with steps of 0.5 sec (default 5 sec) Communication objects: 151: music - volume feedback (input) Behaviour: The feedback value fills the slider.
Source n	This parameter enables or disables the source. Settings: Enable Disable Communication objects: 132 – 135: music - source n (output)
Text 'source n'	This parameter sets the displayed text for the source.

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1 byte value	This parameter sets the value that the music system will send when this source is selected. Settings: Value between 0 and 255 (default 1) Behaviour: This object will send a value between 0 and 255 to control the sources.
Preset control page	This parameter enables or disables the preset pages. Settings: Enable Disable (default) Communication objects: 140-143: music source n – preset (output)
Preset feedback object	This parameter enables or disables the preset feedback object to update the preset into the Deseo. Settings: Enable Disable Communication objects: 144-147: music source n – preset feedback (input) Behaviour: This object receives a value between 0 and 255 which correspond with the preset numbers of the selected source.
Text 'preset n'	This parameter sets the displayed text for each preset. Behaviour: When nothing filled out in the text field, the preset will be disabled.
Preset n (1 byte value)	This parameter sets the value for the according preset. Settings: Value between 0 and 255 (default 1) Behaviour: This object will send a value between 0 and 255 to control the presets for the selected preset.

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Playing page	This parameter enables or disables the playing page and defines the type how the information will be displayed. Settings: Disable 1 text line (14 byte) 2 text lines (14 bytes) 2 text lines (14 byte) + control (1 bit) 2 text lines (14 byte) + control (1 byte) Communication objects: 188/191/194/197: music source x – command (output) 189/192/195/198: music source x – previous track (output) 190/193/196/199: music source x – next track (output)
Text 'playing'	This parameter sets the title of the playing page.
Previous command (1 byte value)	This parameter sets the value for the previous command. Only available when the option '2 text lines (14 bytes) + control (1 byte)' is selected into the 'Playing page' parameter. Settings: Value between 0 and 255
Next command (1 byte value)	This parameter sets the value for the next command. Only available when the option '2 text lines (14 bytes) + control (1 byte)' is selected into the 'Playing page' parameter. Settings: Value between 0 and 255

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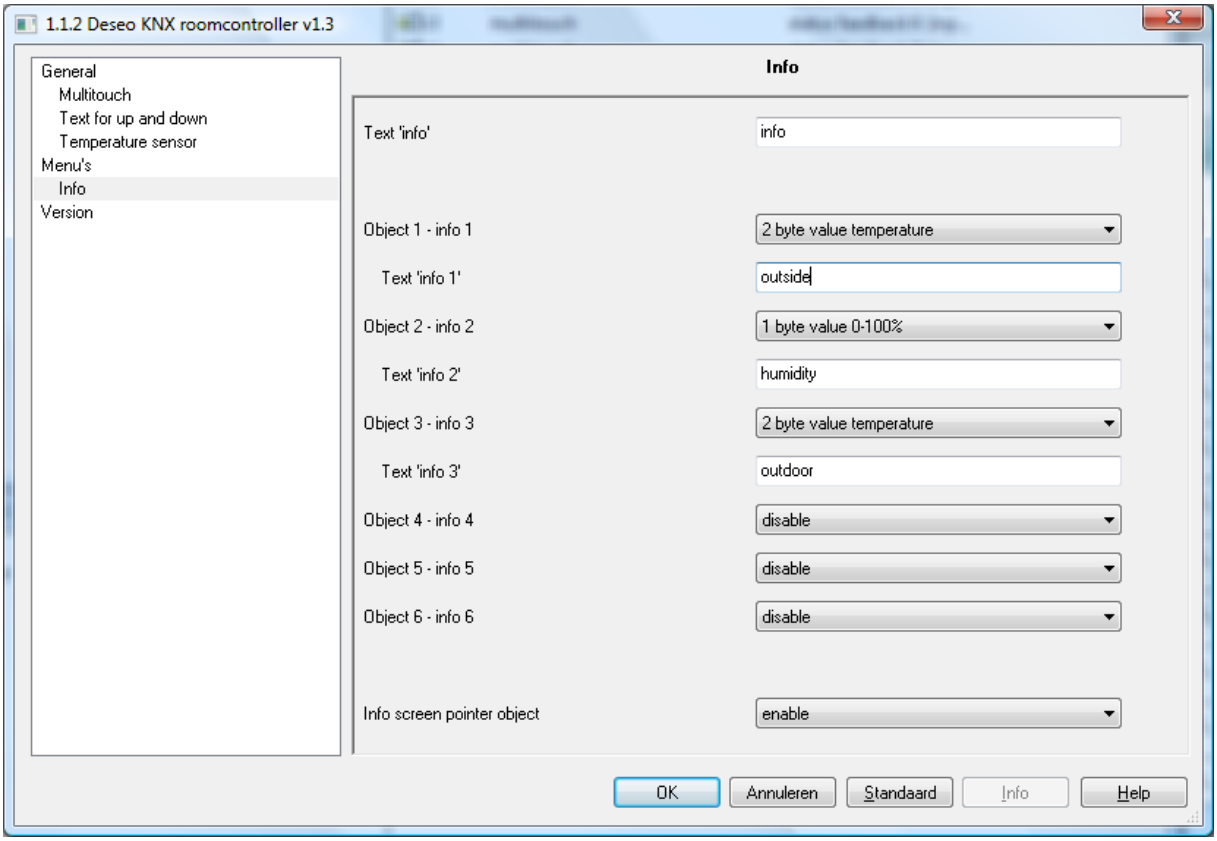
7.2.6 Info



