Flat 55 Display

55x55mm Capacitive Glass Touch Panel with Round Display55x55mm with round display

ZVI-F55D

Application Programme Version: [2.0]
User Manual Version: [2.0]_a

www.zennio.com

USER MANUAL

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DOCUMENT UPDATES

Version	Changes	Page(s)
[2.0]_a	**Changes in the application program:** • New page style: Thermostat. • Parameter to include plus sign before positive setpoints. • Temperature Probe: new option to select the temperature probe included with the device (ref. 9900015). • New font style.	63-66, 77-79 72 80-81

1 INTRODUCTION

1.1 FLAT 55 DISPLAY

Flat 55 Display is a KNX **multifunction capacitive touch switch with an analogue display** from Zennio with proximity sensor, luminosity sensor and backlighted buttons and display.

It is offered at **a reduced size** and **weight**, with **four capacitive touch buttons** on the corners **and a display** in the middle, as well as **LED backlight** to confirm the press of the buttons or showing states.

Flat 55 Display is a fully customisable solution for the room control where the user needs to control climate systems, lighting, blinds, scenes, etc.

The versatility offered by the functionality of buttons is complemented by the built-in **analogue/digital inputs** and the **thermostat** function, as well as an elegant and **fully customisable design of the front glass** – customers can choose their button icons, texts and colours and even personalise the background with their pictures, logos, etc.

Moreover, the **display** offers the possibility of showing useful information to the user about the control states and object values.

The most outstanding features of Flat 55 Display are:

- Dimensions **55 x 55 mm** (standard size) for installation in standard mounting box with 55 x 55 frames.
- **1.18 inch** (1.18'') **round** OLED display with a resolution of **128 pixels** diameter.
- **Fully customisable** design of the front glass.
- **4 touch buttons** which can operate as individual or pair controls.
- **Light indicator (LED)** for every button.
- **Buzzer** for an audible acknowledgement of user actions (with the possibility of disabling it either by parameter or by object).

- Possibility of **locking / unlocking the touch panel** through binary orders or scenes, and of setting a timed/automatic locking of the device (**cleaning function**).
- **Welcome greeting on the display** and **Welcome Back object** (binary or scene).
- **Screensaver** function.
- **Two analogue/digital inputs** (for motion detectors, temperature probes, additional switches, etc.).
- **Thermostat** function.
- **Celsius and Fahrenheit** temperature scales for the on-screen indicators, being possible to select them in parameters or through communication object.
- **Ambient luminosity sensor** for brightness automatic adjustment.
- **Proximity sensor** for quick start.
- **Heartbeat** or periodical “still-alive” notification.
- **Clock functionality** (subject to updating through devices with RTC or NTP client).

1.2 INSTALLATION

Figure 1 shows the connection outilne of the device:

1. Display.
2. Touch Area.
3. Inputs Connector
4. KNX connector
5. Frame.
6. Prog./Test LED.
7. Prog./Test Button.
8. Attachment Clips.
9. Luminosity and Proximity Sensor.

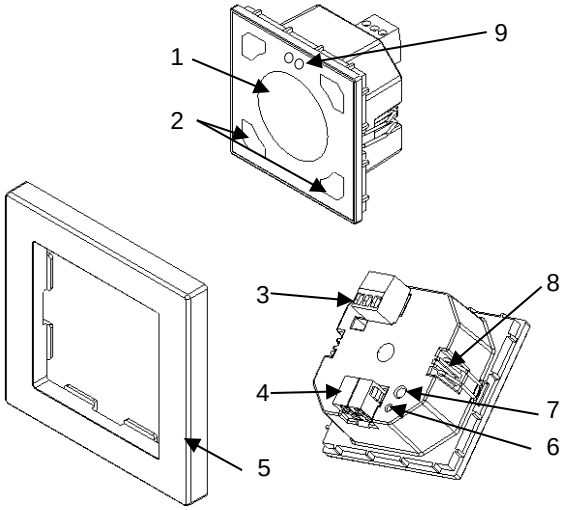


Figure 1. Schematic diagram.

Flat 55 Display is connected to the KNX bus through the built-in terminal (4). An external DC power supply is not needed.

A short press on the **Prog./Test button** (7) will make the device enter the programming mode. The **Prog./Test LED** (6) will light in red. On the contrary, if this button is held while plugging the device into the KNX bus, the device will enter the **Safe Mode**. In such case, the programming LED will then blink in red.

For detailed information about the technical features of Flat 55 Display, as well as on security and installation procedures, please refer to the **Datasheet**, bundled within the device packaging of also available at www.zennio.com.

1.3 START-UP AND POWER LOSS

After download or device reset it is necessary **to wait for 2 minute without performing any action** in order to make it possible a proper calibration of:

- Proximity sensor.
- Luminosity sensor.
- Button presses.

For a correct calibration of the proximity and brightness sensors it is recommended not to approach less than 50 cm from the device during this time and to avoid that the light strikes directly.

2 CONFIGURATION

After importing the corresponding database in ETS and adding the device into the topology of the project, the configuration process begins by entering the Parameters tab of the device.

2.1 GENERAL

In order to allow the device to perform the desired functions, a number of options must be parameterized, either related to its **general behavior** (screensaver, sounds, lock procedure of the touch panel…) or to **advanced features** (cleaning function, welcome back object, welcome greeting…).

2.1.1 CONFIGURATION

In the “Configuration" tab, the general settings are displayed.

ETS PARAMETERISATION

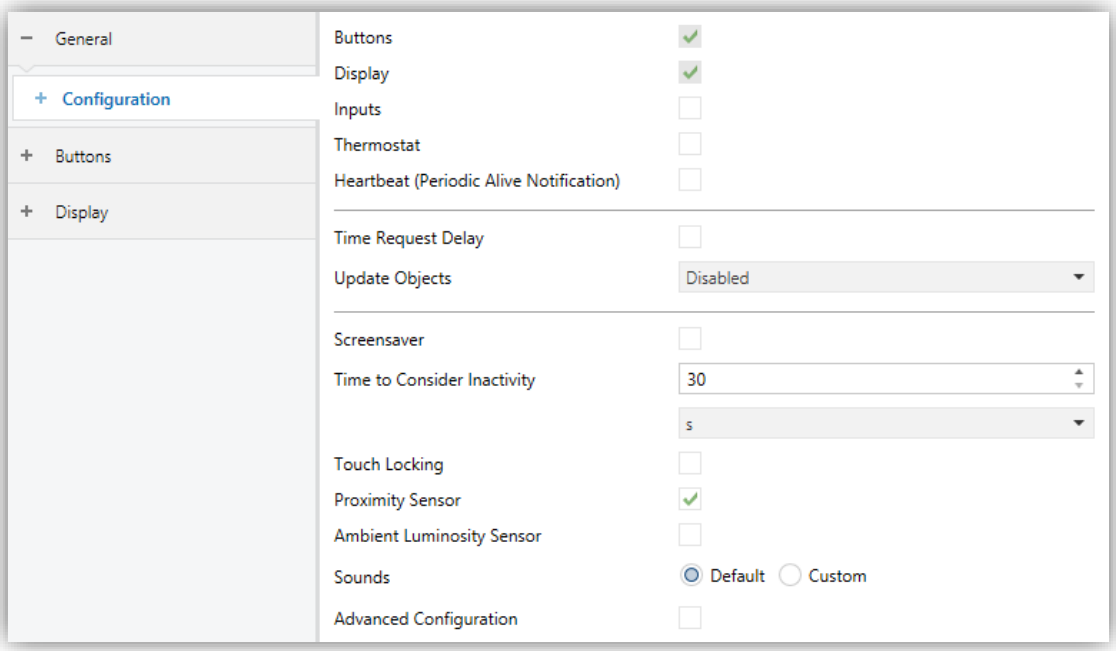


Figure 2. Configuration

This tab shows the following parameters:

- **Buttons** [*enabled*][1]: read-only parameter to make it evident that the "Buttons" tab is always enabled in the tab tree on the left. See section 2.2 for details.

- **Display** [*enabled*]: read-only parameter to make it evident that the "Display" tab is always enabled in the tab tree on the left. See section 2.3 for details.

- **Inputs** [*disabled/enabled*]: enables or disables the "Inputs" tab in the tree on the left, depending on whether the device will or will not be connected any external accessories. See section 2.4for details

- **Thermostat** [*disabled/enabled*]: enables or disables the "Thermostat" tab in the tree on the left. See section 2.5 for details.

- **Heartbeat (Periodic Alive Notification)** [*disabled/enabled*]: incorporates a one-bit object to the project ("**[Heartbeat] Object to Send '1'**") that will be sent periodically with value "1" to notify that the device is still working (*still alive*).

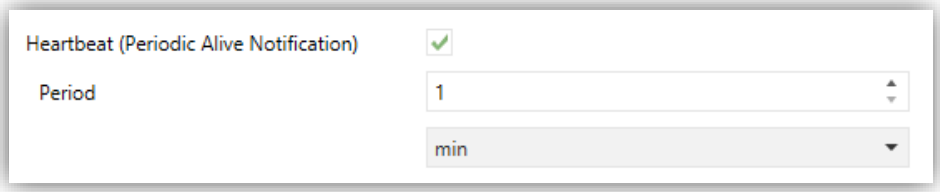


Figure 3. Heartbeat

Note: *the first sending after download or bus failure takes place with a delay of up to 255 seconds, to prevent bus overload. The following sendings march the period set.*

- **Time Request Delay** [*disabled/enabled*]: sets a sending **delay** [*1…65535*] [*s/min/h*] for the time request when the device starts up.

- **Update Objects**: enables the sending of read requests to update status objects and indicators. There are four options available, some of them with a configurable delay:

[1] The default values of each parameter will be highlighted in blue in this document, as follows: [*default/rest of options*].

- [*Disabled*]: no read request, therefore objects are not updated.
- [*After Reset*]: read request are sent when a reset occurs (bus failure, the Reset Device ETS option), after the parameterised **delay** [*1…10…65535*] [*s/min/h*].
- [*After Programming*]: read requests are sent after a complete or partial download after the parameterised **delay** [*1…10…65535*] [*s/min/h*].
- [*After Programming and Reset*]: combination of the two above options.

- **Screensaver** [*disabled/enabled*]: enables or disables the "Screensaver" tab in the tree on the left. See section 2.1.1.2 for details.
- **Time to Consider Inactivity** [*30…255*][*s*] [*1…255*] [*min/h*]: time that must elapse since the last press and/or proximity detection to consider inactivity state. Then the display and the button LEDs backlight will dim.
- **Touch Locking** [*disabled/enabled*]: enables or disables the possibility of locking the touch by object. When enabled, a new tab is added in the tree on the left (see section 2.1.1.3).
- **Proximity Sensor** [*disabled/enabled*]: enables the proximity sensor. This functionality permits "waking up" the device display when detecting presence.

  Note: *Please refer to the specific manual "**Luminosity and Proximity Sensor**" (available in the Flat 55 Display product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.*
- **Ambient Luminosity Sensor** [*disabled/enabled*]: enables or disables the ambient luminosity sensor. When enabled, a new tab is added in the tree on the left. See section 2.1.1.4 for details.
- **Sounds** [*Default / Custom*]: sets whether the sound functions (button beeps and doorbell) should work according to the pre-defined configuration or to a user-defined configuration (see section 2.1.1.5).
- **Advanced Configuration** [*disabled/enabled*]: enables or disables the "Advanced" tab in the tree on the left. See section 2.1.2 for details.

The project topology shows the following objects by default:

- **[General] Scene: Receive** and **[General] Scene: Send**: objects for respectively receiving and sending scene values from/to the KNX bus whenever it is necessary (e.g., when the user touches a button that has been configured to send scene commands)

- **[General] Activity:** 1-bit object that allows to force activity or inactivity state in the device. See "**Proximity and luminosity Sensor**" and "**Brightness**" user manuals for more information.

- **[General] Proximity Sensor**, **[General] External Proximity Detection** and **[General] Proximity Detection:** 1-bit object whose functionality is tied to the proximity sensor. For further information, please refer to the user manual "**Proximity and Luminosity Sensor**"

- **[General] Time of Day**: 3-byte object for setting the internal time of the device, for example, by linking it to a KNX clock. This object also allows read requests, so the current time of the device can be checked. It is also automatically sent after time changes made by the user from the screen itself.

  Important: *the time of day must be set through the bus by means of an external reference. In the absence of power, the clock will become outdated*.

- **[General] External Temperature**: 2-byte object through which the device can receive the temperature values from the bus.

- **[General] Display - Brightness**: 1-byte percentage object for changing the display brightness level.

2.1.1.1 BACKLIGHT

Flat 55 Display allows managing the brightness of the display and the LEDs according to two operating modes: normal mode and night mode.

Note: *Contrast is not a configurable feature in this device*.

Please refer to the specific "**Brightness**" user manual (available in the Flat 55 Display product section at the Zennio website, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

2.1.1.2 SCREENSAVER

The screensaver is a special page that will only be shown after a **period of inactivity**, configurable by parameter.

It is possible to choose whether the time is to be displayed, by means of an analogue clock or by means of a digital clock, the current temperature or, only if a digital clock is chosen, both (which will be displayed alternately every 5 seconds).

To exit the screen saver, press on the screen or move closer to the screen if the proximity sensor is activated. It can be set by parameter if, while the screen saver is active, pressing the touch panel will only cause the screen saver to be interrupted, or if the action corresponding to the button pressed must also be executed (see section 2.1.1).

Notes:

- *When showing the welcome greeting (see section 2.1.2.2), screensaver will not become active.*
- *When screensaver will be active and a pop-up will be active (see touch locking 2.1.1.3, cleaning function 2.1.2.1 or welcome greeting 2.1.2.2) this pop-up will become show up over screensaver*.

PARAMETRIZACIÓN ETS

After enabling "**Screensavers**" from the "Configuration" tab (Section 2.1.1) a new tab is added to the left tree:

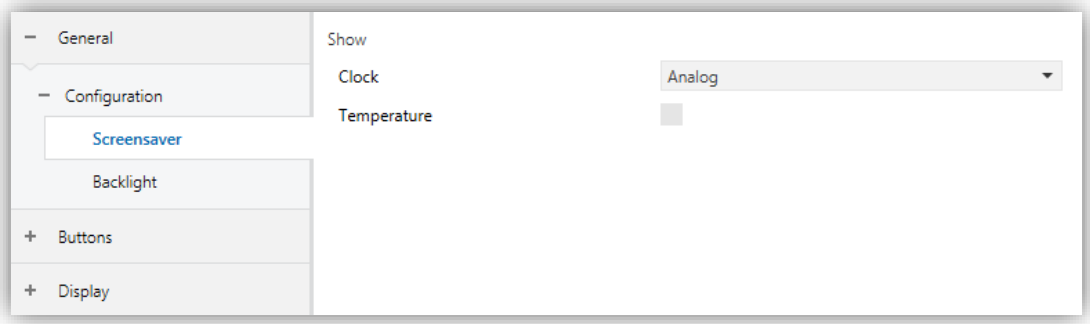


Figure 4. Configuration – Screensaver

- **Clock** [*Disabled / Digital / Analog*]: determines whether an analog or digital clock is displayed or not. If "Analog" is selected, the parameter "**Temperature**" cannot be enabled.

- **Temperature** [*enabled/disabled*]: determines whether to display the current temperature or not.

2.1.1.3 TOUCH LOCKING

The touch panel of Flat 55 Display can be optionally locked and unlocked anytime by writing a configurable one-bit value to a specific object provided for this purpose. It can also be done through scene values.

While locked, user presses on the touch buttons will be ignored: no actions will be performed when the user presses on any of the controls. However, if configured, an icon will be shown on the display for three seconds if the user touches a button during the lock state.

ETS PARAMETERISATION

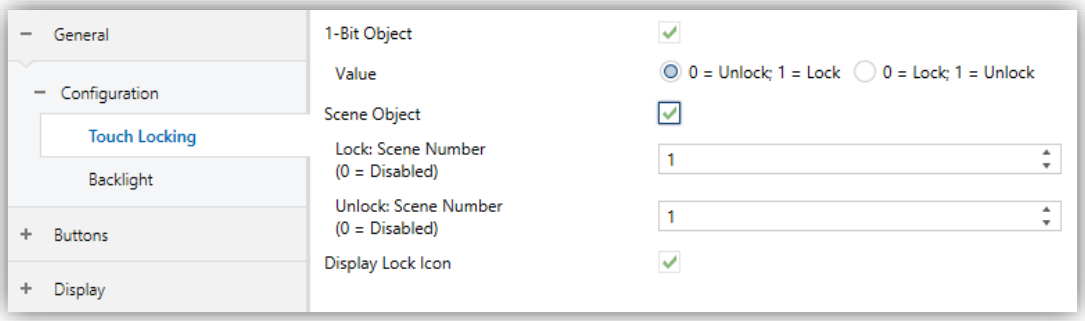


Figure 5. Configuration - Touch Locking

In this tab you can configure the blocking of the presses on the display.

- **1-Bit Object** [*disabled/enabled*]: enables the 1-bit object "**[General] Touch Locking**" to trigger the touch lock.

  - **Value** [*0 = Unlock, 1 = Lock / 0 = Lock, 1 = Unlock*]: parameter to select which value should trigger which action when received through the indicated object.

- **Scene Object** [*disabled/enabled*]: enables the touch locking and unlocking when receiving the configured scene value through the object ("**[General] Scene: receive**").

  - **Lock: Scene Number (0 = Disabled)** [*0/1…64*]: scene number that locks the touch.

  - **Unlock: Scene Number (0 = Disabled)** [*0/1…64*]: scene number that unlocks the touch.

- **Display Lock Icon** [*disabled/enabled*]: sets whether to display a padlock icon in the centre of the screen when the device is locked and the user attempts to touch a button.

2.1.1.4 AMBIENT LUMINOSITY SENSOR

Flat 55 Display incorporates **a luminosity sensor** to receive and monitor ambient brightness measurement.

Please refer to the specific manual "**Luminosity and Proximity Sensor**" (available in the Flat 55 Display product section at the Zennio homepage, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

2.1.1.5 SOUNS

Flat 55 Display emits **3 types of sounds**, depending on the action performed:

- **Press Confirmation:** short beep indicating that the user has pressed a button. This only applies to step controls, i.e., controls that walk through a certain range of values and that do not send a value after every touch, but only the final value after the last press. For this action, the user can choose between two different sounds.

- **Sending Confirmation**: a slightly longer and sharper beep than the previous one. It indicates the sending of an object to the bus as a result of a press.

- **Alert notification:** high-pitched sound with high volume, which is reproduced intermittently in exceptional cases. Each case is specified in its corresponding section.

Note: *the range of sounds emitted when these actions are performing will be different depending on the sound selected type.*

Enabling and disabling the button sounds can be done in parameters or through an object, being also possible to define in parameters whether the button sounds should be initially enabled or not.

Note: *Under no circumstances the alarm or the ring tone will be muted*.

ETS PARAMETERISATION

After enabling the "Custom" configuration of "**Sounds**" from "Configuration" screen (see section 2.1.1), a new tab will be incorporated into the tree on the left.

The initial configuration of this screen is equivalent to the default setting. However, the following parameters can be customized:

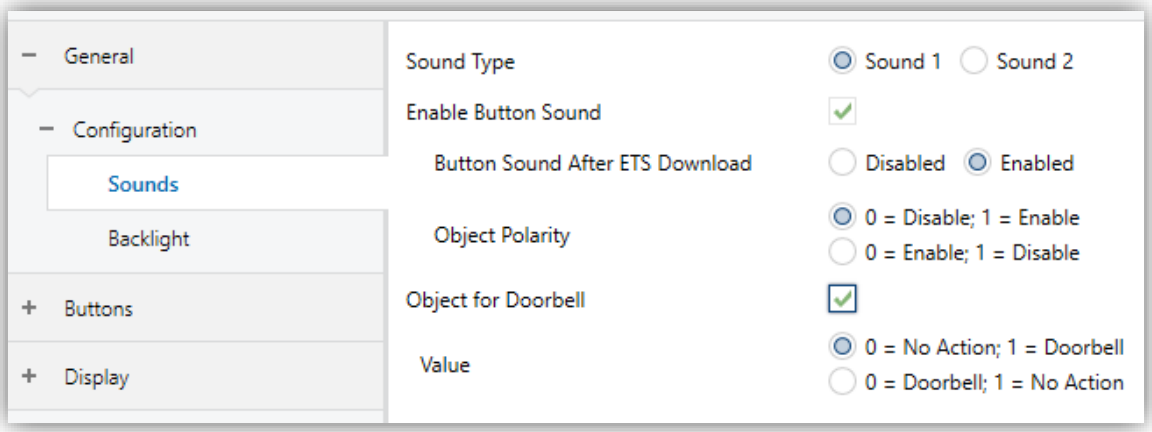


Figure 6. Configuration - Sounds.

- **Sound Type** [*Sound 1 / Sound 2*]: parameter to select which sounds range incorporates the device.

- **Enable Button Sound** [*enabled/disabled*]: enables or disables the acoustic signals when the actions derived from the button clicks are executed. If enabled, makes it possible to disable / resume the button beeping function in runtime by writing to a specific object ("**[General] Sounds – Disabling Button Sound**") and the following parameters will appear:

- **Button Sound After ETS Download** [*enabled*/*disabled*]: sets whether the button beeping function should start up enabled (default option) or disabled after an ETS download.

- **Object Polarity** [*0 = Disabled, 1 = Enabled* / *0 = Enabled, 1 = Disabled*]: parameter to select which value should trigger which action when received through the indicated object

- **Object for Doorbell** [*disabled*/*enabled*]: enables or disables the doorbell function. If enabled, a specific object ("**[General] Sounds - Doorbell**") will be included into the project topology.

  - **Value** [*0 = No Action, 1 = Doorbell* / *0 = Doorbell, 1 = No Action*]: parameter to select which value should trigger which action when received through the indicated object.

2.1.2 ADVANCED CONFIGURATION

Tab for the parameterisation of some advanced functions is shown in ETS if enabled from the "Configuration" tab. These functions are explained next.

ETS PARAMETERISATION

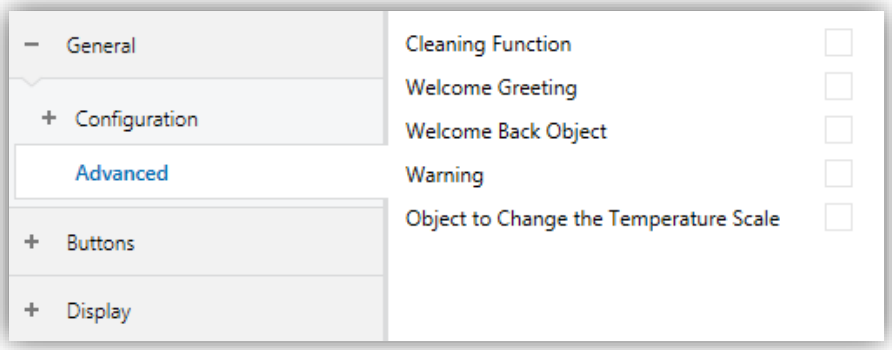


Figure 7. Advanced.

- **Cleaning Function** [*disabled*/*enabled*]: enables or disables the "Cleaning Function" tab. See section 2.1.2.1 for details.

- **Welcome Greeting** [*disabled*/*enabled*]: enables or disables the "Welcome Greeting" tab. See section 2.1.2.2 for details.

- **Welcome Back Object** [*disabled/enabled*]: enables or disables the "Welcome Back Object" tab. See section 2.1.2.3 for details.

- **Warning** [*disabled/enabled*]: enables or disables the "Warning" tab. See section 2.1.2.4 for details.

- **Object to Change the Temperature Scale** [*disabled/enabled*]: enables the 1-bit object **"[General] Temperature Scale"**), which permits changing in runtime the scale of the temperatures that may show on the screen. By receiving one '0' through this object, the scale will switch to Celsius, while after receiving one '1' it will switch to Fahrenheit.

  The selected scale applies to any temperatures shown on the screen, such as:

  - The **screensaver** temperature.
  - Indicators of **temperature controls** linked to a box in the display ([Climate] Temperature setpoint)
  - **Temperature indicators** ([Climate] Temperature).

After enabling this functionality, the following parameter will also appear:

- **Scale After Programming** [*Celsius (ºC) / Fahrenheit (ºF)*]: sets the scale in use after download.

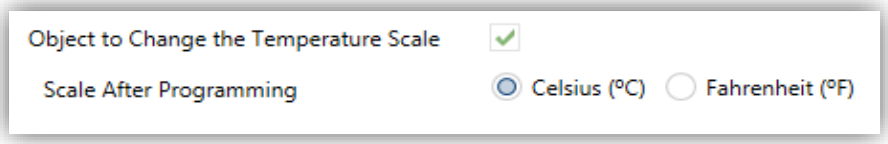


Figure 8. Temperature Scale After Programming.

2.1.2.1 CLEANING FUNCTION

This feature is very similar to the touch locking, that is, it locks the touch area, thus discarding further button touches. The difference is that this function remains active only during a parameterizable time, and then stops.

This function is intended to let the user clean the touch area with the certainty of not triggering unwanted actions.

A cleaning icon can be shown during the cleaning state. When the timeout is about to end, it is also possible to make this cleaning icon blink or to make the device beep (or both).

ETS PARAMETERISATION

After enabling "**Cleaning Function**" from "Advanced" screen (see section 2.1.2), a new tab will be incorporated into the tree on the left.

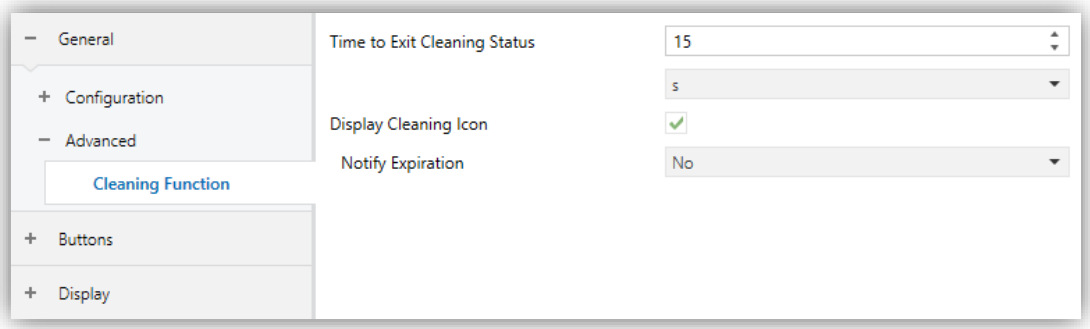


Figure 9. Avanced - Cleaning Function.

- **Time to Exit Cleaning Status** [*5...15…65535*][*s*] [*1…65535*][*min/h*]: timeout to deactivate the cleaning function once triggered.

- **Displayed Cleaning Icon** [*disabled / enabled*]: sets whether to show a cleaning icon during the cleaning state. When "Display Cleaning Icon" is selected, the following parameter appears:

  - **Notify Expiration** [*No / Blink Message / Play Sound / Both*]: sets whether to notify the timeout expiration or not. When any of the three later options is selected, a new parameter shows up:

    - **Length of the Warning** [*1...5…65535*][*s*] [*1…65535*][*min/h*]: sets the ahead-time to start the notification prior to the end of the cleaning function.

The "**[General] Cleaning Function**" one-bit object triggers the cleaning function when it receives a "1" from the KNX bus.

2.1.2.2 WELCOME GREETING

This function permits showing the user a welcome message of up to four lines of text on the display, each of which can be object-dependant or set in parameters.

When a "1" is received through the welcome greeting one-bit object, the display will become blank and show the welcome text. The same will happen if any of the 14-byte objects that define the text lines receives a new value from the bus.

It is also possible to make the button LEDs flash during the welcome state.

The message disappears when touching the screen or ending the welcome greeting with the object.

Note: *Welcome greeting takes precedence over screensaver. When the welcome greeting is displayed, the screensaver will be disabled until the first one disappears.*

ETS PARAMETERISATION

After enabling "**Welcome greeting**" (section 2.1.2), a new tab will be incorporated into the tab tree. A one-bit object named "**[General] Welcome Greeting**" will also be shown in the project topology, to trigger the welcome message by sending the value "1" or to end it by sending the value "0".

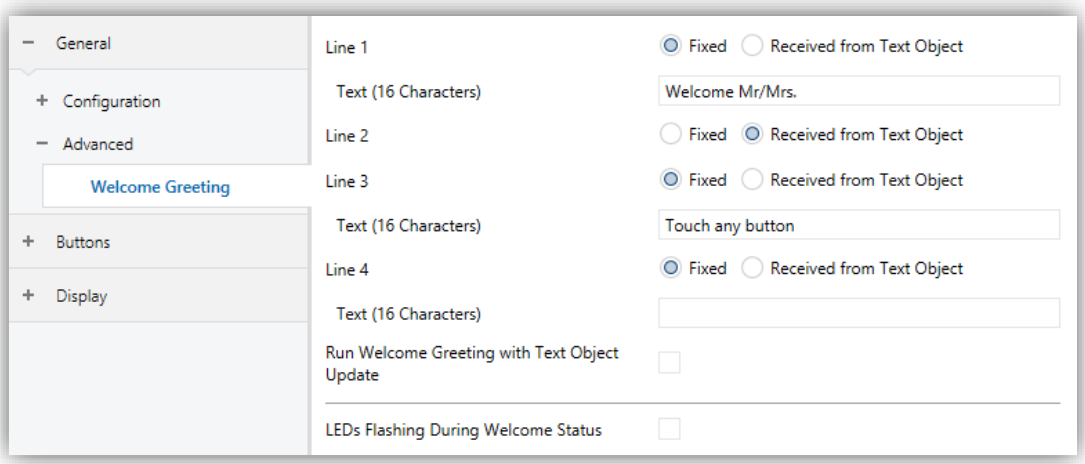


Figure 10. Avanced– Welcome Greeting.

This screen contains the following parameters:

- **Line X** [*Fixed / Received from text Object*]: sets whether the corresponding text line will be pre-defined or object-dependent.

  If "Fixed" is selected, the following parameter will appear:

- **Text**: textbox to enter the desired text for the corresponding line.

If "Received from text Object" is selected, the following parameter will appear:

- **Run Welcome Greeting with Text Object Update** [*enabled/disabled*]: allows choosing whether run the welcome greeting when writing on the 14 bytes object "**[General] Welcome Greeting – Line X**". Up to four objects will appear, depending on how many lines have been assigned the "Received from text Object" option.

- **LEDs Flashing During Welcome Status** [*enabled/disabled*]: sets whether the LEDs of the buttons should blink or not during the welcome greeting.

2.1.2.3 WELCOME BACK OBJECT

Flat 55 Display can send a specific object (a one-bit value, a scene value or both, depending on the parameterisation) to the KNX bus when the user presses a touch button or when the proximity sensor detects presence (if enabled) after a significant amount of time since the last touch or detection. Sending it or not can also depend on an additional, configurable condition consisting in the evaluation of up to five binary objects.

Any actions that in normal operation may be executed will not be if the welcome back object is sent to the bus. Thus, if the user presses a button and this causes that the welcome back object is sent, the normal action of that button will not be triggered.

ETS PARAMETERISATION

After enabling "**Welcome Back Object**" from "Advanced" screen (see section 2.1.2), a new tab will be incorporated into the tree on the left.

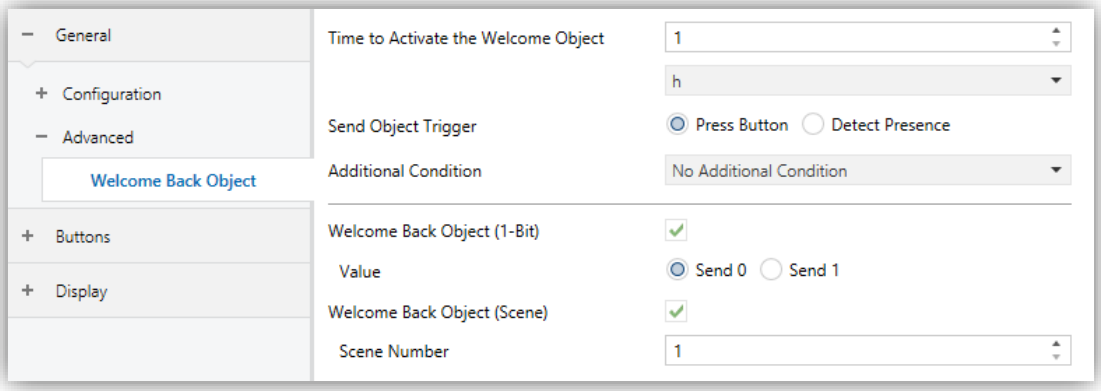


Figure 11. Avanced - Welcome Back Object.

- **Time to Activate the Welcome Object** [*1...65535*][*s*] [*1…65535*][*min/h*]: sets the minimum time that should elapse after the last button touch (or presence detection, when the proximity sensor is enabled) before the next one triggers the execution of the welcome back function.

- **Send Object Trigger** [*Press Button / Detect Presence*]: sets whether the welcome back object is sending after a touch in the screen or when the proximity sensor detects presence.

- **Additional Condition:** sets if sending the welcome back object should also depend on an external condition. The option by default is [*No Additional Condition*]. The following are available too:

  - [*Do not send unless all additional conditions are 0*]: the welcome back object will only be sent if all the condition objects are found to have the value "0".

  - [*Do not send unless all additional conditions are 1*]: the welcome back object will only be sent if all the condition objects are found to have the value "1".

  - [*Do not send unless at least one of the additional conditions is 0*]: the welcome back object will only be sent if at least one of the condition objects is found to have the value "0".

  - [*Do not send unless at least one of the additional conditions is 1*]: the welcome back object will only be sent if at least one of the condition objects is found to have the value "1".

  - **Number of Condition Objects** [*1…5*]: up to 5 objects can be selected for the additional condition ("**[General] Welcome Back Object – Additional Condition**").

- **Welcome Back Object (1-Bit)** [*disabled/enabled*]: checkbox to enable the sending of a 1-bit value (through "**[General] Welcome Back Object**") when the welcome back function is triggered and the condition (if any) evaluates to true. The desired value should to be set in **Value** [*Send 0 / Send 1*]

- **Welcome Back Object (Scene)** [*disabled/enabled*]: checkbox to enable the sending of a scene run request (through "**[General] Scene: send**") when the

welcome back function is triggered and the condition (if any) evaluates to true. The desired value should to be set in **Scene Number** [*1…64*].

2.1.2.4 WARNING

This function is intended for visual and/or audible notification of an important event.

The warning is activated when the configured value is received through a 1-bit object. The display will show a flashing icon, which may be accompanied by flashing LEDs and/or a sound, if configured. In addition, the brightness level can be attenuated during night mode.

The warning can be stopped (muted) by pressing a button. However, as long as the warning remains active, when the device goes into inactivity, the icon is displayed again.

The warning is deactivated when the determined value is received through the 1-bit object, and any notification is no longer displayed.

Note: *Warning sound takes precedence over all other sounds.*

ETS PARAMETERISATION

After enabling "**Warning**" from the "Advanced" (section 2.1.2), a new tab will be incorporated into the tab tree. A one-bit object named "**[General] Warning**" will also be shown in the project topology, to start or stop the warning message.

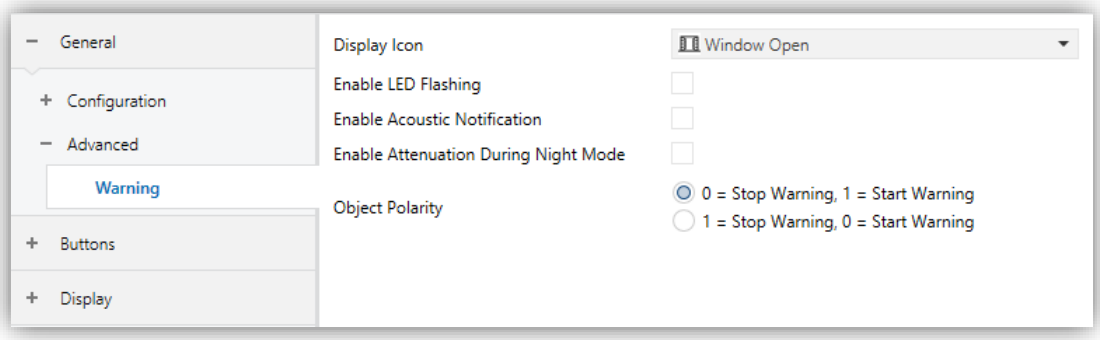


Figure 12. Advanced– Warning.

This screen contains the following parameters:

- **Display Icon** [*Window Open / Drop-down with icons to be selected*]: sets the icon that will be shown on the display once the warning is activated.

- **Enable LED Flashing** [*enabled/disabled*]: sets whether the LEDs of the buttons should blink or not during the warning.

- **Enable Acoustic Notification** [*enabled/disabled*]: sets whether there will be an intermittent sound or not during the warning.

- **Enable Attenuation During Night Mode** [*enabled/disabled*]: sets whether the brightness will be attenuated or not if the night mode is active during the warning.

- **Object Polarity** [*0 = Stop Warning, 1 = Start Warning / 1 = Stop Warning, 0 = Start Warning*]: parameter to select which value should trigger which action when received through the indicated object.

2.2 BUTTONS

2.2.1 CONFIGURATION

Flat 55 Display features **four capacitive buttons** at the user's disposal for the execution of actions. Each will perform a specific function any time, as their functions do not depend on alternating menus, pages, etc.

Although the four buttons are laid out in the corners of the device, they can act as single-button controls or in up to two pairs, being possible to **combine any two of them** within one pair. The opposite corner buttons cannot be configured as a pair.

All the buttons are identical; this brings a high level of versatility for a wide variety of applications. The following is a list of the functions that can be assigned to each button.

- **Disabled** (the button will not react to user presses)**.**
- **Pair Left and Right**, or **Pair Up and Down**, being the function of such pair one of the following:
  - Switch.
  - Two objects (short press / long press).
  - Dimmer.
  - Shutter.
  - Scaling.
  - Counter.
  - Enumeration.
  - Float.
  - Multimedia.
  - [Climate] Temperature setpoint.
  - [Climate] Mode.
  - [Climate] Fan.
  - [Climate] Mode Special.
- **Individual**:
  - LED indicator.
  - Switch.
  - Hold & release.

- Two objects (short press / long press).
- Scene.
- Scaling constant.
- Counter constant.
- Float constant.
- Dimmer.
- Shutter.
- Enumeration.
- [Climate] Fan.
- [Climate] Mode.
- [Climate] Mode Special.
- Room State.

Apart from the button function itself, the integrator can select the desired behaviour of the button LEDs. The different illumination modes have been detailed in ANNEX I. LED Illumination Modes.

The next sections explain the configuration involved for each of the above functions.

ETS PARAMETERISATION

An independent tab for the parameterization of the buttons is shown in ETS by default, initially containing only a sub-tab named “Configuration”.

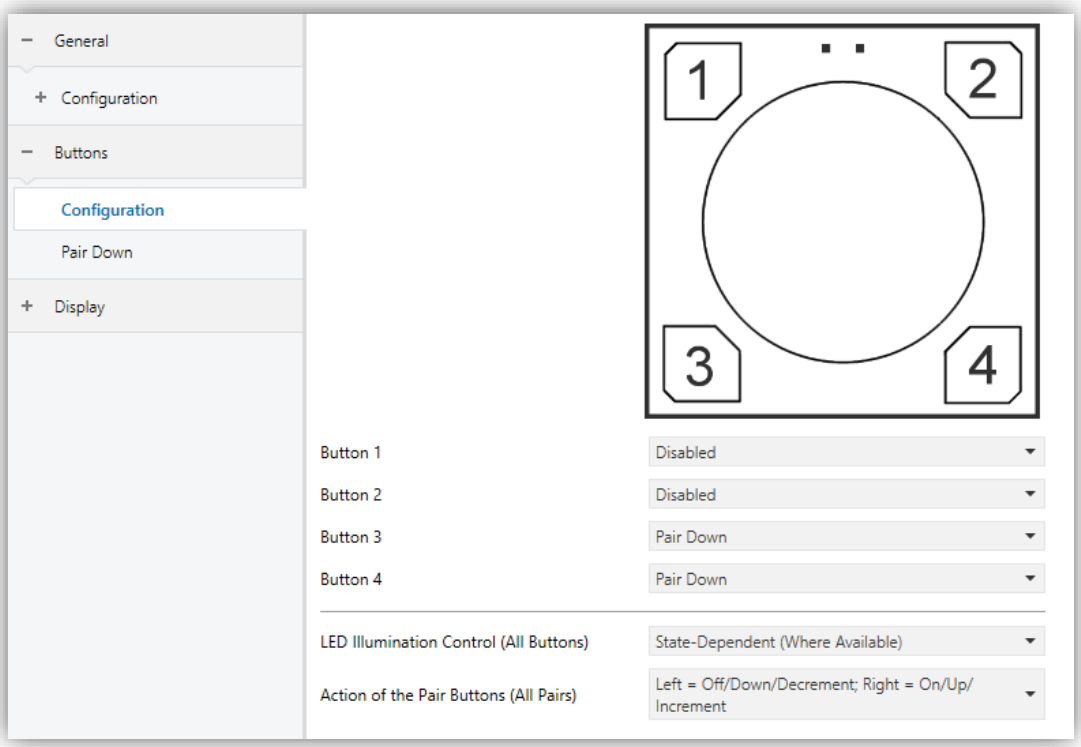


Figure 13. Buttons – Configuration

One drop-down list with the following options is shown per **button**.

- [*Disabled*]. See section 2.2.2 for details.
- [*Individual*]. Selecting this option brings a new tab (“Button X”), which will make it possible to configure the functionality of that particular touch button. See section 2.2.3 for details.
- [*Pair X*]. Sets that this touch button will belong to a two-button control. Once one pair has been assigned to two buttons (and not before), a new tab (Pair Up / Down / Left / Right) will show up in the tab tree, in order to configure the desired functionality. See section 2.2.4 for details.

- **LED Illumination Control (All buttons)**: jointly sets the LEDs illumination behaviour. The options are (please refer to ANNEX I. LED Illumination Modes for details):

- [*Disabled*]
- [*Regular*]
- [*State-Dependent (where available)*]
- [*State-Dependent (where available) (both LEDs)*]
- [*Dedicated Object*]
- [*Configure every button (pair) separately*]: in case of selecting the last option, there will be a specific parameter **for each control** to specifically select the desired behaviour of the LED (or LEDs):

If at least one two-button control is being configured (either Pair Left, Right or Pair Up, Down), an additional parameter will be available. The options are:

- **Action of the pair buttons (All pairs)**: to determine an operation criterion:
  - [*Left = Off/Down/Decrement; Right = On/Up Increment*]
  - [*Right = Off/Down/Decrement; Left = On/Up Increment*]
  - [*Every button pair is configured separately*]*:* there will be a specific parameter in every two-button control for specifically selecting the desired behaviour.

2.2.2 DISABLE

While a button stays disabled, it will not be functional: touching on it will not cause the execution of actions, nor will make the associated LED light.

ETS PARAMETERISATION

While a button stays disabled, it will not be functional: touching on it will not cause the execution of actions, nor will make the associated LED light.

2.2.3 INDIVIDUAL

Buttons configured to work as individual (separate) controls can be assigned any of the following control functions:

- **LED Indicator:** user presses will not trigger any function although the LED will turn on or off depending on the values received from the bus.

- **Switch:** whenever the user touches the button, a binary value will be sent to the KNX bus. This value is configurable and may be 0 or 1, or alternate with every touch according to the sequence 1 → 0 → 1 → …

  Under a "State-dependent" LED illumination, the LED will remain on/off according to the current state (on/off) of the object.

- **Hold & Release:** as soon as the user touches the button, a binary value will be sent to the KNX bus. And as long as the user releases the button, another value will be sent through the same object.

  The "State-dependent" LED mode is not available for this function.

- **Two Objects (short press/long press):** specific binary values will be sent both after a short or a long press (a different object will be used in each case).

  Under a "State-dependent" LED illumination, the LED will remain on/off according to the current state (on/off) of either one object or the other, which can be configured in parameters. However, if **LED Illumination Control** (**All Buttons)** has been set to "State-dependent (where available)", only the short press object will apply.

- **Scene:** after the user touches the button, an order to run a specific scene (configurable) will be sent to the bus. If enabled in parameters, orders to save the scene can also be sent to the bus after a three-second press on the button.

  The "State-dependent" LED mode is not available for this function.

- **Scaling constant:** sends a percentage value (configurable) to the bus when the user touches the button.

  Under a "State-dependent" LED illumination, the LED will remain on/off depending on whether the current value of the object matches the one parameterised. This object can also be written from the bus, which will update the LED according to the new value.

- **Counter constant:** sends an integer value (configurable) to the bus when the user touches the button. This value can be one-byte or two-byte sized, as well as signed or unsigned. The available ranges are shown next:

	1-byte	2-byte
Unsigned	0 – 255	0 – 65535
Signed	-128 – 127	-32768 – 32768

Table 1 Value range – Counter type constant

The "State-dependent" LED illumination mode is analogous as for the Scaling Constant function.

- **Float constant:** sends a two-byte floating point value (configurable) to the bus when the user touches the button. The available range is -671088.625 to 670760.9375.

  The "State-dependent" LED illumination mode is analogous as for the Scaling Constant and Counter Constant functions.

- **Dimmer:** implements a one-button light control that sends orders to the KNX bus, which can then be executed by light dimmers. These orders consist in:

  - Switch-on/Switch-off orders (on short presses).
  - Step dimming orders (on long presses) and the subsequent stop order after the button is released.

  Being a one-button control, the **switch orders will alternate** (on/off) for every short press, and so will do the step dimming orders (increase/decrease) for every long press. However, there are some exceptions:

  - On a long press: an increase dimming order will be sent if the light is found to be off (according to the status object). On the other hand, a decrease order will be sent if it is found to be 100%.
  - On a short press: a switch-on order will be sent if the light is found to be off (according to the status object). On the other hand, a switch-off order will be sent if it is found to be on (value greater than 0%).

  Note that the device considers that the **current light level** is the value of a specific one-byte object provided to be written from the KNX bus (i.e., to

receive feedback from the dimmer). This object is internally updated after a short or long press but linking it to the real dimmer status is highly advisable.

Under a "state-dependent" LED illumination, the LED will remain on/off according to the value of the aforementioned status object (i.e., off when the value is 0% and on in any other case).

- **Shutter:** implements a one-button shutter control that sends orders to the KNX bus, which can then be executed by an actuator. Two control types can be configured:

  - Standard: the device will react to both long and short presses, being possible to send the bus the following commands:

    - Move (raise/lower) orders (on **long presses**).
    - Stop/Step orders (on **short presses**).

    Being a one-button control, the direction of the motion will alternate (upwards/downwards) for both the move and the step orders after every long press. However, there are some exceptions to this alternation:

    - On a short press: a step-up order will be sent if the last long press made the shutter move up, or if the current position is found to be 100%. On the other hand, a step-down order will be sent if the last long press made the shutter move down or if the current position is found to be 0%.
    - On a long press: a move-up order will be sent if the last short press caused a step-down order or if the current position is found to be 100%. On the other hand, a move-down order will be sent if the last short press caused a step-up order or if the current position is found to be 0%.

    As usual in the KNX standard, stop/step orders are interpreted by the actuators as a request to move the slats one step up or down (in case the shutter is still) or as a request to interrupt the motion of the shutter (in case it is already moving up or down).

  - Hold & Release: the device will send an order to move the shutter when the button is touched, and the order to stop it as soon as it is released.

Therefore, short or long touches have the same effect: the shutter will remain in motion as long as the user keeps holding the button.

The direction of this motion (upwards or downwards) will **alternate** with every touch, according to the following sequence: downwards → upwards → downwards → … However, there are some exceptions to this alternation:

- If the position of the shutter is found to be 0%, the next order will lower the shutter.
- If the position of the shutter is found to be 100%, the next order will raise the shutter.

Flat is aware of the current **position of the shutter** through a specific object which should be linked to the analogous object of the shutter actuator, in order to receive feedback. This object is initialised with value "50%" after a download or a bus failure; therefore, the actuator is required to update it with the real value after the bus recovery.

The "state-dependent" LED illumination mode is not available for this function.

- **Enumeration:** sends one-byte (unsigned) numeric value to the KNX bus from a list of up 6 different values. Each press advances the list to the next item.

  This control provides a parameter to link the control to a box on the screen so that the current numeric value is displayed at all times on the screen.

  The "State-dependent" LED mode is not available for this function.

- **[Climate] Fan:** pressing one of the two buttons will make Flat 55 Display send a binary value to the bus that allows changing the fan speed (up to **five levels** available). This value can be either **binary** (increase / decrease orders), **scaling** (0% - 100%) or **enumerated**.

  Furthermore, it is possible to configure the speed 0 as an additional fan level, and/or another level to activate the Auto mode.

The order to activate the auto mode can be sent over a one-bit object independent from the fan control object, or alternatively consist in the speed level 0. In the latter case, one '0' will trigger the Auto mode.

The table below shows the relation between the scaling values and the enumeration values, depending on the number of speed levels configured (note that if the Auto mode or the speed level 0 are allowed one more level is added, corresponding to value 0).

% Values based on fan levels						
Speed levels		**1**	**2**	**3**	**4**	**5**
Enumeration value	1	100	50,2	33,3	25,1	20
	2	-	100	66,7	50,2	40
	3	-	-	100	75,3	60
	4	-	-	-	100	80
	5	-	-	-	-	100

Table 2 Fan levels.

For the scaling and enumeration controls, the object is sent to the bus slightly delayed once the desired value has been set by the user. For these two cases it is possible to **link the control with a box in the display** in order to show the current value on the display.

Under a "state-dependent" LED illumination, the LED will remain on/off according to the current state of the fan.

- **[Climate] Mode**: pressing the button will make Flat 55 Display send climate mode values to the bus. Two mode control types are possible: **Heat / Cool** and **Extended** (HVAC).

  As above, linking the control to a box in the display in order to show the current mode on it is possible (only for Extended mode).