Parameter	Description
Text 'info'	The name of the main menu items of this page can be set with this parameter.
Object n – info n	This parameter enables or disables the info object and defines his type. Settings: Disable 1 bit 1 byte value 0-255 1 byte value 0-100% 1 byte value slider (0-100) 1 byte value slider (0-255) 2 byte value (0-65535) 2 byte value temperature 2 byte value lux 2 byte value m/s 2 byte value ppm 2 byte kW 14 byte text (large font) 14 byte text (small font) Communication objects: 161-166: Info x – 1 bit object 167-172: Info x – 1 byte object 173-178: Info x – 2 byte object 179-184: Info x – 15 byte object

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Info screen pointer object	This parameter enables or disables the info screen pointer object. Settings: Enable Disable (default) Communication objects: 3: Menu Pointer - page number (input) Behaviour: With this parameter, the Deseo jumps direct to the requested page. The page number must be between 1 and 6. These numbers correspond with the info object number. Remark: This feature is only available when the info pages are enabled

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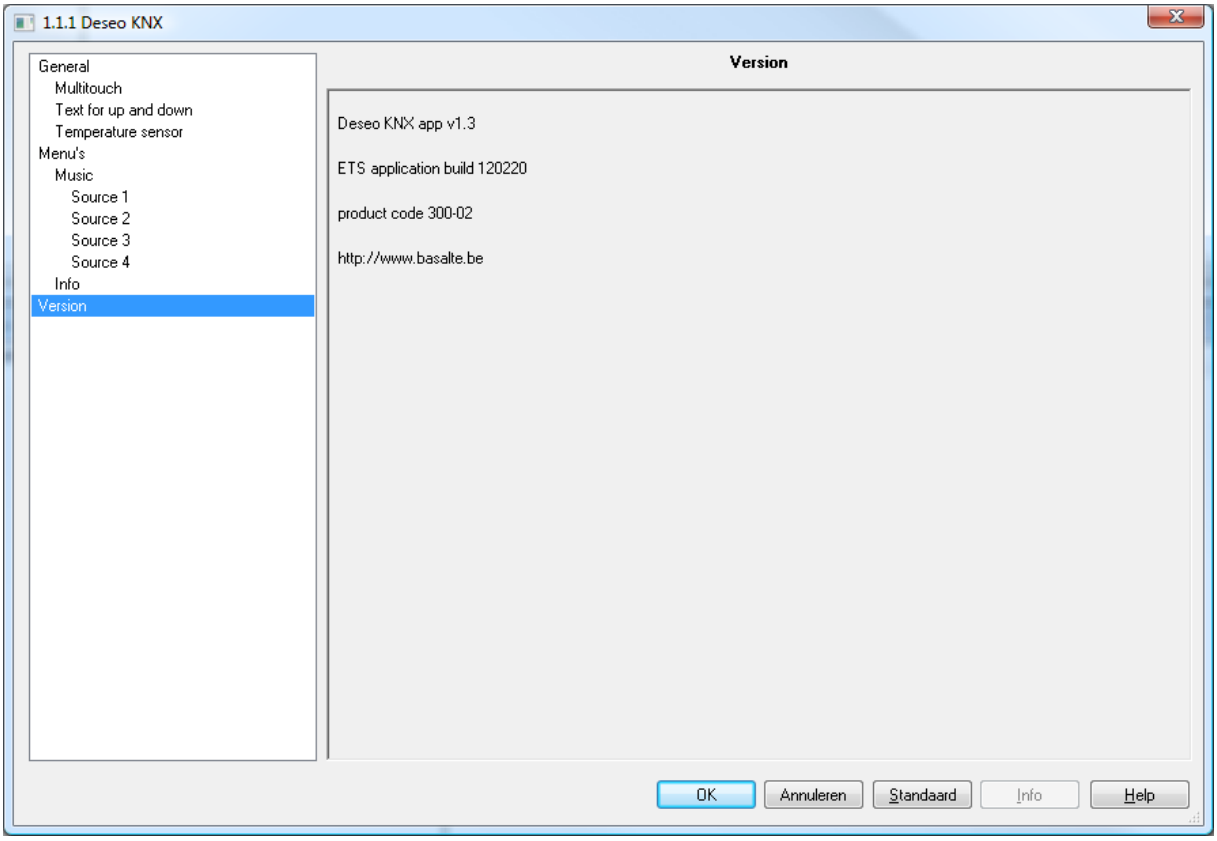
7.3 Version



This page gives some more information about the application file that is used.