  The "State-dependent" LED mode is not available for this function.

- **[Climate] Special Mode:** lets the user sequentially commute between the different special climate mode: Auto, Comfort, Standby, Economy and Building Protection. This function is analogous to the modes control in its Extended version.

- **Room State:** allows controlling the room states (normal, make-up request, do not disturb). User can switch the state between *normal* and *do not disturb* or *make-up request.* Configuring by parameter if will activate *do not disturb* or *make-up request* state will be necessary.

  Depending on the parameterisation and the current value of object, after a short press, the following values will be transmitted:

State	Current Object Value	Transmitted Value
Make-Up Request	Do Not Disturb / Normal	Make-Up Request
	Make-Up Request	Normal
Do Not Disturb	Normal / Make-Up Request	Do Not Disturb
	Do Not Disturb	Normal

Table 3 Room States

If the LED illumination is "State-dependent", LED will light up when the current object value coincides with the parameterized value.

ETS PARAMETERISATION

When an individual button has been enabled, a specific tab ("**Button In**") becomes available under "Buttons" in the tree on the left.

The main parameter to be configured is:

- **Function** [*LED indicator / Switch / Hold & Release / Two Objects (short press / long press) / Scene / Scaling constant / Counter constant / Float constant / Dimmer / Shutter / Enumeration / [Climate] Fan / [Climate] Mode / [Climate] Special Mode / Room State*]: sets the desired function for the button.

  Depending on the function, some more parameters are involved (as described next). Please note that in the next pages "**[In]**" is used as a general notation for the communication objects, where "n" depends on the particular button pair.

- **LED Illumination Control:** sets the behaviour of the LEDs on the buttons. Depending on the type of control selected for each button, the options may be: [*Regular / State-Dependent / Dedicated object*]. (See ANNEX I. LED Illumination Modes for details)

In case of selecting "Dedicated Object", the object "**[Btn] [In] LED On/Off**" will be included in the project topology and a new parameter:

- **Value** [*0 = Off; 1 = On / 0 = On; 1 = Off*] to select the value to switch off and on the LED shows up.

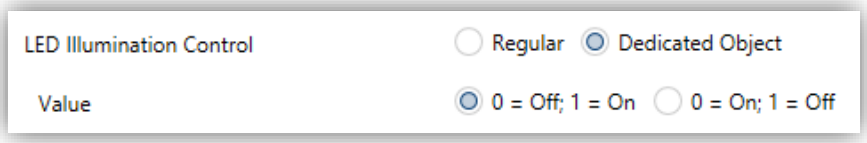


Figure 14 LED illumination control - Dedicated object.

Note: *this parameter will remain hidden unless having selected "Configure every button (pair) separately" in "**LED Illumination Control (All Buttons)**" (see 2.2.1).*

Moreover, the textbox **INFO** allows changing the default name of the tab in the left menu, as shows the following figure.

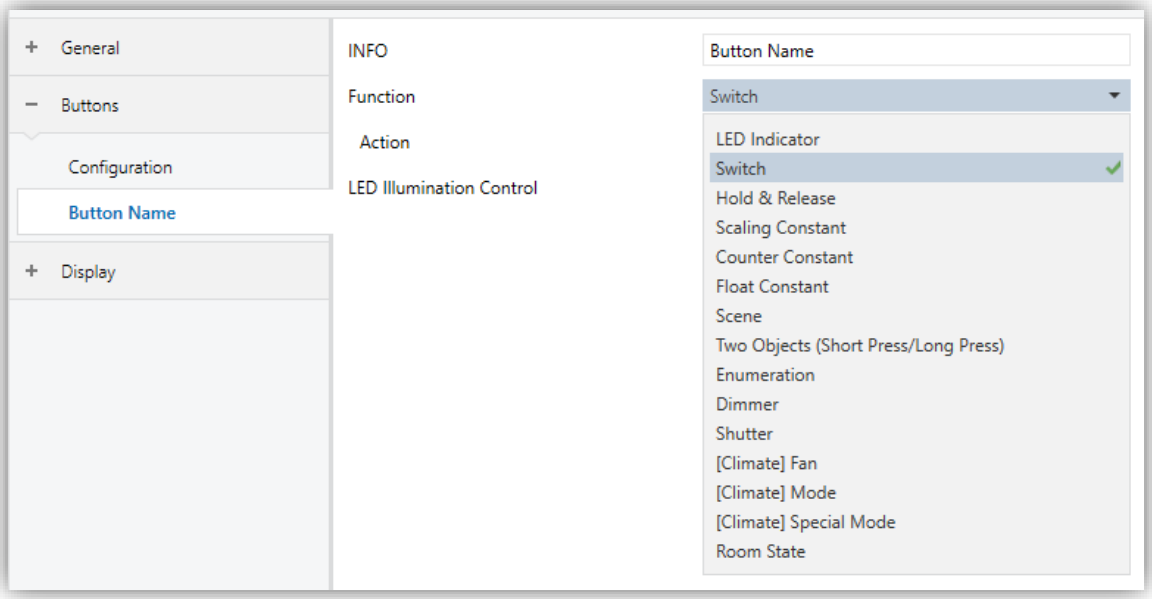


Figure 15. Individual Button.

LED indicator

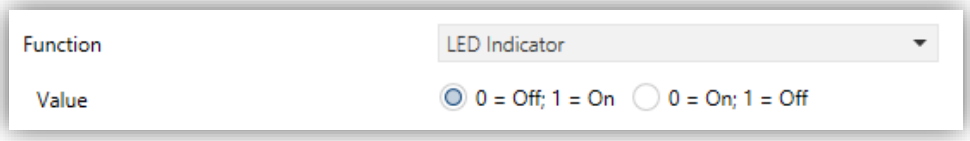


Figure 16. Individual Button – LED indicator.

- **Value** [*0 = Off; 1 = On / 0 = On; 1 = Off*]: sets the behaviour of the LED of the button. The options are similar to those of the dedicated-object LED illumination available for other control types.

  Note: *this parameter does not depend on the option selected for **LED Illumination Control (All Buttons)** (see section 2.2.1).*

After assigning this function to the button, object "**[Btn] [In] LED On/Off**" is included in the project topology, so that the values that determine the state of the LED at a given time can be received from the bus.

Switch

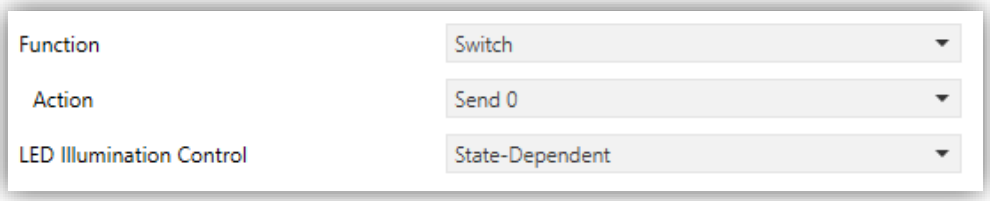


Figure 17. Individual Button - Switch.

- **Action** [*Send 0 / Send 1 / Toggle 0/1*]: sets the value to be sent to the bus (through object "**[Btn] [In] Switch**") when the user touches the button.

- **LED Illumination Control** [*Regular / State-Dependent / Dedicated object*].

Hold & Release

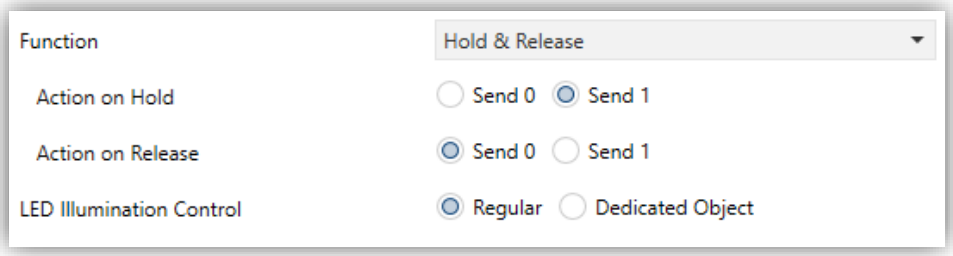


Figure 18. Individual Button - Hold & Release.

- **Action on Hold** [*Send 0 / Send 1*]: sets the value to be sent to the bus (through "**[Btn] [In] Hold & Release**") when the user touches the button.

- **Action on Release** [*Send 0 / Send 1*]: sets the value to be sent to the bus (again, through "**[Btn] [In] Hold & Release**") when the user stops touching the button.

- **LED Illumination Control** [*Regular / Dedicated object*].

Two Objects (Short Press/Long Press)

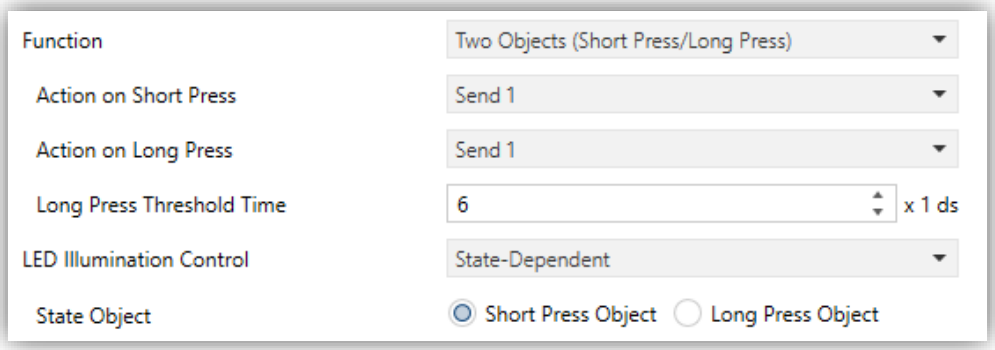


Figure 19. Individual Button - Two Objects (Short Press / Long Press).

- **Action on Short press** [*Send 0 / Send 1 / Toggle 0/1 / Send 1-byte Unsigned Int Value*]: sets the value to be sent to the bus (through "**[Btn] [In] Two Objects - Short Press**") when the user short-presses the button.

  In case of selecting the latter, an additional parameter ("**Value**") will be displayed to enter the desired one-byte value [*0…255*].

- **Action on Long press** [*Send 0 / Send 1 / Toggle 0/1 / Send 1-byte Unsigned Int Value*]: sets the value to be sent to the bus (through "**[Btn] [In] Two Objects - Long Press**") when the user long-presses the button.

  In case of selecting the latter, an additional parameter ("**Value**") will be displayed to enter the desired one-byte value [*0…255*].

- **Long Press Threshold Time** [*4…6…50*] [*ds*]: sets the minimum time the user should hold the button in order to consider it a long press.

- **LED Illumination Control** [*State dependent / Regular / Dedicated object*]: Selecting "State dependent" brings an additional parameter:

  - **State Object** [*Short Press Object / Long Press Object*] to make the state of the LED correspond either to object "**[Btn] [In] Two Objects - Short press**" or to object "**[Btn] [In] Two Objects - Long press**" respectively.

Scene

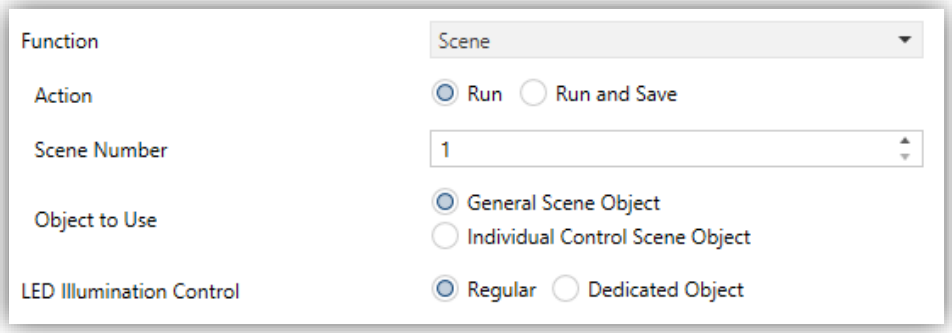


Figure 20. Individual Button - Scene.

- **Action** [*Run / Run and Save*]: sets whether the value to be sent to the KNX bus when the user touches the button will always be a scene run request or –depending on the length of button press– a scene run or save request (3s press).
- **Scene number** [*1…64*]: number of the scene to be sent to the bus, both in the case of the run requests and the save requests.
- **Object to Use** [*General Scene Object / Individual Control Scene Object*]**:** commands are sent via the general scene object ("**[General] Scene: Send**") or through a control object ("**[Btn][In] Scene: Send**").

- **LED Illumination Control** [*Regular / Dedicated object*].

Scaling Constant / Counter Constant / Float Constant

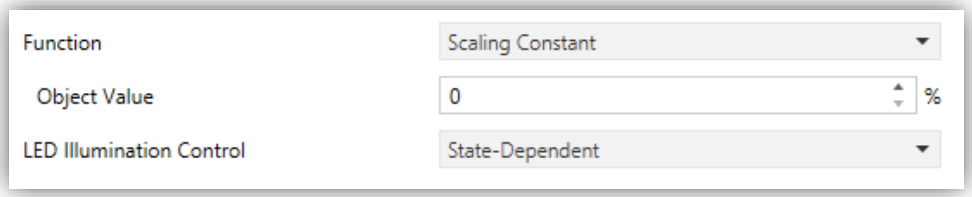


Figure 21. Individual Button - Scaling Constant

- **Object Value**: sets the value to be sent to the KNX bus when the user touches the button. The available range and the object through which the value is sent depend for each case, as the table below shows.

In case of selecting Counter Constant, two specific parameters ("**Size**" and "**Signed**") will be displayed to respectively define the size of the constant and whether it is a signed value or an unsigned value. Depending on that, the range and the name of the object will vary.

Function	Size	Sign	Object Value	Object Name
Scaling	1-Byte		[*0…100*]	[Btn][In] 1-Byte Scaling Value
Counter	*1-Byte*	*Signed*	[*-128…0…127*]	[Btn][In] 1-Byte Signed Int Value
		Unsigned	[*0…255*]	[Btn][In] 1-Byte Unsigned Int Value
	2-Bytes	*Signed*	[*-32768…32767*]	[Btn][In] 2-Byte Signed Int Value
		Unsigned	[*0…65535*]	[Btn][In] 2-Byte Unsigned Int Value
Float	2-Bytes		[*-671088.64…0…670760.96*]	[Btn][In] 2-Byte Float Value

Table 4 Constant type numerical control.

- **LED Illumination Control** [*Regular / State dependent / Dedicated object*].

Dimmer

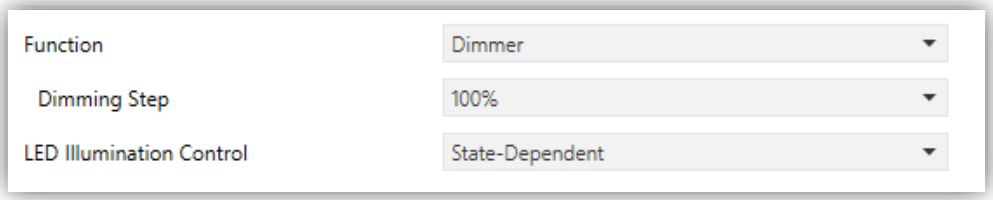


Figure 22. Individual Button - Dimmer

The (alternating) switch orders will be sent through the "**[Btn] [In] Light - On/Off**" one-bit object, while the (alternating) increase/decrease/stop orders will be through the "**[Btn] [In] Light - Dimming**" four-bit object.

On the other hand, the "**[Btn] [In] Light - Dimming (Status)**" one-byte object may be linked to the light level status object of the dimmer.

The parameters for this function are:

- **Dimming Step** [*100% / 50% / 25% / 12.5% / 6.25% / 3.1% / 1.5%*]: defines the dimming step to be sent (through "**[Btn] [In] Light - Dimming**") to the light dimmer with every long press.

Note: *since dimmers typically do not apply the new light level immediately (i.e., the step is performed progressively) and since Flat 55 Display sends an order to interrupt the step dimming once the user releases the button, it is advisable to configure a step of 100%. This way, the user can perform any dimming step by simply leaving the button pressed and then releasing it, without needing to make successive button presses.*

- **LED Illumination Control** [*Regular / State-Dependent / Dedicated object*].

Shutter

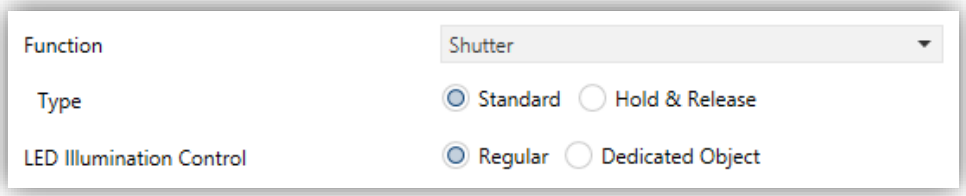


Figure 23. Individual Button - Shutter

The (alternating) move up/down orders will be sent through the "**[Btn] [In] Shutter - Move**" one-bit object, while the (alternating) step up/down orders will be through the "**[Btn] [In] Shutter - Stop / Step**" one-bit object.

Additionally, a one-byte object ("**[Btn] [In] Shutter Position**") is provided to link it to the position status object of the shutter actuator (in fact, this object is only intended to receive values from the bus, not to send them).

The parameters for this function are:

- **Type** [*Standard*/*Hold & Release*]: sets the desired control type:
  - [*Standard*]: a long press will make the device send to the KNX bus an order to start moving the shutter (upwards or downwards, depending on the button), while a short press will make it send a stop order.
  - [*Hold & Release*]: as soon as the button is held, the device will send the KNX bus an order to start moving the shutter (upwards or downwards, depending on the button). After the button is released, it will send an order to stop the shutter.

- **LED Illumination Control** [*Regular / Dedicated object*].

Enumeration

This control is analogous to the Switch control, with the particularity that the communication object will be one byte ("**[Btn][In] Enumeration**") and that up to 6 states can be distinguished depending on the object value.

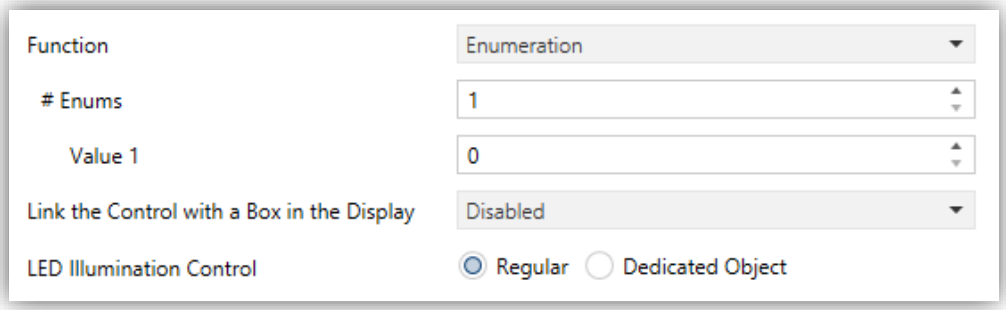


Figure 24. Individual Buttons – Enumeration.

- # **Enums** [*1…6*]: number of states that will be distinguished. For every distinguished state, the following parameter will become available:
  - **Value *j*** [*0…255*]: numerical value that will be sent through the control object when the user, after pressing the buttons, sets the control to state *j*. The actual sending will not be performed until 1.5 seconds after the last press.

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current numeric value. See section 2.3 for details.

- **LED Illumination Control** [*Regular / Dedicated object*].

[Climate] Fan

When this function is assigned to the button, one object ("**[Btn][In] Fan Control**") for each type of control and 1-byte status object ("**[Btn][In] Fan Indicator**") are enabled. The status object (which must be linked to the status object of the fan actuator) will indicate, in percent, the value of the current speed level.

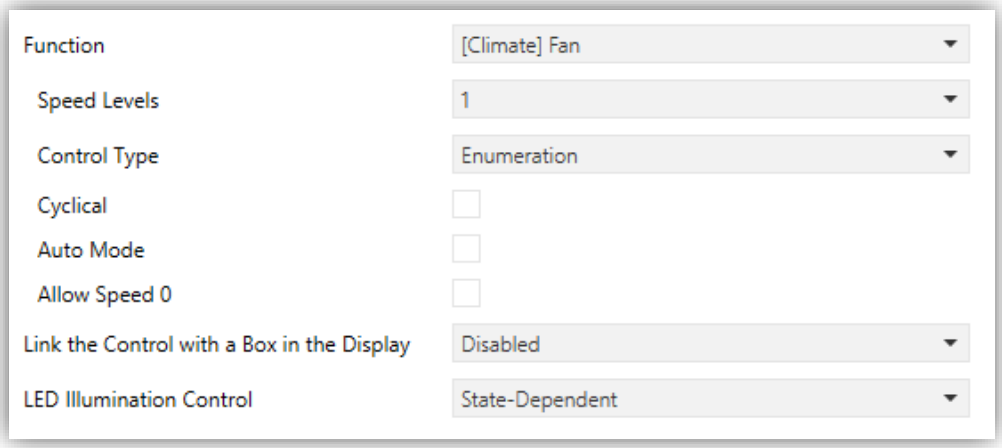


Figure 25 Individual Buttons – [Climate] Fan

- **Speed Levels** [*1…5*]**:** allows selecting the speed levels available for control.

- **Control Type**: sets the type of the communications objects to control the fan level.

  - [*1 bit (decrease/increase)*]: orders of speed increase/decrease are sent through the one-bit object "**[Btn] [In] Fan Control (Type: 1-Bit)**".
  - [*Scaling*]: scaling values are sent through the one-byte object "**[Btn] [In] Fan Control (Type: Scaling)**".
  - [*Enumeration*]: integer values are sent through the one-byte object "**[Btn] [In] Fan Control (Type: Enumeration)**".

- **Cyclical** [*enabled/disabled*]: sets whether scrolling through the speed levels is circular or not. If checked, a press switches to the minimum level. On the other hand, if cyclical is disabled, the level increases to the last one and then decrease. At levels other than the first and last, the last action (increase or decrease) is maintained until reaching the first or last.

- **Auto Mode** [*enabled/disabled*]: sets whether the fan Auto mode will be available or not. If checked, the following parameters are also shown.

  - **Dedicated Object for Auto Mode** [*enabled/disabled*]: sets how the Auto mode should be activated. In the absence of a dedicated object, the Auto fan mode will be activated by switching to fan level 0.

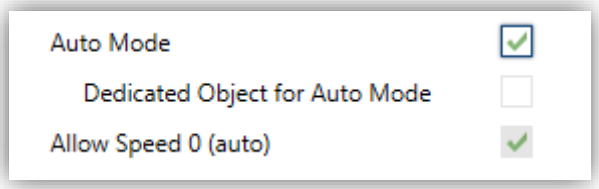


Figure 26. Individual Buttons – [Climate] Fan – Auto Mode.

In this case (supposing that "**Speed Levels"** has been set, for instance, to "3"), the fan levels that can be navigated through short presses are:

Auto Mode (0)	Minimum	Medium	Maximum

On the other hand, marking the checkbox enables the one-bit object "**[Btn] [In] Fan Control – Auto Mode**", which will trigger the Auto mode when it receives the value "1" (or "0", depending on the subsequent parameter, "**Value to Set the Auto Mode**" [*Send 0 / Send 1*]).

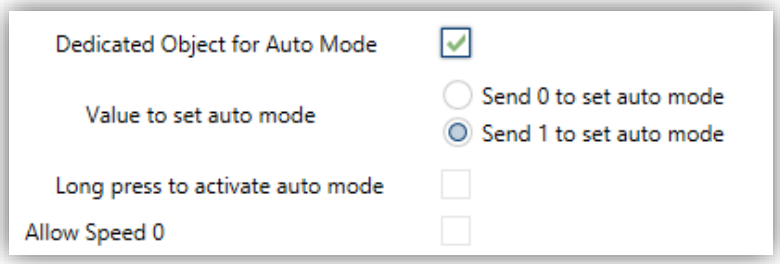


Figure 27. Individual Buttons – [Climate] Fan – Dedicated Object for Auto Mode.

However, two alternative (and mutually exclusive) methods are possible to activate this mode:

- By short press: Auto mode can be reached as a further level above the maximum one. In this case the fan levels activated by short presses are (note that **speed 0 is optional**):

(0)	Minimum	Medium	Maximum	Auto Mode

- By long press on any of the buttons of the control (requires checking "**Long Press to Activate Auto Mode**" [*enabled/disabled*]).

  A further long press deactivates back the Auto mode and resumes the previous fan level. Instead, a short press deactivates the Auto mode

and switches to the next level (or previous, depending on the button). In this case the fan levels reachable through short presses are (**speed 0 is optional**):

(0)	Minimum	Medium	Maximum

(The Auto mode here is only activated by long press).

- **Allow speed 0** [*enabled/disabled*]: sets whether the speed level 0 will be present or not. When the "**Auto Mode without a dedicated object**" has been configured, this option will be necessarily activated.

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current fan speed. The selected box must be configured with the same data type (see section 2.3 for details).

  Note: *this parameter is only available for Scaling or Enumeration control types*.

- **LED Illumination Control** [*Regular / State-dependent / Dedicated Object*].

[Climate] Mode

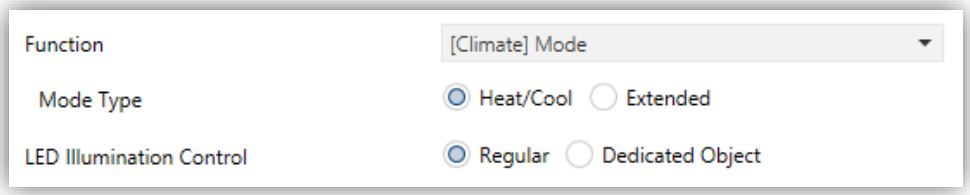


Figure 28. Individual Buttons – [Climate] Mode (Heat/Cool)

- **Mode Type**: sets mode control type:

  - [*Heat/Cool*]: Selecting this type of mode control turns the box into a control which will activate the Heat or Cool mode.

    One communication object is also enabled: the "**[Btn][In] (Climate) Mode**" control and status object. Depending on the mode selected by the user, the control object will be sent to the bus a certain value.

Mode	Sent Value
Cool	0
Heat	1

Table 5. Heat/Cool Mode vs. Object Value.

- [*Extended*]: pressing on the button will make Flat 55 Display walk through the different HVAC modes and send a one-byte value to the bus according to the selected mode.

  Up to five modes [*Heat* / *Cool* / *Auto* / *Fan* / *Dry*] are available, each of which can be in ETS by means of the proper checkbox, which permits setting which of all the five extended modes will be included into the sequential scrolling implemented by the buttons.

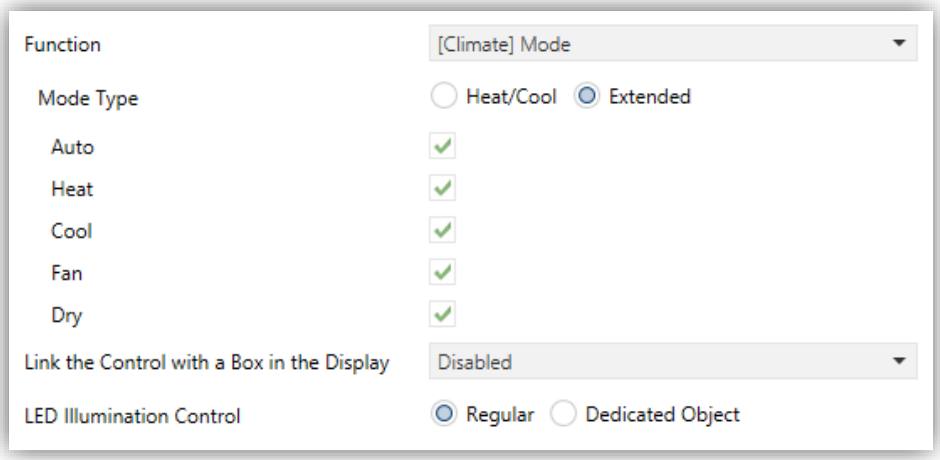


Figure 29. Individual Buttons – [Climate] Mode (Extended).

When this type of mode control is assigned to the box, one 1-byte communication object is enabled: the "**[Btn][In] (Climate) Mode – Extended**" control and status object. Depending on the mode selected by the user, the control object will be sent to the bus a certain value.

Mode	Sent Value
Auto	0 (0x00)
Heat	1 (0x01)
Cool	3 (0x03)
Fan	9 (0x09)
Dry	14 (0x0E)

Table 6. HVAC Mode vs. Object Value.

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current numeric value. The selected box must be configured with the same data type (see section 2.3 for details).

  Note: *this option is only available for Extended mode type.*

- **LED Illumination Control** [*Regular / Dedicated Object*].

[Climate] Special Mode

This control is exactly the same as **[Climate] Mode** in its Extended version, but with the modes: Auto, Comfort, Standby, Economy, Building Protection.

The climate mode will be controlled through the object "**[Btn][In] (Climate) Special Mode Control**".

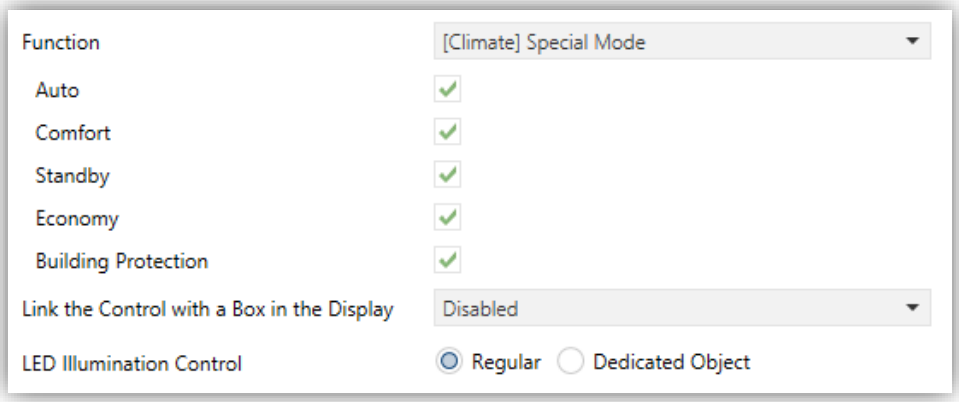


Figure 30. Individual Buttons - [Climate] Special Mode Control.

Room State

When this function is assigned to the button, the object for the control ""**[Btn][In] Room State**" is enabled. This object will also be a status indicator.

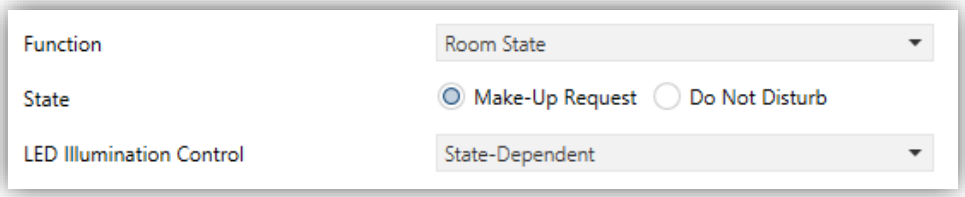


Figure 31. Individual Buttons – Room State.

- **State** [*Make-up Request / Do not Disturb*]: sets the desire function.
- **LED Illumination Control** [*Regular / State-Dependant / Dedicated Object*].

2.2.4 PAIR

Buttons configured to work as a joint control can be assigned the following functions:

- **Switch:** Pressing one of the two buttons will make Flat 55 Display send a binary value to the bus, while pressing on the other will make it send the inverse binary value. It is possible to configure which one does what.

  Under a "state-dependent" LED illumination (see ANNEX I. LED Illumination Modes), the LED of the corresponding button will remain on/off according to the current state (on/off) of the switch.

  On the other hand, under a "state-dependent (both LEDs)" LED illumination, both of them will remain on while the switch is in the "on" state, and off while in the "off" state.

- **Two objects (short press/long press):** control for sending specific binary values both after a short or a long press on any of the two. Different objects will be used for the short and long presses.

  Moreover, it is possible (in parameters) to make the "state-dependent" and "state-dependent (both LEDs)" LED illumination modes (see ANNEX I. LED Illumination Modes) depend on either one object or the other. However, if "**LED Illumination Control (All Buttons)**" (section 2.2.1) has been set to "state-dependent (where available)" only the short press object will be considered.

- **Dimmer:** sends a switch-on order to the bus, while doing so on the other button will make it send a switch-off order. Long presses will make it send a step dimming order (the value of which is configurable) to make a dimmer increase or decrease the light level (and a stop order as soon as the user releases the push button). Setting which button does what is possible.

  Under a "state-dependent" LED illumination (see ANNEX I. LED Illumination Modes), the LED of the corresponding button will remain on/off according to whether the current value of the light level status object (which should be updated by the actual dimmer) is greater than 0% or not.

  On the other hand, under a "state-dependent (both LEDs)" LED illumination, both together will remain on or off depending on such value.

- **Shutter:** This option permits making use of the two buttons to control a shutter actuator connected to the bus. Two alternative control methods are possible:

  - Standard: a long press will make the device send to the KNX bus an order to start moving the shutter (upwards or downwards, depending on the button), while a short press will make it send a stop order (which will be interpreted as an order to step up or to step down –depending on the button– if the shutter was not in motion and such function is available).

  - Hold & Release: as soon as the button is held, the device will send the KNX bus an order to start moving the shutter (upwards or downwards, depending on the button). Once the button is released, it will send an order to stop the shutter.

  The "state-dependent" and "state-dependent (both LEDs)" LED illumination modes are not available for this function. See ANNEX I. LED Illumination Modes for details.

- **Scaling, Counter, Float:** the touches over the buttons will trigger the sending of a certain numerical value to the bus (this value will be progressively increased or decreased every time the user touches one button or the other) through the control object.

  These controls provide a parameter to link them to a box in the display so the current numerical value is shown on the display. The screen will reflect the new values as the user touches the buttons, however values are actually sent to the bus 1.5 seconds after the last press.

  The "state-dependent" and "state-dependent (both LEDs)" LED illumination modes are not available for this function. See ANNEX I. LED Illumination Modes for details.

- **Enumeration:** pressing the buttons will make Flat 55 Display send a one-byte (unsigned) value to the bus. There were up to 6 different values. Successively pressing on the buttons will make Flat 55 Display walk through the different values.

As the above functions, this type of control provides parameter to link the control with a box in the display in order to show the current value on the display. Again, values are sent to the bus 1.5 seconds after the last press.

The "state-dependent" and "state-dependent (both LEDs)" LED illumination modes are not available for this function. See ANNEX I. LED Illumination Modes for details.

- **[Climate] Temperature setpoint:** allows controlling the temperature setpoint of an external thermostat by means of a button pair and the display.

  This function can also be linked to a box in the display in order to show the current setpoint value. The box will reflect the value (in ºC or ºF, depending on the selected scale; see section 2.1.2) of the status object, which gets automatically updated after sending control orders (that is, after pressing the buttons), being even possible to receive values from the bus, for example, from the corresponding setpoint status object from the external thermostat.

  The "state-dependent" and "state-dependent (both LEDs)" LED illumination modes are not available for this function. See ANNEX I. LED Illumination Modes for details.

- **[Climate] Mode:** pressing one of the two buttons will make Flat 5 Display send climate mode values to the KNX bus. This function is analogous to the mode control on individual button described in section 2.2.3.

- **[Climate] Fan:** implements a two-button fan control which sends the KNX bus values in order to change the fan speed level. This function is analogous to the ventilation control on individual button described in section 2.2.3.

- **[Climate] Special Mode:** lets the user sequentially commute between the different special climate mode: Auto, Comfort, Standby, Economy and Building Protection. This function is analogous to the special mode control on individual button described in section 2.2.3.

ETS PARAMETERISATION

After two buttons have been assigned to a particular pair, a specific tab ("**Pair X**") becomes available under "Buttons" in the tab tree.

The main parameter that needs to be configured is:

- **Function** [*Switch / Two Objects (Short Press/Long Press) / Dimmer / Shutter / Scaling / Counter / Enumeration / Float / [Climate] Temperature Setpoint / [Climate] Mode / [Climate] Fan / [Climate] Mode Special*]: sets the desired function for the button.

  Depending on the function, some more parameters are shown, as described next. Please note that in the next pages the general notation "**[X]**" is used for the name of the communication objects, as "X" depends on the button pair.

- **LED Illumination Control:** sets the behaviour of the LEDs on the buttons. Depending on the type of control selected for each buttons pair, the options may be: [*Regular / State-Dependent / State-dependent (Both LEDs) / Dedicated object*]. (See ANNEX I. LED Illumination Modes for details).

  In case of selecting "Dedicated Object", the object "**[Btn] [PX] LED On/Off**" will be included in the project topology and a new parameter:

  - **Value** [*0 = Off; 1 = On / 0 = On; 1 = Off*] to select the value to switch off and on the LED shows up.

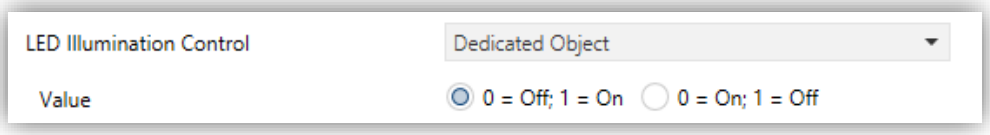


Figure 32 LED illumination control - Dedicated object.

Note: *this parameter will remain hidden unless having selected "Configure every button (pair) separately" in "**LED Illumination Control (All Buttons)**" (see 2.2.1).*

Moreover, the textbox **INFO** allows changing the default name of the tab in the left menu, as shows the following figure.

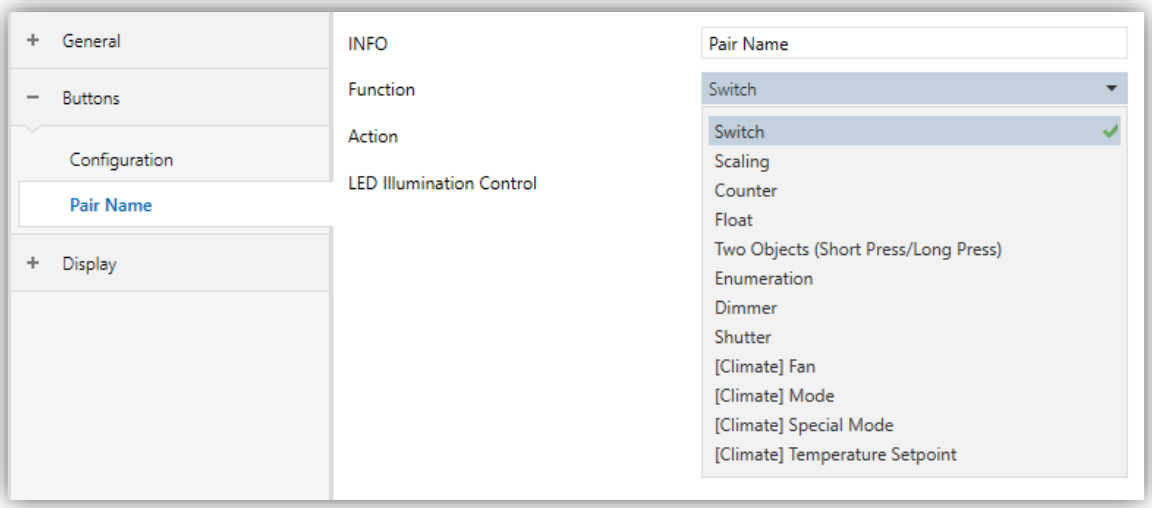


Figure 33. Pair A.

Buttons configured to work as a joint control can be assigned the following functions:

Switch

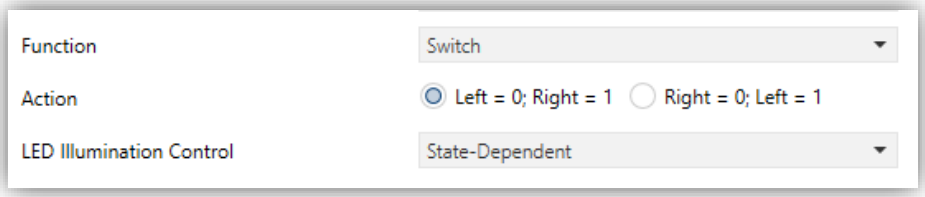


Figure 34. Pair Buttons – Switch

- **Action** [*Left = 0; Right = 1 / Right = 0; Left = 1*]: assigns each of the two buttons the value to be sent through "**[Btn] [PX] Switch**".

  Note: *this parameter will remain hidden unless having selected "Every button pair is configured separately" in* ***Action of the pair buttons*** *(see section 2.2.1).*

- **LED Illumination Control** [*Regular / State-dependent / State-dependent (both LEDs) / Dedicated Object*].

Two objects (short press / long press)

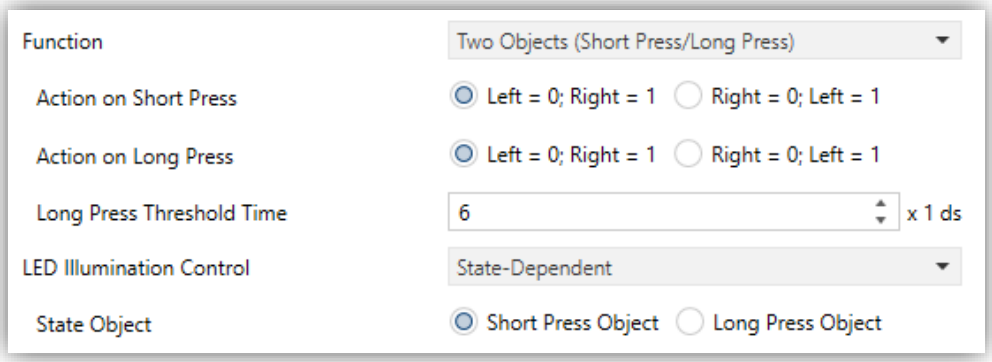


Figure 35 Pair Buttons - Two objects (short press/long press).

- **Action on Short press** [*Left = 0; Right = 1 / Right = 0; Left = 1*]: sets the value to be sent through the object "**[Btn][PX] Two Objects – Short press**" when short pressing each of the two buttons.

- **Action on Long press** [*Left = 0; Right = 1 / Right = 0; Left = 1*]: sets the value to be sent through the object "**[Btn][PX] Two Objects – Long press**" when long pressing each of the two buttons.

- **Long Press Threshold Time** [*4…6…50*] [*ds*]: sets the minimum time the user should hold the button in order to consider it a long press.

- **LED Illumination Control** [*Regular / State-dependent / State-dependent (both LEDs) / Dedicated Object*]. Selecting "State-dependent" or "State-dependent (both LEDs)" brings an additional parameter:

  - **State Object** [*Short Press Object / Long Press Object*], to make the state of the LEDs correspond either to object "**[Btn] [PX] Two Objects: Short press**" or to object "**[Btn] [PX] Two Objects: Long press**" respectively.

Dimmer

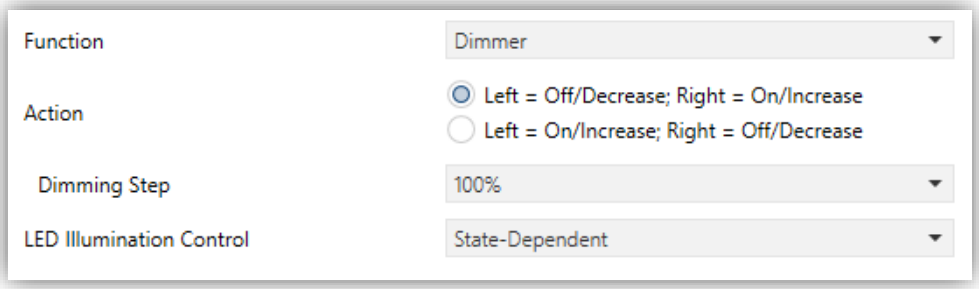


Figure 36 Pair Buttons - Dimmer

The switch orders will be sent through the "**[Btn] [PX] Light - On/Off**" one-bit object, while the increase/decrease orders will be through the "**[Btn] [PX] Light - Dimming**" four-bit object.

On the other hand, the "**[Btn] [PX] Light Dimming (Status)**" one-byte object may be linked to the light level status object of the dimmer (in fact, this object is only intended to receive values from the bus, not to send them).

The parameters available are:

- **Action** [*Left = Off/Decrease; Right = On/Increase / Left = On/Increase; Right = Off/Decrease*]**:** sets which of the two buttons will send the "turn on" orders and which the "turn off" orders.

  Note: *this parameter will remain hidden unless having selected "Every button pair is configured separately" in* ***Action of the pair buttons*** *(see section 2.2.1)*.

  - **Dimming Step** [*100% / 50% / 25% / 12.5% / 6.25% / 3.1% / 1.5%*]: sets the increase or decrease in the light level (in terms of percentage) the dimmer must perform with every step order. How step dimming works is detailed below.

    Note: *since dimmers typically do not apply the new light level immediately (i.e., the step regulation is performed progressively) and since Flat 55 Display sends an order to interrupt the step dimming once the user releases the button, it is advisable to configure a step of 100%. This way, the user can perform any dimming step by simply leaving the button*

pressed and then releasing it without needing to make successive button presses.

- **LED Illumination Control** [*Regular / State-dependent / State-dependent (both LEDs) / Dedicated Object*].

Shutter

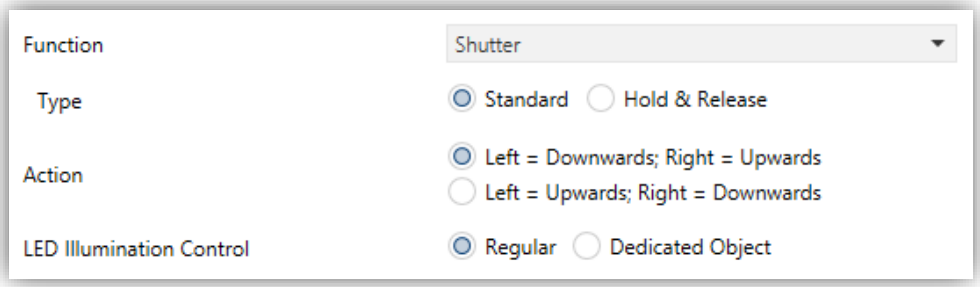


Figure 37. Pair Buttons - Shutter.

➢ **Type**:

- [*Standard*]: a long press will make the device send to the KNX bus an order to start moving the shutter (upwards or downwards, depending on the button), while a short press will make it send a stop order.
- [*Hold & Release*]: as soon as the button is held, the device will send the KNX bus an order to start moving the shutter (upwards or downwards, depending on the button). Once the button is released, it will send an order to stop the shutter.

- **Action** [*Left = Downwards; Right = Upwards / Right = Upwards; Left = Downwards*]: sets which of the two buttons will send the move up orders and which the move down orders.

  Note: *this parameter will remain hidden unless having selected "Every button pair is configured separately" in* ***Action of the pair buttons*** *(see section 2.2.1).*

- **LED Illumination Control** [*Regular / Dedicated Object*].

The move orders will be sent through "**[Btn] [PX] Shutter - Move**", while the stop orders will be sent through "**[Btn] [PX] Shutter - Stop/Step**" (for Standard type) or "**[Btn] [PX] Shutter - Stop**" (for Hold & Release type).

Scaling / Counter / Float

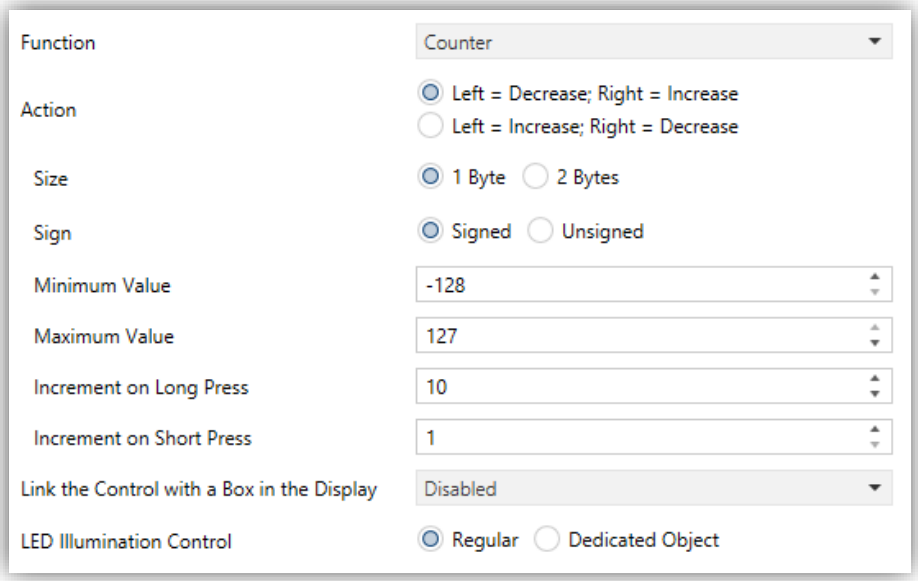


Figure 38. Pair Buttons - Counter.

- **Action** [*Left = Decrease; Right = Increase / Left = Increase; Right = Decrease*]**:** sets which of the two buttons will increase the current numerical value and which will decrease it on user presses.

  Note: *this parameter will remain hidden unless having selected "Every button pair is configured separately" in* ***Action of the pair buttons*** *(see section 2.2.1).*

  - **Minimum Value**: sets which value from the available range will be the minimum value permitted by the control after a number of presses on the decrease button.
  - **Maximum Value**: sets which value from the available range will be the maximum value permitted by the control after a number of presses on the increase button.
  - **Increment on Short Press**: sets the increase or decrease to be applied to the current value on every short press over the increase or decrease buttons, respectively.
  - **Increment on Long Press**: sets the increase or decrease to be applied to the current value on every long press over the increase or decrease buttons, respectively.

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current numeric value. See section 2.3 for details

- **LED Illumination Control** [*Regular / Dedicated Object*].