Text	Description
Deseo KNX app	This is the version of the application In this case: v1.3
ETS application build	This is the build number of the application In this case: 120220
Product code	The product code for the Deseo KNX In this case: 300-02
http://www.basalte.be	The website from basalte

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8. Appendix:

8.1 Characters main menu font (blue)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï	Ñ	Ò	Ó	Ô	Õ	Ö	Ù	Ú	Û	Ü
à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï	ñ	ò	ó	ô	õ	ö	ù	ú	û	ü
Ø	ø	Ý	ý	ÿ	ß																				
0	1	2	3	4	5	6	7	8	9																
‘	-	/	:	.	?																				

8.2 Characters submenu font (white)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï	Ñ	Ò	Ó	Ô	Õ	Ö	Ù	Ú	Û	Ü
à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï	ñ	ò	ó	ô	õ	ö	ù	ú	û	ü
Ø	ø	Ý	ý	ÿ	ß																				
0	1	2	3	4	5	6	7	8	9																
%	-	.	/	³	:																				

8.3 Characters information font (small white / orange)

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
À	Á	Â	Ã	Ä	Å	Æ	Ç	È	É	Ê	Ë	Ì	Í	Î	Ï	Ñ	Ò	Ó	Ô	Õ	Ö	Ù	Ú	Û	Ü
à	á	â	ã	ä	å	æ	ç	è	é	ê	ë	ì	í	î	ï	ñ	ò	ó	ô	õ	ö	ù	ú	û	ü
Ø	ø	Ý	ý	ÿ	ß																				
0	1	2	3	4	5	6	7	8	9																
+	,	-	.	/	:	;	<	>	=	?															