Whether the selected function is **counter** type, two additional options will be enabled:

- **Size** [*1 Byte / 2 Bytes*]: size of the indicator object.
- **Sign** [*Signed / Unsigned*]**:** sets whether the range includes negative values or only positive values

The different types of configurable 2-buttons controls are listed in the following table:

Function	Size	Sign	Minimum Value	Maximum Value	Increment short press	Increment long press	Related Object
Counter	*1-Byte*	*Signed*	[*-128…127*]	[*-128…127*]	[*-128…1…127*]	[*-128…10…127*]	[Btn][PX] Counter - 1-Byte Signed
		Unsigned	[*0…255*]	[*0…255*]	[*0…255*]	[*0…255*]	[Btn][PX] Counter - 1-Byte Unsigned
	2-Byte	*Signed*	[*-32768…32767*]	[*-32768…32767*]	[*-32768…32767*]	[*-32768…32767*]	[Btn][PXi] Counter - 2-Byte Signed
		Unsigned	[*0…65535*]	[*0…65535*]	[*0…65535*]	[*0…65535*]	[Btn][PX] Counter - 2-Byte Unsigned
Scaling	1-Byte		[*0…100*]	[*0…100*]	[*0…1…100*]	[*0…10…100*]	[Btn][PX] Scaling
Float	2-Byte		[*-671088,64…* *…670760,96*]	[*-671088,64…* *…670760,96*]	[*-671088,64…* *…0,5…670760,96*]	[*-671088,64…* *…1…670760,96*]	[Btn][PX] Float

Table 7 2-buttons Numeric Control

Enumeration

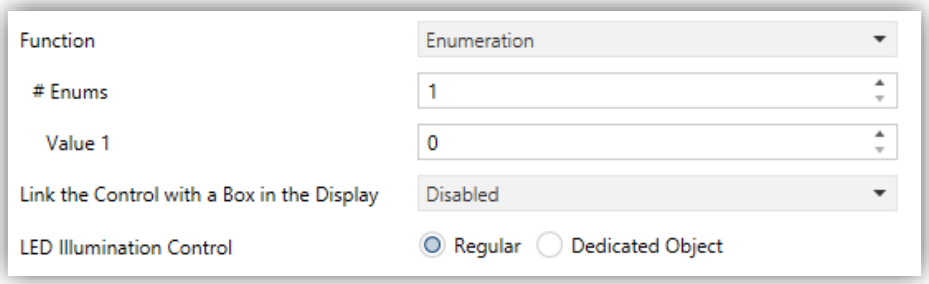


Figure 39. Pair Buttons - Enumeration.

- **# Enums** [*1…6*]: number of states that will be distinguished. For every distinguished state, the parameter **Value** will become available together with the corresponding indicator.

- **Value *j*** [*0…255*]: numerical value that will be sent through the control object "**[Btn][PX] Enumeration**" when the user, after pressing the buttons, sets the control to state *j*.

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current numeric value. See section 2.3.

- **LED illumination control** [*Regular / Dedicated Object*].

[Climate] Temperature Setpoint

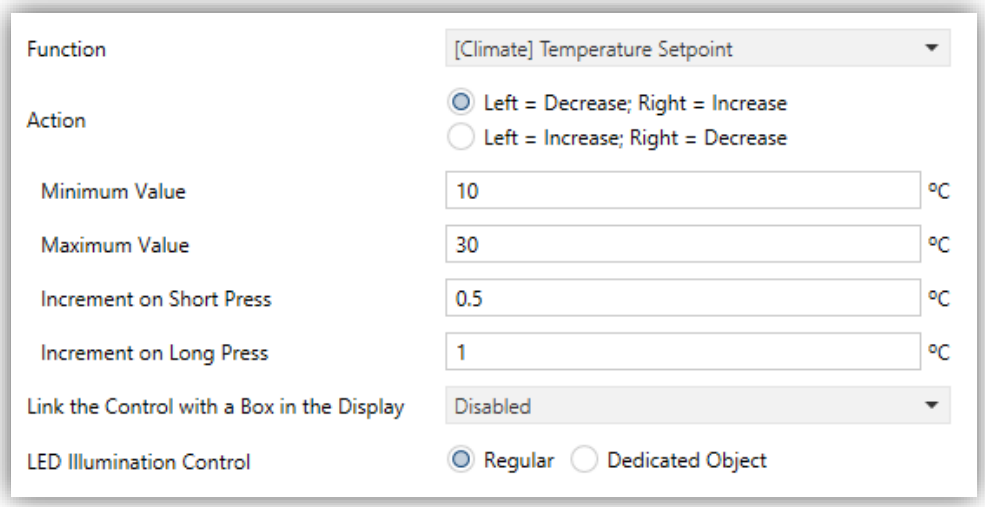


Figure 40. Pair Buttons - [Climate] Temperature setpoint.

- **Action** [*Left = Decrease; Right = Increase / Right = Increase; Left = Decrease*]: sets which of the two buttons will permit increasing the setpoint value and which one will permit decreasing it. The values are sent to the bus through "**[Btn] [PX] (Climate) Temperature Setpoint**".

  Note: *this parameter will remain hidden unless having selected "Every button pair is configured separately" in* ***Action of the pair buttons*** *(see section 2.2.1).*

  - **Minimum Value** [*-99…10…199*]: minimum value than can be reached by the control after a number of presses on the decrease button

- **Maximum Value** [*-99…30…199*]: maximum value than can be reached by the control after a number of presses on the increase button.

- **Increment on Short Press** [*0.1…0.5…10*]: sets the increase or decrease step to be applied to the current value on every short press over the increase or decrease buttons, respectively.

- **Increment on Long Press** [*0.1…1…10*]: sets the increase or decrease step to be applied to the current value on every long press over the increase or decrease buttons, respectively.

  Note: *Long and short increments are applied in ºC regardless of the scale used.*

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current numeric value. The selected box must be configured with the same data type (see section 2.3 for details).

- **LED illumination control** [*Regular / Dedicated Object*].

[Climate] Fan

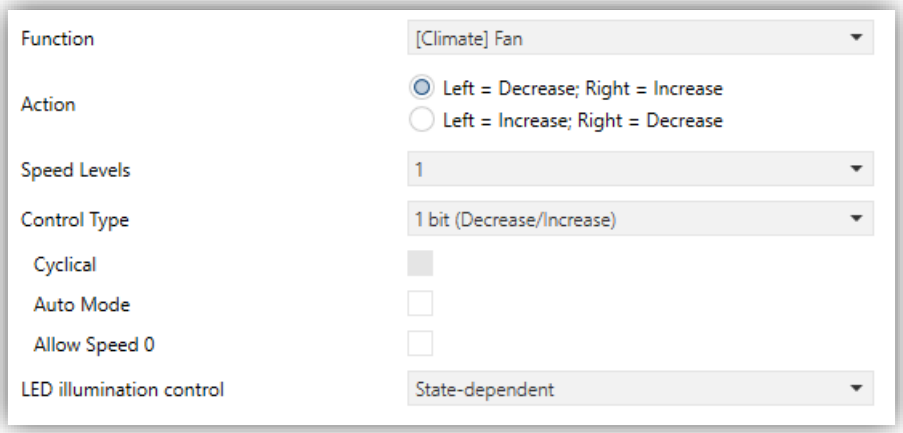


Figure 41. Pair Buttons - [Climate] Fan.

This control is analogous to the Fan control in individual buttons (see section 2.2.3). The objects that depending on the configuration will send the orders to the bus are in this case the following:

- "**[Btn] [PX] Fan Control (Type: 1-Bit)**".
- "**[Btn] [PX] Fan Control (Type: Scaling)**".
- "**[Bnt] [PX] Fan Control (Type: Enumeration)**".
- "**[Bnt] [PX] Fan Control – Auto Mode**".

The status object ("**[Btn] [PX] Fan Indicator**") will be percentage-type.

When two buttons are available, the "direction" of increasing or decreasing the ventilation level or switch the automatic mode is determined by the current ventilation level reflected in the status object, by the "Cyclic" parameter, by whether or not there is a dedicated object and the action associated to each buttons of the pair:

- **Action** [*Left = Decrease; Right = Increase / Left = Increase; Right = Decrease*]: sets which of the buttons to use to send an order to decrease and which to increase.

  Note: *this parameter will remain hidden unless having selected "Every button pair is configured separately" in* ***Action of the pair buttons*** *(see section 2.2.1).*

Note that depending on how many speed levels have been configured and on whether the Auto mode has been left disabled or has been enabled with a dedicated object or not, the minimum and maximum levels of the range may not always be the same.

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current fan speed. The selected box must be configured with the same data type (see section 2.3 for details).

  Note: *this parameter is only available for Scaling or Enumeration control types*.

- **LED illumination control** [*Regular / State-dependent / State-dependent (both LEDs) / Dedicated Object*].

[Climate] Mode

This control is analogous to the mode control in individual buttons (see section 2.2.3). When Heat/Cool mode control is assigned to the box, a binary communication object is enabled: the "**[Btn][PX] (Climate) Mode**", assigning the extended mode enables one 1-byte communication object is enabled "**[Btn][PX] (Climate) Mode – Extended**"

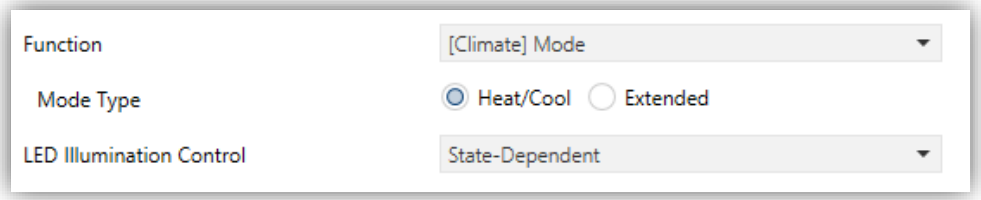


Figure 42. Pair Buttons - [Climate] Mode (Heat/Cool)

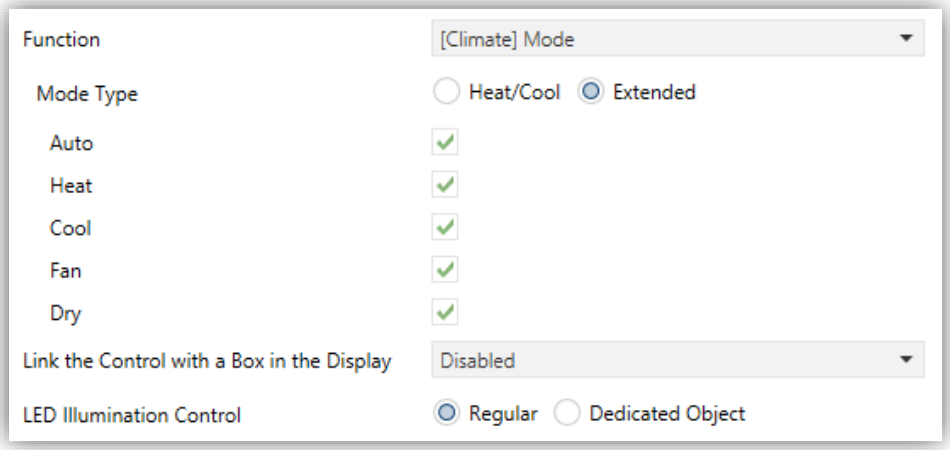


Figure 43. Pair Buttons - [Climate] Mode (Extended)

- **Link the control with a box in the display**: sets the area of the display where to show the indicator of this control, i.e., the current numeric value. The selected box must be configured with the same data type (see section 2.3 for details).

  Note: *this option is only available for Extended mode type.*

- **LED Illumination Control** [*Regular / State-dependent / State-dependent (both LEDs) / Dedicated Object*].

  Note: *for Extended mode type is only available the options [Regular / Dedicated Object].*

[Climate] Mode Special

This control is exactly the same as special mode control in individual buttons (see sections 2.2.3).

The climate mode will be controlled through the object "**[Btn][Px] (Climate) Special Mode Control**".

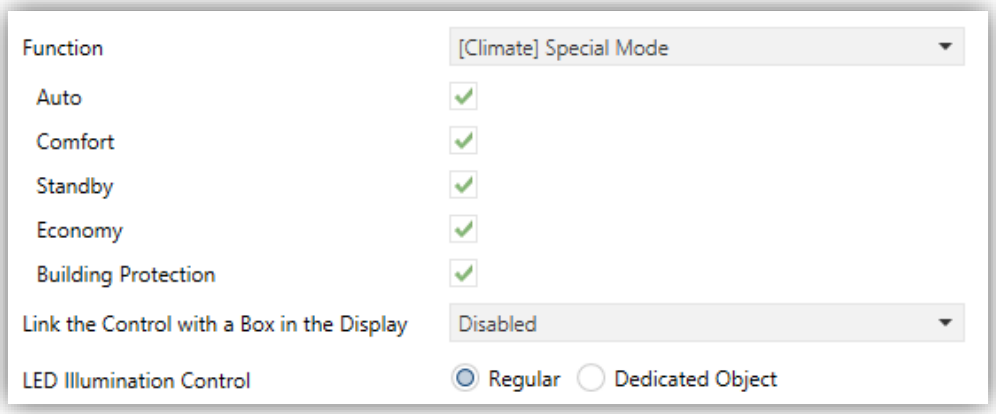


Figure 44. Pair Buttons - [Climate] Special Mode Control

2.3 DISPLAY

2.3.1 CONFIGURATION

Flat 55 Display features a **1.18'' 128 pixels diameter back-lit monochrome screen** with black background and white icons and fonts.

This screen can show useful information to the user, related to the current state of other devices or of its own controls.

The information provided by the display can consist in icons (with a resolution up to 28 pixels diameter) or alphanumeric characters (texts). Please refer to the specific document "**Icons in Flat 55 Display**" (available at the Zennio homepage, www.zennio.com) to see the list of available icons.

Two **different font sizes** for the alphanumeric characters are available: **Small** and **Big** (only available for the numeric characters in the horizontal double boxes and screensaver). On the other hand, the built-in character set is:

- **Basic Latin**[2].
- **Extended Latin**.
- **Cyrillic**.
- **Greek**.
- **Symbols**: € £ Ω

Note: *See ANNEX II. Character Selection for details.*

As Flat 55 Display offers the user a sole control page (instead of alternating, browsable pages), all the content of the display is shown permanently. It only gets hidden when the screensaver or some other special messages (welcome, locking or cleaning) are superimposed.

The display is divided into different zones according to the chosen page style:

- **Normal page**: two, three or four zones, depending on whether the boxes are set as individual or double (left-right or up-down).

[2] According to the Unicode classification.

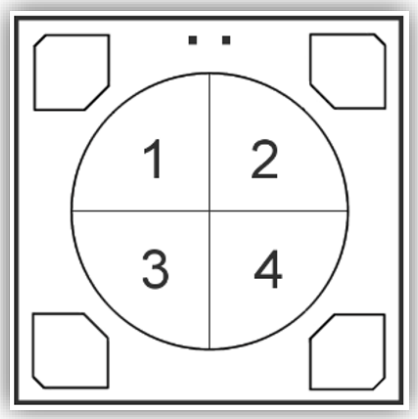


Figure 45. Display – Normal Page

- **Thermostat**: the display is divided into three zones, each one with an explicit functionality.
  - **Zone 1**: occupies the upper part and it is designed to contain a fan indicator, although it can be also configured as an individual box.
  - **Zone 2**: setpoint box displayed centered on the display.
  - **Zone 3**: equivalent to **Zone 1**.

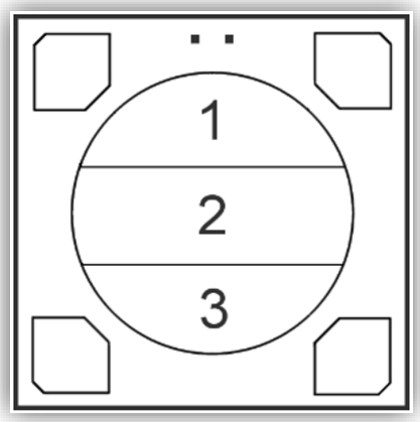


Figure 46. Display – Thermostat Page

There are up to four representation modes, configurable in parameters for each indicator: **Permanent** (always shown), **Temporary** (shown for a moment when the value changes or after a bus recovery), **Intermittent** (intermittent indicator), and **Progressive** (the icon is progressively drawn from top to bottom). The latter representation is only available for icon type indicators.

The boxes in the screen can be assigned different functions, as described next.

ETS PARAMETERISATION

An independent tab for the parameterisation of the Display is shown in ETS by default. While all the zones remain disabled, it will only contain a sub-tab named Configuration.

This display contains the following parameters:

- **Page Style** [*Normal Page / Thermostat*]: sets the layout and functionality of the display.

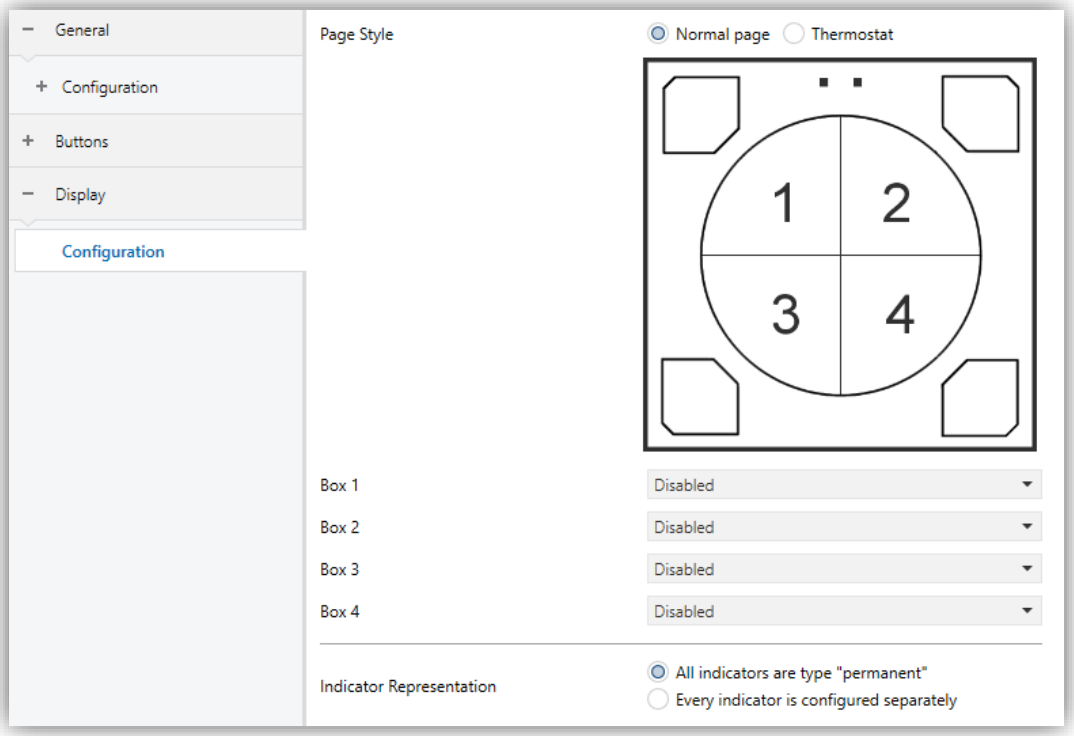


Figure 47. Display – Configuration (Normal Page).

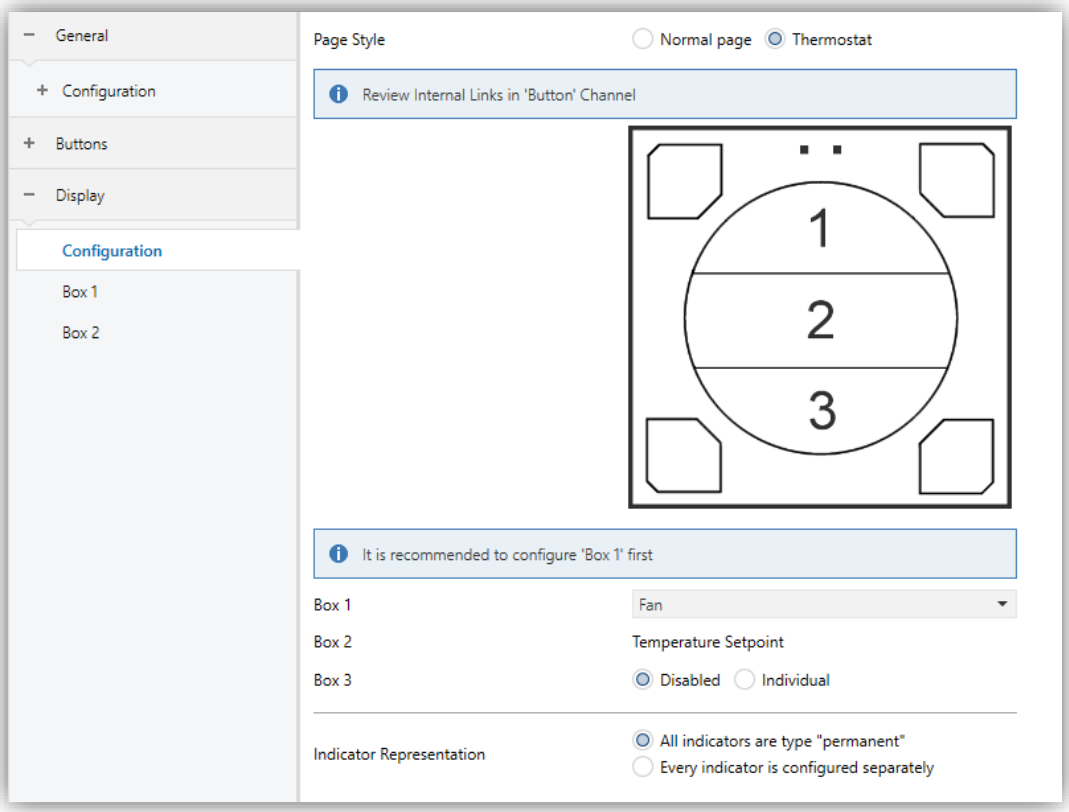


Figure 48. Display – Configuration (Thermostat Page)

One drop-down list is shown per zone. The options under it are:

- [*Disabled*]. See section 2.3.2.
- [*Individual*]. Selecting this option brings a new tab to the tree on the left (named "**Box X**", where X depends on the display zone). See section 2.2.3.

  Note: *this option will be available in all boxes except box 2 in Thermostat Page.*

- [*Pair*]. Selecting this option brings a new tab to the tree on the left named "**Pair X**". See section 2.3.4.

  - [*Pair Left*]. Only available for box 1 and 3.
  - [*Pair Right*]. Only available for box 2 and 4.
  - [*Pair Up*]. Only available for box 1 and 2.
  - [*Pair Down*]. Only available for box 3 and 4.

Note: *this option is only available in Normal Page boxes.*

- [*Setpoint*]: Selecting Thermostat Page, this option will always be activated in **Box 2**. See section 2.3.5.

- [*Fan*]. Selecting this option brings a new tab to the tree on the left named "Box C". See section 2.3.6

  Note: *this option will be available in boxes 1 and 3 in Thermostat Page.*

- **Indicator representation** [*All indicators are type "permanent" / Every indicator is configured separately*]: defines the representation of the indicators on the display.

  In case of selecting "Every indicator is configured separately", there will be a specific parameter for every box to select the desired indicator representation.

2.3.2 DISABLED

While a display zone remains disabled, it does not represent anything and cannot be linked to any button – it will remain empty.

ETS PARAMETERISATION

This function has no related parameters.

2.3.3 INDIVIDUAL

The display can be divided into up to four single boxes.

Individual boxes can be assigned the following types of indicators:

- **Icon:** the indicator will represent an icon according to the value of an object. Depending on the type of object there are two types of icons:

  - 1-Bit: an icon represents the On state and another one represents the Off state.

  - Enumeration: up to six different states can be represented through one icon each.

- **Number:** the indicator will represent a number (received through the associated object) and a three-character text representing the units. Different number types are available for the different object types: Scaling, Counter (1 byte unsigned), Counter (1 byte signed), Counter (2 bytes unsigned), Counter (2 bytes signed), Counter (4 bytes unsigned), Float (2 bytes).

- **Text:** The indicator will represent a text according to the value of an object. This indicator is totally analogous to the Icon indicator, but each value is associated to a text instead of an icon. The types are the same:

  - 1-Bit: a text represents the On state and another one represents the Off state.

  - Enumeration: up to six different states can be represented through one text each.

- **Text from object:** Represents a string (up to 14 characters) received through the corresponding communication object.

- **[Climate] Temperature:** represents temperature values as received through the related communication object. Values in the range [-99, 199] ºC and in the range [-142, 390] ºF are available (depending on the selected temperature scale; see section 2.1.2). Values out of range will be replaced by the corresponding limit.

  When the value contains decimals, only the first one will be shown, and it will be represented in a smaller size. Also, if the decimal part does not fit, the number will be rounded to the nearest integer.

- **[Climate] Mode:** represents climate modes as received through the associated communication object. There are two Mode Types:

  - Heat/Cool: only the Heat and Cool modes will be represented, according to the value of a one-bit object.

  - Extended: up to five HVAC climate mode will be represented, according to the value received through a specific one-byte object. The icons are represented with a progressive shift in the box, i.e., the first mode is shown at the left and the last at the right, with the exception of the Auto mode, which is represented in the centre of the box.