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8.4 List with communication objects

Communi-cation object	Name	Function	Input/ Output	Data length	Date type	Flags
0	Cleaning object	As long as object is 1	Input	1 bit	Switch	C-W
1	Screen Wake	On rising edge	Input	1 bit	1 bit	C-W
2	Calibration	On rising edge	Input	1 bit	1 bit	C-W
3	Menu Pointer	Page number	Input	1 byte	Unsigned	C-W
4	Multitouch	On/off	Output	1 bit	Switch	C-T
5	Multitouch	Scene number	Output	1 byte	Switch	C-T
6	Multitouch	All off	Output	1 bit	Switch	C-T
7	Multitouch	Blocking object	Output	1 bit	Switch	C-T
8	Multitouch	Status feedback 1	Input	1 bit	Switch	C-W-U
9	Multitouch	Status feedback 2	Input	1 bit	Switch	C-W-U
10	Multitouch	Status feedback 3	Input	1 bit	Switch	C-W-U
11	Multitouch	Status feedback 4	Input	1 bit	Switch	C-W-U
12	Multitouch	Status feedback 5	Input	1 bit	Switch	C-W-U
13	Multitouch	Status feedback 6	Input	1 bit	Switch	C-W-U
14	Multitouch	Status feedback 7	Input	1 bit	Switch	C-W-U
15	Multitouch	Status feedback 8	Input	1 bit	Switch	C-W-U
16	Scene 1	Scene number	Output	1 byte	Unsigned	C-T
17	Scene 2	Scene number	Output	1 byte	Unsigned	C-T
18	Scene 1	Blocking object	Output	1 bit	Switch	C-T
19	Scene 2	Blocking object	Output	1 bit	Switch	C-T
20	Light 1	On/Off	Output	1 bit	Switch	C-T
21	Light 2	On/Off	Output	1 bit	Switch	C-T
22	Light 3	On/Off	Output	1 bit	Switch	C-T
23	Light 4	On/Off	Output	1 bit	Switch	C-T
24	Light 5	On/Off	Output	1 bit	Switch	C-T
25	Light 6	On/Off	Output	1 bit	Switch	C-T
26	Light 7	On/Off	Output	1 bit	Switch	C-T
27	Light 8	On/Off	Output	1 bit	Switch	C-T
28	Light 9	On/Off	Output	1 bit	Switch	C-T
29	Light 10	On/Off	Output	1 bit	Switch	C-T
30	Light 11	On/Off	Output	1 bit	Switch	C-T
31	Light 12	On/Off	Output	1 bit	Switch	C-T
32	Light 1	Status feedback	Input	1 bit	Switch	C-W-U
33	Light 2	Status feedback	Input	1 bit	Switch	C-W-U
34	Light 3	Status feedback	Input	1 bit	Switch	C-W-U
35	Light 4	Status feedback	Input	1 bit	Switch	C-W-U
36	Light 5	Status feedback	Input	1 bit	Switch	C-W-U
37	Light 6	Status feedback	Input	1 bit	Switch	C-W-U
38	Light 7	Status feedback	Input	1 bit	Switch	C-W-U
39	Light 8	Status feedback	Input	1 bit	Switch	C-W-U
40	Light 9	Status feedback	Input	1 bit	Switch	C-W-U
41	Light 10	Status feedback	Input	1 bit	Switch	C-W-U
42	Light 11	Status feedback	Input	1 bit	Switch	C-W-U
43	Light 12	Status feedback	Input	1 bit	Switch	C-W-U
44	Light 1	Dim up/down	Output	4 bit	Dim	C-T
45	Light 2	Dim up/down	Output	4 bit	Dim	C-T
46	Light 3	Dim up/down	Output	4 bit	Dim	C-T
47	Light 4	Dim up/down	Output	4 bit	Dim	C-T
48	Light 5	Dim up/down	Output	4 bit	Dim	C-T
49	Light 6	Dim up/down	Output	4 bit	Dim	C-T
50	Light 7	Dim up/down	Output	4 bit	Dim	C-T

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51	Light 8	Dim up/down	Output	4 bit	Dim	C-T
52	Light 9	Dim up/down	Output	4 bit	Dim	C-T
53	Light 10	Dim up/down	Output	4 bit	Dim	C-T
54	Light 11	Dim up/down	Output	4 bit	Dim	C-T
55	Light 12	Dim up/down	Output	4 bit	Dim	C-T
56	Light 1	Value feedback	Input	1 byte	Unsigned	C-W-U
57	Light 2	Value feedback	Input	1 byte	Unsigned	C-W-U
58	Light 3	Value feedback	Input	1 byte	Unsigned	C-W-U
59	Light 4	Value feedback	Input	1 byte	Unsigned	C-W-U
60	Light 5	Value feedback	Input	1 byte	Unsigned	C-W-U
61	Light 6	Value feedback	Input	1 byte	Unsigned	C-W-U
62	Light 7	Value feedback	Input	1 byte	Unsigned	C-W-U
63	Light 8	Value feedback	Input	1 byte	Unsigned	C-W-U
64	Light 9	Value feedback	Input	1 byte	Unsigned	C-W-U
65	Light 10	Value feedback	Input	1 byte	Unsigned	C-W-U
66	Light 11	Value feedback	Input	1 byte	Unsigned	C-W-U
67	Light 12	Value feedback	Input	1 byte	Unsigned	C-W-U
68	Motor 1	Open/close	Output	1 bit	Open/Close	C-T
69	Motor 2	Open/close	Output	1 bit	Open/Close	C-T
70	Motor 3	Open/close	Output	1 bit	Open/Close	C-T
71	Motor 4	Open/close	Output	1 bit	Open/Close	C-T
72	Motor 5	Open/close	Output	1 bit	Open/Close	C-T
73	Motor 6	Open/close	Output	1 bit	Open/Close	C-T
74	Motor 7	Open/close	Output	1 bit	Open/Close	C-T
75	Motor 8	Open/close	Output	1 bit	Open/Close	C-T
76	Motor 9	Open/close	Output	1 bit	Open/Close	C-T
77	Motor 10	Open/close	Output	1 bit	Open/Close	C-T
78	Motor 11	Open/close	Output	1 bit	Open/Close	C-T
79	Motor 12	Open/close	Output	1 bit	Open/Close	C-T
80	Motor 1	Open/Close step	Output	1 bit	Open/Close	C-T
81	Motor 2	Open/Close step	Output	1 bit	Open/Close	C-T
82	Motor 3	Open/Close step	Output	1 bit	Open/Close	C-T
83	Motor 4	Open/Close step	Output	1 bit	Open/Close	C-T
84	Motor 5	Open/Close step	Output	1 bit	Open/Close	C-T
85	Motor 6	Open/Close step	Output	1 bit	Open/Close	C-T
86	Motor 7	Open/Close step	Output	1 bit	Open/Close	C-T
87	Motor 8	Open/Close step	Output	1 bit	Open/Close	C-T
88	Motor 9	Open/Close step	Output	1 bit	Open/Close	C-T
89	Motor 10	Open/Close step	Output	1 bit	Open/Close	C-T
90	Motor 11	Open/Close step	Output	1 bit	Open/Close	C-T
91	Motor 12	Open/Close step	Output	1 bit	Open/Close	C-T
92	Temperature	Internal value	Output	2 byte	Temp	C-R-T
93	Thermostat	Setpoint	Input	2 byte	Temp	C-W-U
94	Temperature	External sensor	Input	2 byte	Temp	C-W-U
95	Thermostat	Setpoint (comfort)	Input	2 byte	Temp	C-W-U
96	Thermostat	Setpoint (comfort)	Output	2 byte	Temp	C-R-T
97	Thermostat	Actual setpoint	Output	2 byte	Temp	C-R-T
98	Thermostat	Presence object	Input	1 bit	Switch	C-W-U
99	Thermostat	Mode	Input	1 byte	Unsigned	C-W-U
100	Thermostat	Mode comfort	Input	1 bit	1 bit	C-W-U
101	Thermostat	Mode standby	Input	1 bit	1 bit	C-W-U
102	Thermostat	Mode economy	Input	1 bit	1 bit	C-W-U
103	Thermostat	Mode protected	Input	1 bit	1 bit	C-W-U
104	Thermostat	Mode	Output	1 byte	Unsigned	C-R-T
105	Thermostat	Mode comfort	Output	1 bit	1 bit	C-T
106	Thermostat	Mode standby	Output	1 bit	1 bit	C-T
107	Thermostat	Mode economy	Output	1 bit	1 bit	C-T
108	Thermostat	Mode protected	Output	1 bit	1 bit	C-T