If the object value does not correspond to a valid mode, no icon will be displayed.

- **[Climate] Fan:** represents fan speeds, according to the value of the corresponding object. There are up to 4 fan speed levels: Off/Auto, Min, Med, Max. The number of levels can be customized, as explained later.

  As with climate modes, the icons of the successive levels are represented with a progressive shift, but without hiding the preceding ones.

- **[Climate] On/Off + Mode + Status:** Climate status indicator with three one-bit objects associated: On/Off, Mode and Status. The icon represented depends on the value of these three objects.

- **[Climate] Mode Special:** works in the same way as **[Climate] Mode** in its extended version with the values mentioned in section 2.2.4.

ETS PARAMETERISATION

When a display zone has been configured as Individual, a specific tab ("**Box x**") becomes available under "Display" in the tree on the left.

Moreover, the textbox **INFO** allows changing the default name of the tab in the left menu, as shows the following figure, as happen with buttons (see section 2.2.3).

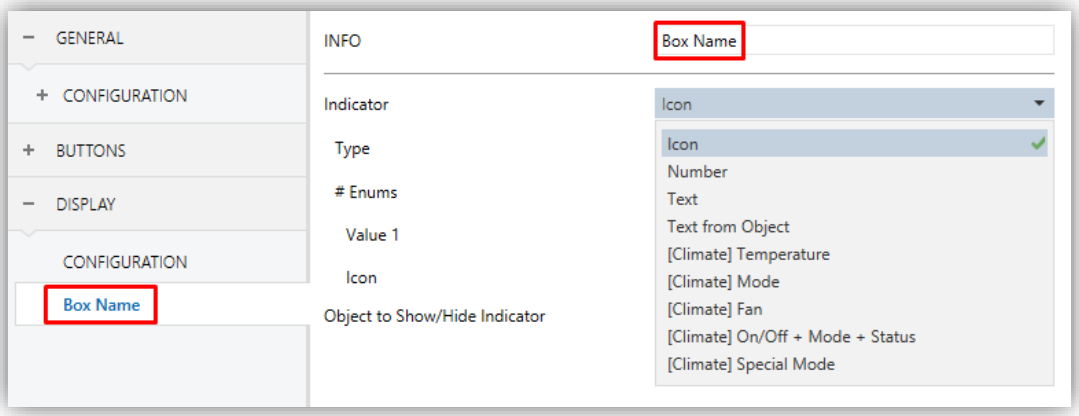


Figure 49. Display – Box a.

The main parameters that need to be configured are:

- **Indicator** [*Icon / Number / Text / Text from object / [Climate] Temperature / [Climate] Mode / [Climate] Fan / [Climate] On/Off + Mode + Status / [Climate] Mode Special*]: sets the desired indicator to display in the box.

- **Representation** [*Permanent / Temporary / Intermittent / Progressive*]: sets the icon representation.

  Note:

  - *This parameter will remain hidden unless having selected "Every indicator is configured separately" in "**Indicator representation**" (see 2.3.1).*
  - *The "Progressive" option is only available for the following icon type indicators: Icon, [Climate] Mode, [Climate] Fan, [Climate] Special Mode.*

- **Object to show/hide indicator** [*enabled/disabled*]: enables or disables a one-bit object ("**[Disp] [BX] Show/Hide indicator**") to show or hide the indicator in runtime.

Depending on the indicator, some more parameters are shown, as described next. Please note that in the next pages the general notation "**[Disp][BX]**" is used for the name of the communication objects, as "x" depends on the display zone (left, right…).

Icon

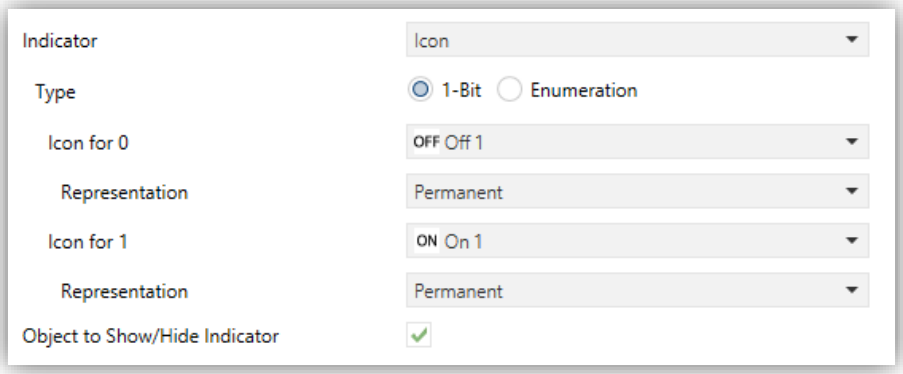


Figure 50. Display indicator – Icon – 1 bit.

- **Type**:

  - [*1-bit*]: the icon represented depends on the value of the one-bit object "**[Disp] [BX] Icon – 1-Bit**".

    When selecting this type, the following parameters need to be configured:

- **Icon for 0/1**: sets the icon to display for each value.

➢ [*Enumeration*]: the icon represented depends on the value of the one-byte object "**[Disp] [BX] Icon – Enumeration**".

When selecting this type, the following parameters need to be configured:

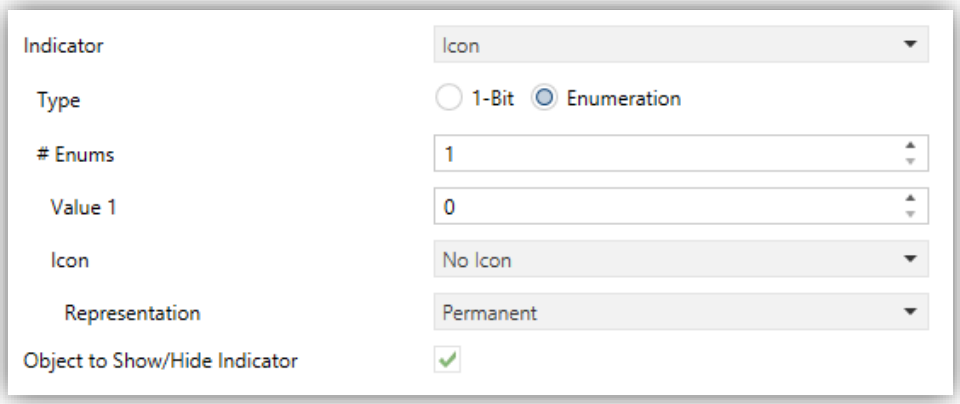


Figure 51. Display indicator – Icon – Enumeration.

- **# Enums** [*1…6*]: sets the number of states of the enumerated list.
  - **Value** [*0…255*]: sets the numerical value assigned to the state.
  - **Icon**: sets the icon to be displayed when the above value is received**.**

Number

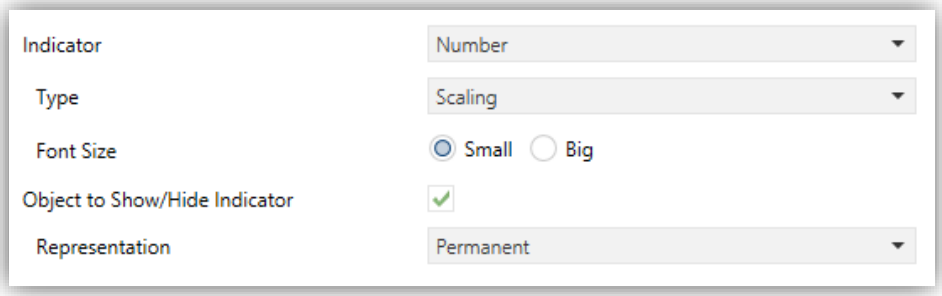


Figure 52. Display indicator – Number – Scaling.

- **Type** [*Scaling / Counter (1-Byte unsigned) / Counter (1-Byte signed) / Counter (2-Bytes unsigned) / Counter (2-Bytes signed) / Counter (4-Bytes unsigned) / Counter (4-Bytes signed) /Float (2 bytes)*]: sets the type of the number indicator.

The objects depending on configuration in this case are the following:

Function	Size	Sign	Related Object
Counter	*1-Byte*	*Signed*	[Btn][BX] Number Counter (1-Byte Signed)
		Unsigned	[Btn][BX] Number Counter (1-Byte Unsigned)
	2-Byte	*Signed*	[Btn][BX] Number Counter (2-Byte Signed)
		Unsigned	[Btn][BX] Number Counter (2-Byte Unsigned)
	4-Byte	*Signed*	[Btn][BX] Number Counter (4-Byte Signed)
		Unsigned	[Btn][BX] Number Counter (4-Byte Unsigned)
Scaling	1-Byte		[Btn][BX] Number - Scaling
Float	2-Byte		[Btn][BX]Number - Float (2-Byte)

Table 8 Number – Indicator. Communiation objects.

Text

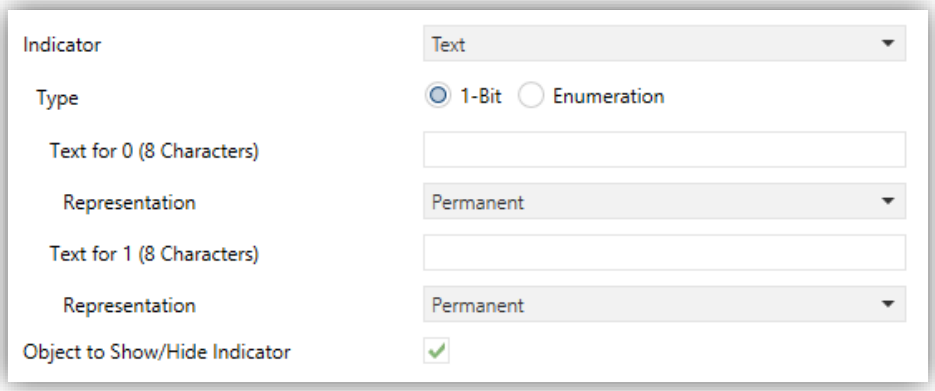


Figure 53. Display indicator – Text – 1 bit.

- **Type**:

  - [*1-Bit*] the text represented depends on the value of the one-bit object "**[Disp] [BX] Text – 1-Bit**".

    When selecting this type, the following parameters need to be configured.

    - **Text for 0/1:** sets the text to be displayed for each value.

  - [*Enumeration*]: the icon represented depends on the value of the one-byte object "**[Disp] [BX] Text – Enumeration**".

    When selecting this type, the following parameters need to be configured.

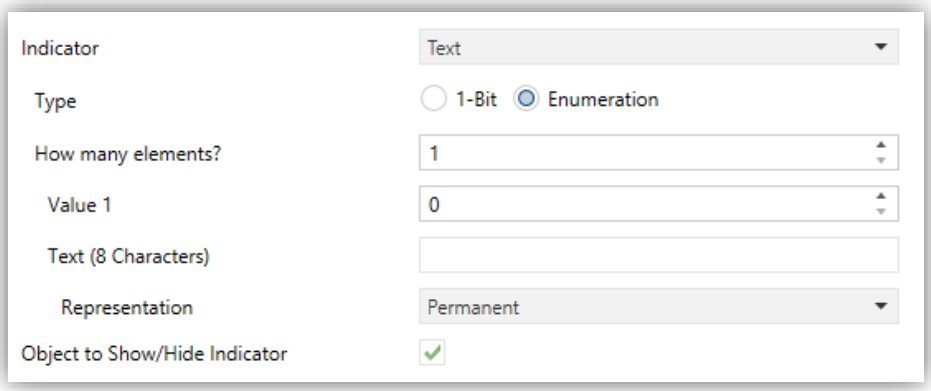


Figure 54. Display indicator – Text – Enumeration.

- **How many elements?** [*1…6*]: sets the number of states of the enumerated list. For each state, the following parameters need to be configured.
  - **Value** [*0…255*]: sets the numerical value assigned to the state.
  - **Text**: sets the text to be displayed when the above value is received**.**

Text from object

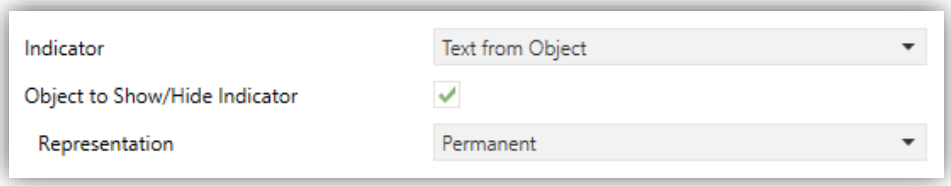


Figure 55. Display indicator – Text from object.

The text to be shown is to be received through the "**[Disp] [BX] Text from Object**" 14-byte communication object.

[Climate] Temperature

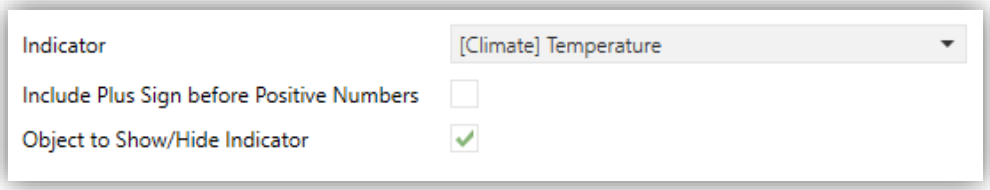


Figure 56 Display indicator – [Climate] Temperature.

- **Include Plus Sign before Positives Numbers** [*enabled*/*disabled*]: sets whether a plus sing is displayed before de positive numbers or not.

The temperature needs to be updated through the "**[Disp] [BX] (Climate) Temperature**" two-byte communication object.

[Climate] Mode

- **Mode Type**:
  - [*Heat/Cool*]: the icon (Heat or Cool) will depend on the value of the "**[Disp] [BX] (Climate) Mode**" one-bit object.

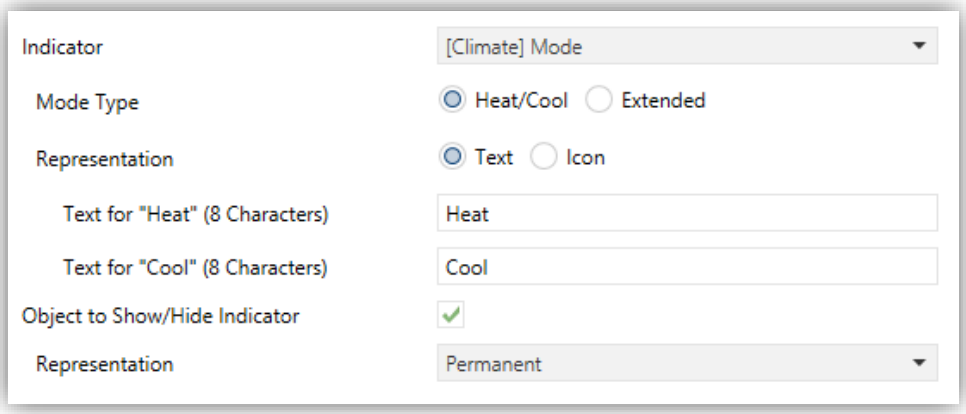


Figure 57. Display indicator – [Climate] Mode – Heat/Cool.

  - [*Extended*]: the icon represented will depend on the value of the "**[Disp] [BX] (Climate) Mode - Extended**" one-byte object. When selecting this type, five checkboxes appear to select which HVAC modes should be available [*Auto* / *Heat* / *Cool* / *Fan* / *Dry*], as shown in Figure 58).

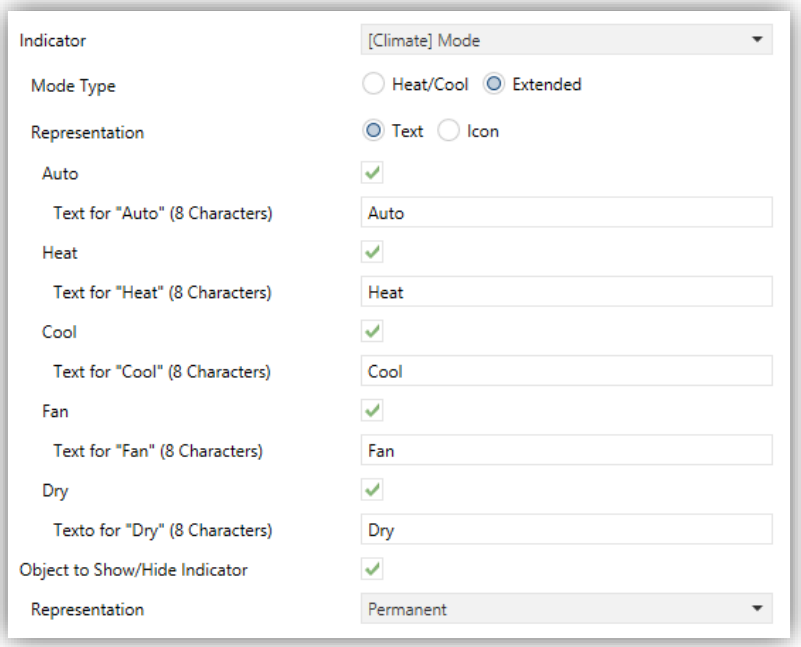


Figure 58. Display indicator – [Climate] Mode – Mode Type: Extended.

- **Representation** [*Text / Icon*]: sets whether the mode is displayed by means a preset text or icon. the representation. This representation depends on the value the 1-Bit object ("**[Disp] [BX] (Climate) Temperature**" or "**[Disp] [BX] (Climate) Mode - Extended**"). If "Text" is selected, the following parameters will appear:

  - **Text for each value:** sets the text to be displayed for each value.

[Climate] Fan

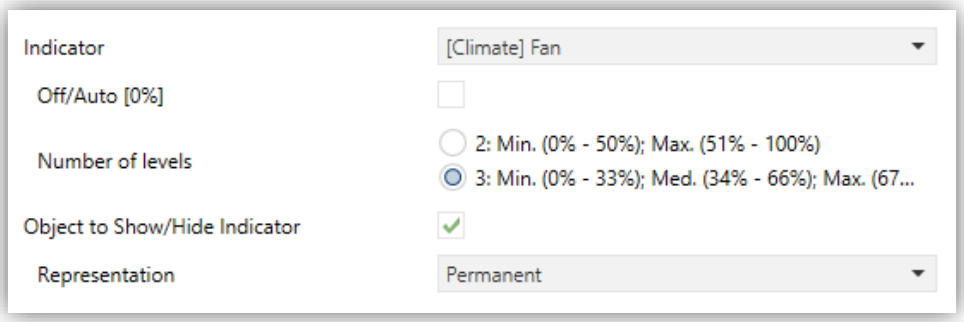


Figure 59. Display indicator – [Climate] Fan.

The value should be updated through the "**[Disp] [BX] Fan**" one-byte communication object.

- **Off/Auto [0%]** [*enabled/disabled*]: defines whether the Off/Auto level is required to be represented or not. If enabled, the following parameter shows up:

  - **How to show Off/Auto status?** [*Auto-Style (Fan Automatic Symbol) / Off-Style I (Fan Stop Symbol) / Off-Style II (Clear the Box)*]: sets how to represent the Auto/Off state.

- **Number of levels**: sets the number of fan speed levels. The available options depend on whether the Off/Auto level is enabled or not:

  - **If Off/Auto is enabled**:

    - [*1: Max. (1% - 100%)*]
    - [*2: Min. (1% - 50%); Max. (51% - 100%)*]
    - [*3: Min. (1% - 33%); Med. (34% - 66%); Max. (67% - 100%)*]

    The value 0% does not correspond to any level, but to the Off/Auto state.

- **If Off/Auto is disabled**:
  - [*2: Min. (0% - 50%); Max. (51% - 100%)*]
  - [*3: Min. (0% - 33%); Med. (34% - 67%); Max. (68% - 100%)*]

[Climate] On/Off + Mode + Status

Figure 60. Display indicator – [Climate] On/Off + Mode + Status.

The icon to be represented depends on the value of three one-bit objects:

- "**[Disp] [BX] (Climate) On/Off**" **= 0**: no icon is represented.
- **"[Disp] [BX] (Climate) On/Off" = 1 and "[Disp] [BX] (Climate) On/Off - Status" = 0**, it means that the climate system is on but stopped. The icon represented will depend on the mode selected through "**[Disp] [BX] (Climate) On/Off - Mode**" (1 = Heat or 0 = Cool). The representation type will be Permanent.
- **If "[Disp] [BX] (Climate) On/Off" = 1 and "[Disp] [BX] (Climate) On/Off - Status" = 1**, it means that the climate is on and running. The icon represented will depend on the mode selected through "**[Disp] [BX] (Climate) On/Off - Mode**" (1 = Heat –with waves–, or 0 = Cool –with waves–). The representation type is Progressive.

Note: *for this indicator, the representation type cannot be configured. It is always permanent or progressive, depending on the value of the objects, as explained above.*

[Climate] Special Mode

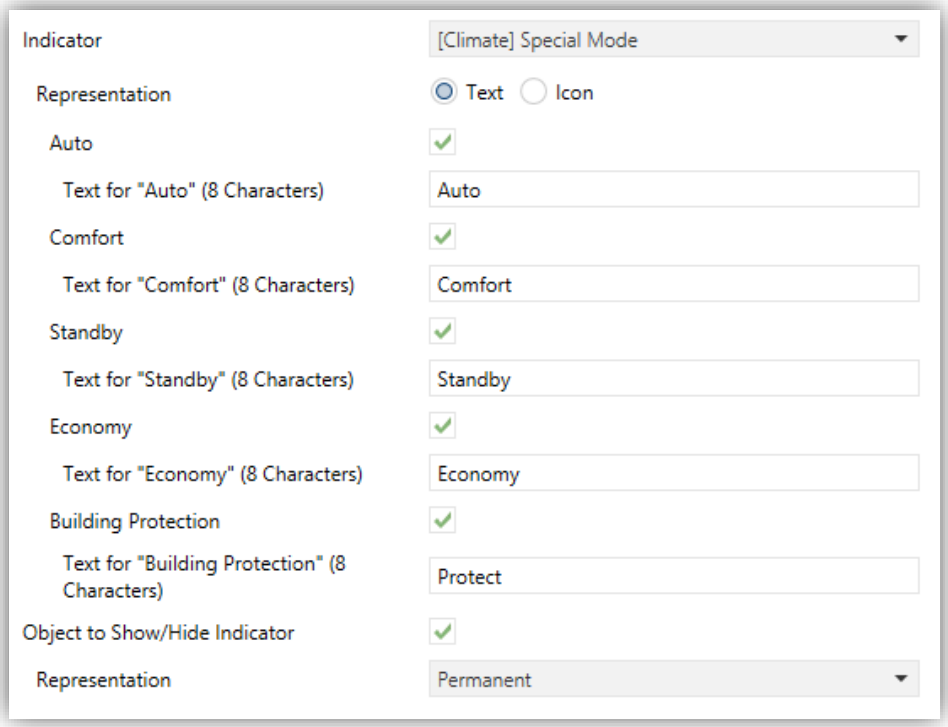


Figure 61. [Climate] Mode Special

- **Representation** [*Text / Icon*]: Sets whether the mode is displayed on screen by means of text or a preset icon. This representation depends on the value of the object in one byte "**[Disp] [BX] (Climate) Mode Special**". If "Text" is selected, the following parameters will appear:

  - **Text for each value:** sets the text to be displayed for each value.

2.3.4 DOUBLE

The display can be divided into up to 2 double boxes.

Double boxes can be assigned exactly the same types of indicators as Individual boxes (see section 2.3.3 for details).

The only differences between the two types of boxes are:

- The **maximum number of characters** allowed (up to 6 characters for double boxes; for single boxes the limit is 12 characters).

- The **font size** can be configured with 2 different sizes for number type indicators in horizontal type pairs.

ETS PARAMETERISATION

When a display zone has been set to Double, a specific tab ("**Box X**") becomes available under "Display" in the tree on the left.

The textbox **INFO** also allows changing the default name of the tab in the left menu.

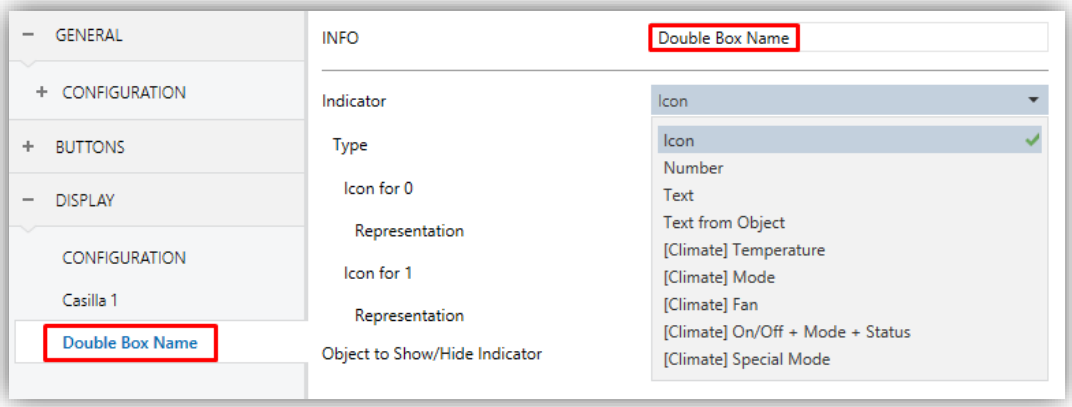


Figure 62. Display – Box a1.