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109	Thermostat	Window open	Input	1 bit	1 bit	C-W-U
110	Thermostat	Cooling/Heating mode	Input	1 bit	1 bit	C-W-U
111	Thermostat	Heating mode	Output	1 bit	1 bit	C-T
112	Thermostat	Cooling mode	Output	1 bit	1 bit	C-T
113	Thermostat	Heating active	Output	1 bit	Switch	C-T
114	Thermostat	Cooling active	Output	1 bit	Switch	C-T
115	Thermostat	Heating 2 point	Output	1 bit	Switch	C-T
116	Thermostat	Heating PWM	Output	1 bit	Switch	C-T
117	Thermostat	Heating continuous	Output	1 byte	Scaling	C-T
118	Thermostat	Cooling 2 point	Output	1 bit	Switch	C-T
119	Thermostat	Cooling PWM	Output	1 bit	Switch	C-T
120	Thermostat	Cooling continuous	Output	1 byte	Scaling	C-T
121	Ventilation	Mode high	Output	1 bit	Switch	C-T
122	Ventilation	Mode mid	Output	1 bit	Switch	C-T
123	Ventilation	Mode low	Output	1 bit	Switch	C-T
124	Ventilation	Mode high	Input	1 bit	Switch	C-W-U
125	Ventilation	Mode mid	Input	1 bit	Switch	C-W-U
126	Ventilation	Mode low	Input	1 bit	Switch	C-W-U
127	Music	On/Off	Output	1 bit	Switch	C-T
128	Music	Off	Output	1 bit	Switch	C-T
129	Music	On/Off feedback	Input	1 bit	Switch	C-W-U
130	Music	Source value	Output	1 byte	Unsigned	C-T
131	Music	Source value feedback	Input	1 byte	Unsigned	C-W-U
132	Music	Source 1	Output	1 bit	Switch	C-T
133	Music	Source 2	Output	1 bit	Switch	C-T
134	Music	Source 3	Output	1 bit	Switch	C-T
135	Music	Source 4	Output	1 bit	Switch	C-T
136	Music	Source 1 feedback	Input	1 bit	Switch	C-T
137	Music	Source 2 feedback	Input	1 bit	Switch	C-T
138	Music	Source 3 feedback	Input	1 bit	Switch	C-T
139	Music	Source 4 feedback	Input	1 bit	Switch	C-T
140	Music source 1	Preset	Output	1 byte	Unsigned	C-T
141	Music source 2	Preset	Output	1 byte	Unsigned	C-T
142	Music source 3	Preset	Output	1 byte	Unsigned	C-T
143	Music source 4	Preset	Output	1 byte	Unsigned	C-T
144	Music source 1	Preset feedback	Input	1 byte	Unsigned	C-W-U
145	Music source 2	Preset feedback	Input	1 byte	Unsigned	C-W-U
146	Music source 3	Preset feedback	Input	1 byte	Unsigned	C-W-U
147	Music source 4	Preset feedback	Input	1 byte	Unsigned	C-W-U
148	Music	Volume up	Output	1 bit	Switch	C-T
149	Music	Volume down	Output	1 bit	Switch	C-T
150	Music	Volume up/down	Output	4 bit	3 bit controlled	C-T
151	Music	Volume feedback	Input	1 byte	Unsigned	C-W-U
152	Music	Volume feedback	input	14 byte	String	C-W-U
153	Music source 1	Playing - text line 1	Output	14 byte	String	C-W-U
154	Music source 1	Playing - text line 2	Output	14 byte	String	C-W-U
155	Music source 2	Playing - text line 1	Output	14 byte	String	C-W-U
156	Music source 2	Playing - text line 2	Output	14 byte	String	C-W-U
157	Music source 3	Playing - text line 1	Output	14 byte	String	C-W-U
158	Music source 3	Playing - text line 2	Output	14 byte	String	C-W-U
159	Music source 4	Playing - text line 1	Output	14 byte	String	C-W-U
160	Music source 4	Playing - text line 2	Output	14 byte	String	C-W-U
161	Info 1	1 bit	Input	1 bit	1 bit	C-W-U
162	Info 2	1 bit	Input	1 bit	1 bit	C-W-U
163	Info 3	1 bit	Input	1 bit	1 bit	C-W-U

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164	Info 4	1 bit	Input	1 bit	1 bit	C-W-U
165	Info 5	1 bit	Input	1 bit	1 bit	C-W-U
166	Info 6	1 bit	Input	1 bit	1 bit	C-W-U
167	Info 1	1 byte value	Input	1 byte	Unsigned	C-W-U
168	Info 2	1 byte value	Input	1 byte	Unsigned	C-W-U
169	Info 3	1 byte value	Input	1 byte	Unsigned	C-W-U
170	Info 4	1 byte value	Input	1 byte	Unsigned	C-W-U
171	Info 5	1 byte value	Input	1 byte	Unsigned	C-W-U
172	Info 6	1 byte value	Input	1 byte	Unsigned	C-W-U
173	Info 1	2 byte value	Input	2 byte	Unsigned	C-W-U
174	Info 2	2 byte value	Input	2 byte	Unsigned	C-W-U
175	Info 3	2 byte value	Input	2 byte	Unsigned	C-W-U
176	Info 4	2 byte value	Input	2 byte	Unsigned	C-W-U
177	Info 5	2 byte value	Input	2 byte	Unsigned	C-W-U
178	Info 6	2 byte value	Input	2 byte	Unsigned	C-W-U
179	Info 1	14 byte string	Input	14 byte	String	C-W-U
180	Info 2	14 byte string	Input	14 byte	String	C-W-U
181	Info 3	14 byte string	Input	14 byte	String	C-W-U
182	Info 4	14 byte string	Input	14 byte	String	C-W-U
183	Info 5	14 byte string	Input	14 byte	String	C-W-U
184	Info 6	14 byte string	Input	14 byte	String	C-W-U
185	Time		Input	3 byte	TimeOfDay	C-W-T-U
186	Date		Input	3 byte	Date	C-W-T-U
187	Startscreen	Text	Input	14 byte	String	C-W-U
188	Music source 1	Command	Output	1 byte	Unsigned	C-T
189	Music	Previous track	Output	1 bit	Switch	C-T
190	Music	Next track	Output	1 bit	Switch	C-T
191	Music	Command	Output	1 byte	Unsigned	C-T
192	Music	Previous track	Output	1 bit	Switch	C-T
193	Music	Next track	Output	1 bit	Switch	C-T
194	Music	Command	Output	1 byte	Unsigned	C-T
195	Music	Previous track	Output	1 bit	Switch	C-T
196	Music	Next track	Output	1 bit	Switch	C-T
197	Music source 4	Command	Output	1 byte	Unsigned	C-T
198	Music source 4	Previous track	Output	1 bit	Switch	C-T
199	Music source 4	Next track	Output	1 bit	Switch	C-T
200	Multitouch	External trigger	Input	1 bit	Switch	C-W

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