The ETS parameterisation of each indicator is exactly the same as for Individual boxes. See section 2.3.3 for details.

2.3.5 SETPOINT

Thermostat type display will have central box (always enabled) for showing the setpoint temperature of an external thermostat.

ETS PARAMETERISATION

When the display is configurated as thermostat, a specific tab ("**Box 2**") becomes available under "Display" in the tree on the left.

The parameterisation of this box is the same as for [Climate] Temperature box of normal page. For more information, see section 2.3.3.

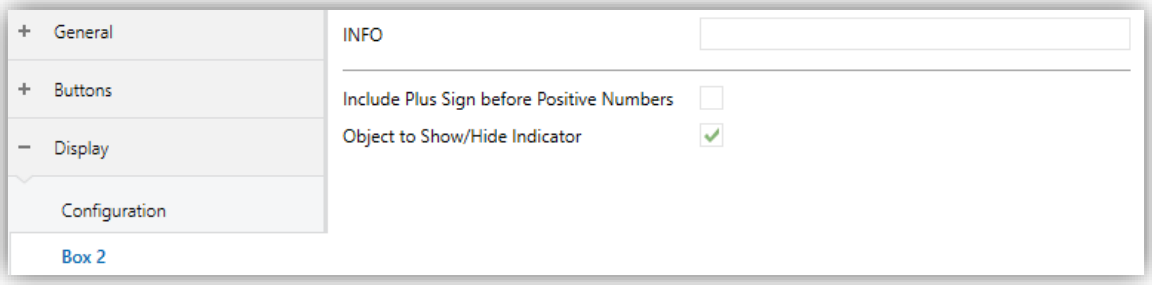


Figure 63. Display – Thermostat Page – Setpoint (Box 2)

2.3.6 FAN

Fan boxes displays **ventilation speed indicators and mode indicators**.

On the left side there is fan icon with an animation that will be activated whenever the fan speed is higher than 0% or the automatic mode is active.

On the right side, the fan speed is represented by a wave icon depending on the value of the 1-byte object "**[Disp][Bx] Fan**". The icons differ from each other in the number of waves, to reflect the current speed level: minimum, average or maximum.

If AUTO mode is allowed, there will be a binary object to indicate its mode. The polarity of this object will be set by parameter. When object "**[Disp][Bx] Fan Auto On/Off**" is in "auto mode", the fan speed is controlled automatically and icons speed will incorporate an "A" in front of the waves.

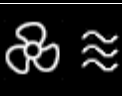
	Speed = 0% (Fan stopped in normal mode)	Minimum Speed (Fan with animation)	Medium Speed (Fan with animation)	Maximum Speed (Fan with animation)
Auto Mode				
Normal Mode				

Table 9. Display – Thermostat Page – Fan Indicator according to mode and speed level.

PARAMETRIZACIÓN ETS

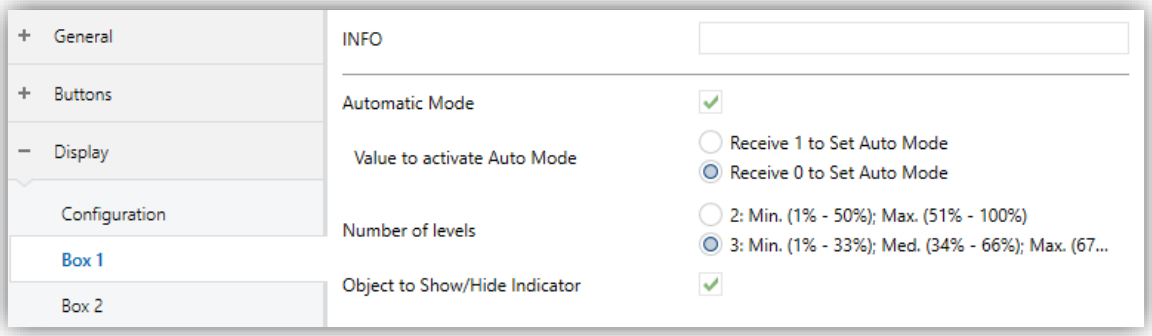


Figure 64. Display – Thermostat Page – Fan (Box Bx)

This tab contains the following parameters:

- **Automatic Mode** [*disabled*/*enabled*]: sets whether the fan Auto mode will be available. If this option is enabled, the object "**[Disp][Bx] Fan Auto On/Off**", which will trigger the auto mode when it receives the corresponding value set in:

  - **Value to activate Auto Mode** [*Receive 1 to Set Auto Mode* / *Receive 0 to Set Auto Mode*].

- **Number of levels** [*2* / *3*]: sets how many speed levels will be available in the indicator.

- **Object to show/hide indicator** [*disabled* / *enabled*].

2.4 INPUTS

Flat 55 Display incorporates **two analogue/digital inputs**, each configurable as a:

- **Binary Input**, for the connection of a pushbutton or a switch/sensor.
- **Temperature Probe**, for the connection of a temperature sensor from Zennio.
- **Motion Detector**, to connect a motion detector (suitable for the new motion detector model from Zennio).

  Important: *older models of the Zennio motion detector (e.g., ZN1IO-DETEC and ZN1IO-DETEC-N) will not work properly with Flat 55 Display*.

2.4.1 BINARY INPUT

Please refer to the specific user manual "**Binary Inputs**", available in the Flat 55 Display product section, at the Zennio website (www.zennio.com).

2.4.2 TEMPERATURE PROBE

Three types of temperature probe can be configured, depending on the probe connected to the input:

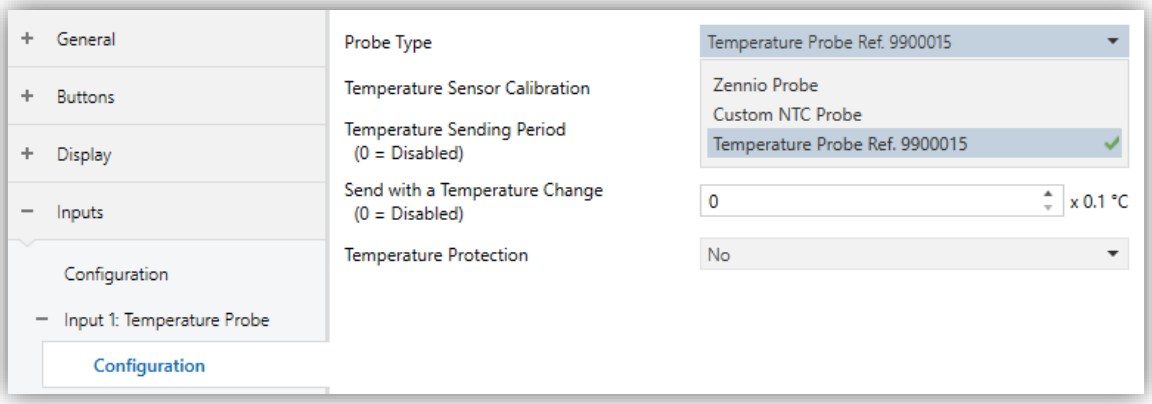


Figure 65. Inputs – Temperature Probe – Probe Type.

- Zennio Probe.
- Custom NTC Probe: to configure an NTC probe from other manufacturers.

- **Temperature Probe Ref. 9900015**: corresponds to the temperature probe included with the device.

Please refer to the specific user manual "**Temperature Probe**", available in the Flat 55 Display product section, at the Zennio website (www.zennio.com).

2.4.3 MOTION DETECTOR

To connect motion detectors (models **ZN1IO-DETEC-P** and **ZN1IO-DETEC-X** from Zennio) to the input ports of Flat 55 Display is possible. This brings the device with the possibility of monitoring motion and presence in the room. Depending on the detection, different response actions can be parameterised.

Please refer to the specific "**Motion Detector**" user manual (available in the Flat 55 Display product section at the Zennio website, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

Notes:

- *This device does not include **luminosity measurement capabilities**. Therefore, both motion detector models (ZN1IO-DETEC-P and ZN1IO-DETEC-X) offer equivalent functionality when connected to this device.*
- *Motion detectors with references ZN1IO-DETEC and ZN1IO-DETEC-N are **not compatible** with Flat 55 Display (they may report inaccurate measurements if connected to this device).*
- *When connected to Flat 55 Display, the rear micro-switch of model ZN1IO-DETEC-P should be set to position "**Type B**".*

2.5 THERMOSTAT

Flat 55 Display implements **one Zennio thermostat** which can be enabled and fully customised.

Please refer to the specific manual "**Zennio Thermostat**" (available in the Flat 55 Display product section at the Zennio website, www.zennio.com) for detailed information about the functionality and the configuration of the related parameters.

ANNEX I. LED ILLUMINATION MODES

The LED backlight of every button, by default (in most functions), will turn on for a brief instant whenever the button is touched. This behaviour is referred to as the "**Regular Illumination**".

However, in most cases it is possible to assign different behaviours to the LEDs. Which options are available will depend on the function parameterised for the button, but will always include some of the following:

- **Regular Illumination**: the LED will light for an instant once the button is touched.
- **State-Dependent Illumination**: the LED will or will not light, depending on the value of the communication object that corresponds to the function implemented by the button. The exact correspondence between the different values of the object and the different states of the LED may be slightly different from one type of control to another, and is detailed for each function.
- **State-Dependent Illumination (both LEDs)**: only applies to buttons configured as pair controls. The two LEDs of the control will light or not, depending on the value of the related object and on the particular control type parameterised for that pair of buttons. The only difference compared to the previous case is that, under "both LEDs", the two LEDs will always turn off or on simultaneously, as if it were a unique indicator consisting of two LEDs.
- **Dedicated Object**: the LED will light or not depending on the value ("0" or "1", configurable) of a binary, independent object. In the case of the pair controls, the value "0" will make one of the LEDs light (leaving the other one off), while the value "1" will make them switch their states.

Table 10 illustrates which of the above are configurable for each function.

		Disabled	Regular	State-dep.	State-dep. (both LEDs)	Dedicated object
INDIVIDUAL	LED Indicator					✓
	Switch		✓	✓		✓
	Hold & Release		✓			✓
	Two Objects		✓	✓		✓
	Scene		✓			✓
	Constants		✓	✓		✓
	Dimmer		✓	✓		✓
	Shutter		✓			✓
	Enumeration		✓			✓
	Fan		✓	✓		✓
	Mode		✓			✓
	Special Mode		✓			✓
	Room State		✓	✓		✓
PAIR	Switch		✓	✓	✓	✓
	Two Objects		✓	✓	✓	✓
	Dimmer		✓	✓	✓	✓
	Shutter		✓			✓
	Scaling, Counter, Float		✓	✓	✓	✓
	Enumeration		✓			✓
	Temperature Set-Point		✓			✓
	Mode		✓			✓
	Mode Special		✓			✓
	Fan		✓	✓	✓	✓
DISABLED		✓				

Table 10 Functions vs. LED Illumination Options.

Note:

Regarding the LEDs, it is interesting to distinguish the following cases:

- *Disabled button: the LED will remain off, and the button will have no function.*
- *Button configured as "Individual" with "LED Indicator" function: the button will still have no function. The LED may be turned on/off through a binary object.*
- *Button configured as any other control type: the behaviour of the LED will be configurable according to the following table (being also possible to leave it turned off).*

Although the behaviour of the LEDs can be configured independently for each control, it is also possible to define a **general behaviour for all of them** thus not being then necessary to configure the same option multiple times.

In case of opting for a general configuration, the options are:

- **Regular.**
- **State-Dependent (where available)**. Functions where "state-dependent" is not available will use the regular illumination.
- **State-Dependent (where available) (both LEDs)**. Functions where "state-dependent" is not available will use the regular illumination.
- **Dedicated Object**. One binary communication object per control will be included in the project topology so that the LED of every control turns on/off depending on its own object.

ETS PARAMETERISATION

For details on the parameterisation of the LED illumination modes please refer to the pages that cover the specific function being assigned to the button (see section 2.2).

In case of desiring a **similar behaviour for all of the LEDs**, please find the parameter **LED Illumination Control (All buttons)** in the options of the "GENERAL" configuration.

ANNEX II. CHARACTER SELECTION

All characters supported by the device according to the alphabet type are shown below:

Latin	! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ 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 { | } ~
Latin (extended)	¡ ¢ £ ¥ ¦ § ¨ © ª « ¬ - ® ¯ ° ± ² ³ ´ µ ¶ · ¸ ¹ º » ¼ ½ ¾ ¿ À Á Â Ã Ä Å Æ Ç È É Ê Ë Ì Í Î Ï Ð Ñ Ò Ó Ô Õ Ö × Ø Ù Ú Û Ü Ý Þ ß à á â ã ä å æ ç è é ê ë ì í î ï ð ñ ò ó ô õ ö ÷ ø ù ú û ü ý þ ÿ
Greek	΄ ΅ Ά · Έ Ή Ί Ό Ύ Ώ ΐ Α Β Γ Δ Ε Ζ Η Θ Ι Κ Λ Μ Ν Ξ Ο Π Ρ Σ Τ Υ Φ Χ Ψ Ω Ϊ Ϋ ά έ ή ί ΰ α β γ δ ε ζ η θ ι κ λ μ ν ξ ο π ρ ς σ τ υ φ χ ψ ω ϊ ϋ ό ύ ώ ϑ ϒ ϓ ϔ ϕ ϖ ϗ Ϙ ϙ Ϛ ϛ Ϝ ϝ Ϟ ϟ Ϡ ϡ Ϣ ϣ Ϥ ϥ Ϧ ϧ Ϩ ϩ Ϫ ϫ Ϭ ϭ Ϯ ϯ
Cyrillic	А Б В Г Д Е Ж З И Й К Л М Н О П Р С Т У Ф Х Ц Ч Ш Щ Ъ Ы Ь Э Ю Я а б в г д е ж з и й к л м н о п р с т у ф х ц ч ш щ ъ ы ь э ю я
Extra	€ £ Ω

Table 11. Characters supported

ANNEX III. COMMUNICATION OBJECTS

- "**Functional range**" shows the values that, with independence of any other values permitted by the bus according to the object size, may be of any use or have a particular meaning because of the specifications or restrictions from both the KNX standard or the application program itself.

Number	Size	I/O	Flags	Data type (DPT)	Functional Range	Name	Function
1	1 Bit		C T - - -	DPT_Trigger	0/1	[Heartbeat] Object to Send '1'	Sending of '1' Periodically
2	1 Byte	I	C T - W U	DPT_SceneNumber	0 - 63	[General] Scene: Receive	0-63 (Run Scene 1-64)
3	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[General] Scene: Send	0-63/128-191 (Run/Save Scene 1-64)
4	1 Bit	I	C T - W U	DPT_Switch	0/1	[General] Temperature Scale	0 = ºC; 1 = ºF
5	1 Bit	I	C - - W -	DPT_State	0/1	[General] Activity	0 = Inactivity; 1 = Activity
6	1 Bit	I	C - - W -	DPT_Enable	0/1	[General] Proximity Sensor	0 = Disable; 1 = Enable
7	1 Bit	I	C - - W -	DPT_Ack	0/1	[General] External Proximity Detection	1 = Detection
8	1 Bit		C T - - -	DPT_Ack	0/1	[General] Proximity Detection	Send 1 when Proximity is Detected
9	1 Bit		C T - - -	DPT_Bool	0/1	[General] Luminosity (1-Bit)	0 = Over Threshold; 1 = Under Threshold
	1 Bit		C T - - -	DPT_Bool	0/1	[General] Luminosity (1-Bit)	0 = Under Threshold; 1 = Over Threshold
10	1 Byte	O	C - R - -	DPT_Scaling	0% - 100%	[General] Luminosity (Percentage)	0% ... 100%
11	2 Bytes	O	C - R - -	DPT_Value_Lux	-671088.64 - 670760.96	[General] Luminosity (Lux)	0 Lux ... 670760 Lux
12	3 Bytes	I	C T - W U	DPT_TimeOfDay	00:00:00 - 23:59:59	[General] Time of Day	Time of Day External Reference
13	2 Bytes	I	C T - W U	DPT_Value_Temp	-273.00° - 670760.00°	[General] External Temperature	Temperature to Be Shown
14	1 Bit	I	C T - W -	DPT_Switch	0/1	[General] Welcome Greeting	0 = Finish Welcome; 1 = Run Welcome
15	14 Bytes	I	C - - W -	DPT_String_UTF-8		[General] Welcome Greeting - Line x	Text to Show on the Display at Line 1
16	14 Bytes	I	C - - W -	DPT_String_UTF-8		[General] Welcome Greeting - Line x	Text to Show on the Display at Line 2
17	14 Bytes	I	C - - W -	DPT_String_UTF-8		[General] Welcome Greeting - Line x	Text to Show on the Display at Line 3
18	14 Bytes	I	C - - W -	DPT_String_UTF-8		[General] Welcome Greeting - Line x	Text to Show on the Display at Line 4
19	1 Bit		C T - - -	DPT_Switch	0/1	[General] Welcome Back Object	Switch Object Sent on Wake Up
20, 21, 22, 23, 24	1 Bit	I	C - - W -	DPT_Switch	0/1	[General] Welcome Back Object - Additional Condition	Additional Condition Object x
25	1 Bit	I	C T - W U	DPT_Enable	0/1	[General] Touch Locking	0 = Unlock; 1 = Lock
	1 Bit	I	C T - W U	DPT_Enable	0/1	[General] Touch Locking	0 = Lock; 1 = Unlock
26	1 Bit	I	C - - W -	DPT_Ack	0/1	[General] Cleaning Function	0 = Nothing; 1 = Clean Now
27	1 Bit	I	C - - W -	DPT_Alarm	0/1	[General] Warning	0 = Stop Warning; 1 = Start Warning

	1 Bit	I	C - - W -	DPT_Alarm	0/1	[General] Warning	1 = Stop Warning, 0 = Start Warning
28, 35, 42, 49	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] LED On/Off	0 = Off; 1 = On
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] LED On/Off	0 = On; 1 = Off
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] LED On/Off	0 = On; 1 = Off
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] LED On/Off	0 = Off; 1 = On
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] LED On/Off	0 = On; 1 = Off
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] LED On/Off	0 = Off; 1 = On
29, 36, 43, 50	1 Bit		C T - - -	DPT_Switch	0/1	[Btn][Ix] Light - On/Off	(Short press) Switch between On and Off
	1 Bit		C T - - -	DPT_Step	0/1	[Btn][Ix] Shutter - Stop/Step	(Short press) 0 = Stop shutter/Step up; 1 = Stop shutter/Step down
	1 Bit		C T - - -	DPT_Trigger	0/1	[Btn][Ix] Shutter - Stop	(End pressing) Stop shutter
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Switch: "0"	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Switch: "1"	1-Bit Generic Control
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Ix] Switch: "0/1"	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Hold & Release	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Two Objects - Short Press: "1"	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Two Objects - Short Press: "0"	1-Bit Generic Control
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Ix] Two Objects - Short Press: "0/1"	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Step	0/1	[Btn][Ix] Fan Control (Type: 1-Bit)	0 = Decrease; 1 = Increase
	1 Bit	I	C T - W -	DPT_Heat_Cool	0/1	[Btn][Ix] (Climate) Mode	Rotating change of selected modes on short press
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] Switch	Left = 0; Right = 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] Two Objects - Short press	Left = 1; Right = 0
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] Two Objects - Short press	Left = 0; Right = 1
	1 Bit		C T - - -	DPT_Switch	0/1	[Btn][Py] Light - On/Off	(Short press) Left = Off; Right = On
	1 Bit		C T - - -	DPT_Step	0/1	[Btn][Py] Shutter - Stop/Step	(Short press) Left = Stop/Step down; Right = Stop/Step up
	1 Bit		C T - - -	DPT_Trigger	0/1	[Btn][Py] Shutter - Stop	(End pressing) Left = Stop-down; Right = Stop-up
	1 Bit	I	C T - W -	DPT_Heat_Cool	0/1	[Btn][Py] (Climate) Mode	Left = Cool; Right = Heat
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] Switch	Left = 1; Right = 0
	1 Bit		C T - - -	DPT_Switch	0/1	[Btn][Py] Light - On/Off	(Short press) Left = On; Right = Off
	1 Bit		C T - - -	DPT_Step	0/1	[Btn][Py] Shutter - Stop/Step	(Short press) Left = Stop/Step up; Right = Stop/Step down
	1 Bit		C T - - -	DPT_Trigger	0/1	[Btn][Py] Shutter - Stop	(End pressing) Left = Stop-up; Right = Stop-down
	1 Bit	I	C T - W -	DPT_Step	0/1	[Btn][Py] Fan Control (Type: 1-Bit)	0 = Decrease; 1 = Increase
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] Switch	Down = 0; Up = 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] Switch	Down = 1; Up = 0
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] Two Objects - Short press	Down = 0; Up = 1

	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] Two Objects - Short press	Down = 1; Up = 0
	1 Bit		C T - - -	DPT_Switch	0/1	[Btn][Pz] Light - On/Off	(Short press) Down = Off; Up = On
	1 Bit		C T - - -	DPT_Switch	0/1	[Btn][Pz] Light - On/Off	(Short press) Down = On; Up = Off
	1 Bit		C T - - -	DPT_Step	0/1	[Btn][Pz] Shutter - Stop/Step	(Short press) Down = Stop/Step down; Up = Stop/Step up
	1 Bit		C T - - -	DPT_Step	0/1	[Btn][Pz] Shutter - Stop/Step	(Short press) Down = Stop/Step up; Up = Stop/Step down
	1 Bit		C T - - -	DPT_Trigger	0/1	[Btn][Pz] Shutter - Stop	(End pressing) Down = Stop-down; Up = Stop-up
	1 Bit		C T - - -	DPT_Trigger	0/1	[Btn][Pz] Shutter - Stop	(End pressing) Down = Stop-up; Up = Stop-down
	1 Bit	I	C T - W -	DPT_Step	0/1	[Btn][Pz] Fan Control (Type: 1-Bit)	0 = Decrease; 1 = Increase
	1 Bit	I	C T - W -	DPT_Heat_Cool	0/1	[Btn][Pz] (Climate) Mode	Down = Cool; Up = Heat
30, 37, 44, 51	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Ix] Shutter - Move	(Long press) 0 = Up; 1 = Down
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Ix] Shutter - Move	(Start pressing) Switch between up and down
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Two Objects - Long Press: "1"	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Two Objects - Long Press: "0"	1-Bit Generic Control
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Ix] Two Objects - Long Press: "0/1"	1-Bit Generic Control
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Ix] Fan Control - Auto Mode	Switch Auto Mode on Short Press
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Ix] Fan Control - Auto Mode	Switch Auto Mode on Long Press
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] Two Objects - Long press	Left = 0; Right = 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Py] Two Objects - Long press	Left = 1; Right = 0
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Py] Shutter - Move	(Long press) Left = Down; Right = Up
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Py] Shutter - Move	(Start pressing) Left = Down; Right = Up
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Py] Shutter - Move	(Long press) Left = Up; Right = Down
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Py] Shutter - Move	(Start pressing) Left = Up; Right = Down
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Py] Fan Control - Auto Mode	Switch Auto Mode on Long Press
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Py] Fan Control - Auto Mode	Switch Auto Mode on Short Press
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] Two Objects - Long press	Down = 0; Up = 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Btn][Pz] Two Objects - Long press	Down = 1; Up = 0
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Pz] Shutter - Move	(Long press) Down = Down; Up = Up
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Pz] Shutter - Move	(Long press) Down = Up; Up = Down
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Pz] Shutter - Move	(Start pressing) Down = Down; Up = Up
	1 Bit		C T - - -	DPT_UpDown	0/1	[Btn][Pz] Shutter - Move	(Start pressing) Down = Up; Up = Down
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Pz] Fan Control - Auto Mode	Switch Auto Mode on Short Press
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Btn][Pz] Fan Control - Auto Mode	Switch Auto Mode on Long Press
31, 38, 45, 52	4 Bit	I	C T - W -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%)	[Btn][Ix] Light - Dimming	(Long press) Switch between dimming up and down

					... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)		
	4 Bit	I	**C T - W -**	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Btn][Py] Light - Dimming	(Long press) Left = Darker; Right = Brighter
	4 Bit	I	**C T - W -**	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Btn][Py] Light - Dimming	(Long press) Left = Brighter; Right = Darker
	4 Bit	I	**C T - W -**	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Btn][Pz] Light - Dimming	(Long press) Down = Darker; Up = Brighter
	4 Bit	I	**C T - W -**	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Btn][Pz] Light - Dimming	(Long press) Down = Brighter; Up = Darker

32, 39, 46, 53	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Enumeration	Rotating value change
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Shutter Position	0 - 100 %
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Light Dimming (Status)	0 - 100 %
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] 1-Byte Unsigned Int Value	0 ... 255
	1 Byte	I	C T - W -	DPT_Value_1_Count	-128 - 127	[Btn][Ix] 1-Byte Signed Int Value	-128 ... 127
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Two Objects - Short Press: (1-Byte)	Send Selected 1-Byte Value on Short Press
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] 1-Byte Scaling Value	0% ... 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	50%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	1, 2
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	0, 1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	0, 1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	0, 1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	0, 1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	0, 1, 2
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	0%, 20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	0%, 33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	0%, 50%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	0%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	0%, 25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	Auto, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	Auto, 20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	Auto, 25%, 50%, 75%, 100%

	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	Auto, 33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Control (Type: Scaling)	Auto, 50%, 100%
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	Auto, 1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	Auto, 1, 2
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	Auto, 1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	Auto, 1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Control (Type: Enumeration)	Auto, 1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_SceneControl	0-63; 128-191	[Btn][Ix] Scene: Send	0-63 (Run Scene 1-64)
	1 Byte	I	C T - W -	DPT_SceneControl	0-63; 128-191	[Btn][Ix] Scene: Send	0-63/128-191 (Run/Save Scene 1-64)
	1 Byte	I	C T - W -	DPT_Room_State		[Btn][Ix] Room State	0 = Normal; 1 = Make-up room; 2 = Do not disturb
	1 Byte	I/O	C T R W U	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Btn][Ix] (Climate) Special Mode Control	Auto, Comfort, Standby, Economy, Building Protection
	1 Byte	I/O	C T R W -	DPT_HVACContrMode	0 = Auto 1 = Heat 3 = Cool 9 = Fan 14 = Dry	[Btn][Ix] (Climate) Mode - Extended	Rotating change of selected modes on short press
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Scaling	Left = Decrease percentage; Right = Increase percent.
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Scaling	Left = Increase percentage; Right = Decrease percent.
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Counter - 1-Byte Unsigned	Left = Decrease; Right = Increase
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Counter - 1-Byte Unsigned	Left = Increase; Right = Decrease
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Enumeration	Rotating value change on short press
	1 Byte	I	C T - W -	DPT_HVACContrMode	0 = Auto 1 = Heat 3 = Cool 9 = Fan 14 = Dry	[Btn][Py] (Climate) Mode - Extended	Rotating change of selected modes on short press
	1 Byte	I	C T - W -	DPT_Value_1_Count	-128 - 127	[Btn][Py] Counter - 1-Byte Signed	Left = Decrease; Right = Increase
	1 Byte	I	C T - W -	DPT_Value_1_Count	-128 - 127	[Btn][Py] Counter - 1-Byte Signed	Left = Increase; Right = Decrease
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Light Dimming (Status)	0 - 100 %
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	50%, 100%

	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	1, 2
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	1, 2, 3, 4, 5
	1 Byte	I	C T - W U	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Btn][Py] (Climate) Special Mode Control	Auto, Comfort, Standby, Economy, Building Protection
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	0, 1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	0, 1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	0, 1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	0, 1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	0, 1, 2
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	0%, 20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	0%, 33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	0%, 50%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	0%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	0%, 25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	Auto, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	Auto, 20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	Auto, 25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	Auto, 33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Py] Fan Control (Type: Scaling)	Auto, 50%, 100%
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	Auto, 1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	Auto, 1, 2

	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	Auto, 1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	Auto, 1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Control (Type: Enumeration)	Auto, 1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Scaling	Down = Decrease percentage; Up = Increase percent.
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Scaling	Down = Increase percentage; Up = Decrease percent.
	1 Byte	I	C T - W -	DPT_Value_1_Count	-128 - 127	[Btn][Pz] Counter - 1-Byte Signed	Down = Decrease; Up = Increase
	1 Byte	I	C T - W -	DPT_Value_1_Count	-128 - 127	[Btn][Pz] Counter - 1-Byte Signed	Down = Increase; Up = Decrease
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Counter - 1-Byte Unsigned	Down = Decrease; Up = Increase
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Counter - 1-Byte Unsigned	Down = Increase; Up = Decrease
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Enumeration	Rotating value change on short press
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Light Dimming (Status)	0 - 100 %
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	Auto, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	0%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	Auto, 50%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	0%, 50%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	50%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	Auto, 33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	0%, 33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	33%, 67%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	Auto, 25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	0%, 25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	25%, 50%, 75%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	Auto, 20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	0%, 20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Control (Type: Scaling)	20%, 40%, 60%, 80%, 100%
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	Auto, 1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	0, 1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	1
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	Auto, 1, 2
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	0, 1, 2

	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	1, 2
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	Auto, 1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	0, 1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	1, 2, 3
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	Auto, 1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	0, 1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	1, 2, 3, 4
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	Auto, 1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	0, 1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Control (Type: Enumeration)	1, 2, 3, 4, 5
	1 Byte	I	C T - W -	DPT_HVACContrMode	0 = Auto 1 = Heat 3 = Cool 9 = Fan 14 = Dry	[Btn][Pz] (Climate) Mode - Extended	Rotating change of selected modes on short press
	1 Byte	I	C T - W U	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Btn][Pz] (Climate) Special Mode Control	Auto, Comfort, Standby, Economy, Building Protection
33, 40, 47, 54	1 Byte	I	C T - W -	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Two Objects - Long Press: (1-Byte)	Send Selected 1-Byte Value on Long Press
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Btn][Ix] Fan Indicator	0% ... 100%
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Btn][Ix] Fan Indicator	Enumerated Value
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Btn][Py] Fan Indicator	0% ... 100%
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Btn][Py] Fan Indicator	Enumerated Value
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Btn][Pz] Fan Indicator	0% ... 100%
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Btn][Pz] Fan Indicator	Enumerated Value
34, 41, 48, 55	2 Bytes	I	C T - W -	DPT_Value_2_Ucount	0 - 65535	[Btn][Ix] 2-Byte Unsigned Int Value	0 ... 65535
	2 Bytes	I	C T - W -	DPT_Value_2_Count	-32768 - 32767	[Btn][Ix] 2-Byte Signed Int Value	-32768 ... 32767
	2 Bytes	I	C T - W -	9.xxx	-671088.64 - 670760.96	[Btn][Ix] 2-Byte Float Value	-671088.64 ... 670760.96
	2 Bytes	I	C T - W -	DPT_Value_2_Count	-32768 - 32767	[Btn][Py] Counter - 2-Bytes Signed	Left = Decrease; Right = Increase

	2 Bytes	I	C T - W -	DPT_Value_2_Count	-32768 - 32767	[Btn][Py] Counter - 2-Bytes Signed	Left = Increase; Right = Decrease
	2 Bytes	I	C T - W -	9.xxx	-671088.64 - 670760.96	[Btn][Py] Float	Left = Decrease; Right = Increase
	2 Bytes	I	C T - W -	9.xxx	-671088.64 - 670760.96	[Btn][Py] Float	Left = Increase; Right = Decrease
	2 Bytes	I	C T - W -	DPT_Value_Temp	-273.00° - 670760.00°	[Btn][Py] (Climate) Temperature Setpoint	Left = Decrease; Right = Increase
	2 Bytes	I	C T - W -	DPT_Value_Temp	-273.00° - 670760.00°	[Btn][Py] (Climate) Temperature Setpoint	Left = Increase; Right = Decrease
	2 Bytes	I	C T - W -	DPT_Value_2_Ucount	0 - 65535	[Btn][Py] Counter - 2-Bytes Unsigned	Left = Decrease; Right = Increase
	2 Bytes	I	C T - W -	DPT_Value_2_Ucount	0 - 65535	[Btn][Py] Counter - 2-Bytes Unsigned	Left = Increase; Right = Decrease
	2 Bytes	I	C T - W -	DPT_Value_2_Count	-32768 - 32767	[Btn][Pz] Counter - 2-Bytes Signed	Down = Decrease; Up = Increase
	2 Bytes	I	C T - W -	DPT_Value_2_Count	-32768 - 32767	[Btn][Pz] Counter - 2-Bytes Signed	Down = Increase; Up = Decrease
	2 Bytes	I	C T - W -	DPT_Value_2_Ucount	0 - 65535	[Btn][Pz] Counter - 2-Bytes Unsigned	Down = Decrease; Up = Increase
	2 Bytes	I	C T - W -	DPT_Value_2_Ucount	0 - 65535	[Btn][Pz] Counter - 2-Bytes Unsigned	Down = Increase; Up = Decrease
	2 Bytes	I	C T - W -	9.xxx	-671088.64 - 670760.96	[Btn][Pz] Float	Down = Decrease; Up = Increase
	2 Bytes	I	C T - W -	9.xxx	-671088.64 - 670760.96	[Btn][Pz] Float	Down = Increase; Up = Decrease
	2 Bytes	I	C T - W -	DPT_Value_Temp	-273.00° - 670760.00°	[Btn][Pz] (Climate) Temperature Setpoint	Down = Decrease; Up = Increase
	2 Bytes	I	C T - W -	DPT_Value_Temp	-273.00° - 670760.00°	[Btn][Pz] (Climate) Temperature Setpoint	Down = Increase; Up = Decrease
56	1 Bit	I	C - - W -	DPT_Ack	0/1	[General] Translations - Main Language	0 = Nothing; 1 = Choose this Language
57, 58, 59, 60	1 Bit	I	C - - W -	DPT_Ack	0/1	[General] Translations - Language x	0 = Nothing; 1 = Choose this Language
61	1 Byte	I	C - - W -	Language Enumeration		[General] Translations - Select Language	0 = Main; 1 = Lang. 2; ...; 4 = Lang. 5
62	2 Bytes	I	C - - W -	DPT_LanguageCodeAlpha2_ASCII		[General] Translations - Select Language	Language Selection Through ISO 639-1 Two Letters Code
63, 71, 79, 87	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] Show/Hide Fan	0 = Hide Fan; 1 = Show Fan
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Py] Show/Hide Indicator	0 = Hide Indicator; 1 = Show Indicator
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Pz] Show/Hide Indicator	0 = Hide Indicator; 1 = Show Indicator
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] Show/Hide Indicator	0 = Hide Indicator; 1 = Show Indicator
64, 72, 80, 88	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Disp][Bx] (Climate) Mode	Mode Icon is Shown (0 = Cool; 1 = Heat)
	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Disp][Bx] (Climate) On/Off - Mode	0 = Cool; 1 = Heat. (Mode Icon is Shown when On/Off = 1, and Status = 0)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] Text - 1-Bit	Parameterized Text Shown on New Value Reception
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] Icon - 1-Bit	Selected Icon Shown on New Value Reception
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Py] Icon - 1-Bit	Selected Icon Shown on New Value

							Reception
	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Disp][Py] (Climate) Mode	Mode Icon is Shown (0 = Cool; 1 = Heat)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Py] Text - 1-Bit	Parameterized Text Shown on New Value Reception
	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Disp][Py] (Climate) On/Off - Mode	0 = Cool; 1 = Heat. (Mode Icon is Shown when On/Off = 1, and Status = 0)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Pz] Icon - 1-Bit	Selected Icon Shown on New Value Reception
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Pz] Text - 1-Bit	Parameterized Text Shown on New Value Reception
	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Disp][Pz] (Climate) Mode	Mode Icon is Shown (0 = Cool; 1 = Heat)
	1 Bit	I	C T - W U	DPT_Heat_Cool	0/1	[Disp][Pz] (Climate) On/Off - Mode	0 = Cool; 1 = Heat. (Mode Icon is Shown when On/Off = 1, and Status = 0)
65, 73, 81, 89	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] (Climate) On/Off	0 = Off (hide indicator); 1 = On (show mode or status)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Py] (Climate) On/Off	0 = Off (hide indicator); 1 = On (show mode or status)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Pz] (Climate) On/Off	0 = Off (hide indicator); 1 = On (show mode or status)
66, 74, 82, 90	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] (Climate) On/Off - Status	0 = Halted; 1 = Running. (Status icon is shown when On/Off = 1, and Status = 1)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Py] (Climate) On/Off - Status	0 = Halted; 1 = Running. (Status icon is shown when On/Off = 1, and Status = 1)
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Pz] (Climate) On/Off - Status	0 = Halted; 1 = Running. (Status icon is shown when On/Off = 1, and Status = 1)
67, 75, 83, 91	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Number - Scaling	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Bx] Number - Counter (1-Byte Unsigned)	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Count	-128 - 127	[Disp][Bx] Number - Counter (1-Byte Signed)	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Bx] Text - Enumeration	Parameterized Text Shown on New Value Reception
	1 Byte	I	C T - W U	DPT_HVACContrMode	0 = Auto 1 = Heat 3 = Cool 9 = Fan 14 = Dry	[Disp][Bx] (Climate) Mode - Extended	Mode Icon is Shown
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	2 levels: Min. (0% - 50%); Max. (51% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	3 levels: Min. (0% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	Off/Auto + 2 levels: Off/Auto = 0%; Min. (1% - 50%); Max. (51% - 100%)

	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	Off/Auto + 3 levels: Off/Auto = 0%; Min. (1% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Bx] Icon - Enumeration	Selected Icon Shown on New Value Reception
	1 Byte	I	C T - W U	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Disp][Bx] (Climate) Mode Special	Mode Icon is Shown
	1 Byte	I	C T - W U	DPT_HVACContrMode	0 = Auto 1 = Heat 3 = Cool 9 = Fan 14 = Dry	[Disp][Py] (Climate) Mode - Extended	Mode Icon is Shown
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Py] Fan	3 levels: Min. (0% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Py] Fan	2 levels: Min. (0% - 50%); Max. (51% - 100%)
	1 Byte	I	C T - W U	DPT_Value_1_Count	-128 - 127	[Disp][Py] Number - Counter (1-Byte Signed)	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Py] Number - Counter (1-Byte Unsigned)	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Py] Number - Scaling	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Disp][Py] (Climate) Mode Special	Mode Icon is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Py] Text - Enumeration	Parameterized Text Shown on New Value Reception
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Py] Fan	Off/Auto + 2 levels: Off/Auto = 0%; Min. (1% - 50%); Max. (51% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Py] Fan	Off/Auto + 3 levels: Off/Auto = 0%; Min. (1% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Py] Icon - Enumeration	Selected Icon Shown on New Value Reception
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Pz] Icon - Enumeration	Selected Icon Shown on New Value Reception
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Pz] Number - Scaling	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Pz] Number - Counter (1-Byte Unsigned)	Object Numeric Value is Shown
	1 Byte	I	C T - W U	DPT_Value_1_Count	-128 - 127	[Disp][Pz] Number - Counter (1-Byte	Object Numeric Value is Shown

						Signed)	
	1 Byte	I	C T - W U	DPT_Value_1_Ucount	0 - 255	[Disp][Pz] Text - Enumeration	Parameterized Text Shown on New Value Reception
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Pz] Fan	2 levels: Min. (0% - 50%); Max. (51% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Pz] Fan	3 levels: Min. (0% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Pz] Fan	Off/Auto + 2 levels: Off/Auto = 0%; Min. (1% - 50%); Max. (51% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Pz] Fan	Off/Auto + 3 levels: Off/Auto = 0%; Min. (1% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_HVACContrMode	0 = Auto 1 = Heat 3 = Cool 9 = Fan 14 = Dry	[Disp][Pz] (Climate) Mode - Extended	Mode Icon is Shown
	1 Byte	I	C T - W U	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Disp][Pz] (Climate) Mode Special	Mode Icon is Shown
68, 76, 84, 92	2 Bytes	I	C T - W U	DPT_Value_2_Ucount	0 - 65535	[Disp][Bx] Number - Counter (2-Bytes Unsigned)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	DPT_Value_2_Count	-32768 - 32767	[Disp][Bx] Number - Counter (2-Bytes Signed)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	9.xxx	-671088.64 - 670760.96	[Disp][Bx] Number - Float (2-Bytes)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	DPT_Value_Temp	-273.00° - 670760.00°	[Disp][Bx] (Climate) Temperature	Object Value is Shown (-99ºC to 199ºC)
	2 Bytes	I	C T - W U	DPT_Value_2_Ucount	0 - 65535	[Disp][Py] Number - Counter (2-Bytes Unsigned)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	DPT_Value_2_Count	-32768 - 32767	[Disp][Py] Number - Counter (2-Bytes Signed)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	DPT_Value_Temp	-273.00° - 670760.00°	[Disp][Py] (Climate) Temperature	Object Value is Shown (-99ºC to 199ºC)
	2 Bytes	I	C T - W U	9.xxx	-671088.64 - 670760.96	[Disp][Py] Number - Float (2-Bytes)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	DPT_Value_2_Count	-32768 - 32767	[Disp][Pz] Number - Counter (2-Bytes Signed)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	DPT_Value_2_Ucount	0 - 65535	[Disp][Pz] Number - Counter (2-Bytes Unsigned)	Object Numeric Value is Shown
	2 Bytes	I	C T - W U	9.xxx	-671088.64 - 670760.96	[Disp][Pz] Number - Float (2-Bytes)	Object Numeric Value is Shown

	2 Bytes	I	C T - W U	DPT_Value_Temp	-273.00° - 670760.00°	[Disp][Pz] (Climate) Temperature	Object Value is Shown (-99ºC to 199ºC)
69, 77, 85, 93	4 Bytes	I	C T - W U	DPT_Value_4_Ucount	0 - 4294967295	[Disp][Bx] Number - Counter (4-Bytes Unsigned)	Object Numeric Value is Shown
	4 Bytes	I	C T - W U	DPT_Value_4_Count	-2147483648 - 2147483647	[Disp][Bx] Number - Counter (4-Bytes Signed)	Object Numeric Value is Shown
	4 Bytes	I	C T - W U	DPT_Value_4_Count	-2147483648 - 2147483647	[Disp][Py] Number - Counter (4-Bytes Signed)	Object Numeric Value is Shown
	4 Bytes	I	C T - W U	DPT_Value_4_Ucount	0 - 4294967295	[Disp][Py] Number - Counter (4-Bytes Unsigned)	Object Numeric Value is Shown
	4 Bytes	I	C T - W U	DPT_Value_4_Count	-2147483648 - 2147483647	[Disp][Pz] Number - Counter (4-Bytes Signed)	Object Numeric Value is Shown
	4 Bytes	I	C T - W U	DPT_Value_4_Ucount	0 - 4294967295	[Disp][Pz] Number - Counter (4-Bytes Unsigned)	Object Numeric Value is Shown
70, 78, 86, 94	14 Bytes	I	C T - W U	DPT_String_UTF-8		[Disp][Bx] Text from Object	Received Text is Shown
	14 Bytes	I	C T - W U	DPT_String_UTF-8		[Disp][Py] Text from Object	Received Text is Shown
	14 Bytes	I	C T - W U	DPT_String_UTF-8		[Disp][Pz] Text from Object	Received Text is Shown
71	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] Fan Auto On/Off	Auto Mode With 0
	1 Bit	I	C T - W U	DPT_Switch	0/1	[Disp][Bx] Fan Auto On/Off	Auto Mode With 1
75	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	2 levels: Off = 0%; Min. (1% - 50%); Max. (51% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	3 levels: Off = 0%; Min. (1% - 33%); Med. (34% - 66%); Max. (67% - 100%)
	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[Disp][Bx] Fan	3 levels: Min. Off = 0%; (1% - 33%); Med. (34% - 66%); Max. (67% - 100%)
95	1 Bit	I	C T - W U	DPT_Enable	0/1	[General] Sounds - Disabling Button Sound	0 = Disable Sound; 1 = Enable Sound
	1 Bit	I	C T - W U	DPT_Enable	0/1	[General] Sounds - Disabling Button Sound	0 = Enable Sound; 1 = Disable Sound
96	1 Bit	I	C - - W -	DPT_Ack	0/1	[General] Sounds - Doorbell	0 = Play Doorbell Sound; 1 = Nothing
	1 Bit	I	C - - W -	DPT_Ack	0/1	[General] Sounds - Doorbell	0 = Nothing; 1 = Play Doorbell Sound
97	1 Bit	I	C - - W -	DPT_DayNight	0/1	[General] Backlight Mode	0 = Night Mode; 1 = Normal Mode
	1 Bit	I	C - - W -	DPT_DayNight	0/1	[General] Backlight Mode	0 = Normal Mode; 1 = Night Mode
98	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[General] Display - Brightness	0% ... 100%
99	1 Byte	I	C T - W U	DPT_Scaling	0% - 100%	[General] Display - Contrast	0% ... 100%
100, 106	1 Bit	I	C - - W -	DPT_Enable	0/1	[Ix] Input Lock	0 = Unlock; 1 = Lock
101, 107	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Short Press] 0	Sending of 0
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Short Press] 1	Sending of 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Short Press] 0/1 Switching	Switching 0/1
	1 Bit		C T - - -	DPT_UpDown	0/1	[Ix] [Short Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit		C T - - -	DPT_UpDown	0/1	[Ix] [Short Press] Move Down Shutter	Sending of 1 (Down)

	1 Bit		C T - - -	DPT_UpDown	0/1	[Ix] [Short Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Bit		C T - - -	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
	1 Bit		C T - - -	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit		C T - - -	DPT_Step	0/1	[Ix] [Short Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Brighter	Increase Brightness
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Darker	Decrease Brightness
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Short Press] Brighter/Darker	Switch Bright/Dark
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Short Press] Light On	Sending of 1 (On)
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Short Press] Light Off	Sending of 0 (Off)
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Short Press] Light On/Off	Switching 0/1
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Run Scene	Sending of 0 - 63
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Short Press] Save Scene	Sending of 128 - 191
	1 Bit	I/O	C T R W -	DPT_Switch	0/1	[Ix] [Switch/Sensor] Edge	Sending of 0 or 1
	1 Byte		C T - - -	DPT_Value_1_Ucount	0 - 255	[Ix] [Short Press] Constant Value (Integer)	0 - 255
	1 Byte		C T - - -	DPT_Scaling	0% - 100%	[Ix] [Short Press] Constant Value	0% - 100%

						(Percentage)	
	2 Bytes		C T - - -	DPT_Value_2_Ucount	0 - 65535	[Ix] [Short Press] Constant Value (Integer)	0 - 65535
	2 Bytes		C T - - -	9.xxx	-671088.64 - 670760.96	[Ix] [Short Press] Constant Value (Float)	Float Value
101, 102, 107, 108	2 Bytes	O	C T R - -	DPT_Value_2_Ucount	0 - 65535	[Ix] [Pulse Counter] Counter	Number of Pulses
102, 108	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Ix] [Short Press] Shutter Status (Input)	0% = Top; 100% = Bottom
	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Ix] [Short Press] Dimming Status (Input)	0% - 100%
103, 109	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Long Press] 0	Sending of 0
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Long Press] 1	Sending of 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Long Press] 0/1 Switching	Switching 0/1
	1 Bit		C T - - -	DPT_UpDown	0/1	[Ix] [Long Press] Move Up Shutter	Sending of 0 (Up)
	1 Bit		C T - - -	DPT_UpDown	0/1	[Ix] [Long Press] Move Down Shutter	Sending of 1 (Down)
	1 Bit		C T - - -	DPT_UpDown	0/1	[Ix] [Long Press] Move Up/Down Shutter	Switching 0/1 (Up/Down)
	1 Bit		C T - - -	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Up Shutter	Sending of 0 (Stop/Step Up)
	1 Bit		C T - - -	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Down Shutter	Sending of 1 (Stop/Step Down)
	1 Bit		C T - - -	DPT_Step	0/1	[Ix] [Long Press] Stop/Step Shutter (Switched)	Switching of 0/1 (Stop/Step Up/Down)
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Long Press] Brighter	Long Pr. -> Brighter; Release -> Stop
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%) 0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)	[Ix] [Long Press] Darker	Long Pr. -> Darker; Release -> Stop
	4 Bit		C T - - -	DPT_Control_Dimming	0x0 (Stop) 0x1 (Dec. by 100%) ... 0x7 (Dec. by 1%)	[Ix] [Long Press] Brighter/Darker	Long Pr. -> Brighter/Darker; Release -> Stop

					0x8 (Stop) 0xD (Inc. by 100%) ... 0xF (Inc. by 1%)		
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Long Press] Light On	Sending of 1 (On)
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Long Press] Light Off	Sending of 0 (Off)
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Long Press] Light On/Off	Switching 0/1
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Long Press] Run Scene	Sending of 0 - 63
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Long Press] Save Scene	Sending of 128 - 191
	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] [Switch/Sensor] Alarm: Breakdown or Sabotage	1 = Alarm; 0 = No Alarm
	2 Bytes		C T - - -	9.xxx	-671088.64 - 670760.96	[Ix] [Long Press] Constant Value (Float)	Float Value
	2 Bytes		C T - - -	DPT_Value_2_Ucount	0 - 65535	[Ix] [Long Press] Constant Value (Integer)	0 - 65535
	1 Byte		C T - - -	DPT_Scaling	0% - 100%	[Ix] [Long Press] Constant Value (Percentage)	0% - 100%
	1 Byte		C T - - -	DPT_Value_1_Ucount	0 - 255	[Ix] [Long Press] Constant Value (Integer)	0 - 255
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Double Press] 0	Sending of 0
	1 Bit		C T - - -	DPT_Switch	0/1	[Ix] [Double Press] 1	Sending of 1
	1 Bit	I	C T - W -	DPT_Switch	0/1	[Ix] [Double Press] 0/1 Switching	Switching 0/1
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Double Press] Save Scene	Sending of 128 - 191
	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Ix] [Double Press] Run Scene	Sending of 0 - 63
104, 110	1 Bit		C T - - -	DPT_Trigger	0/1	[Ix] [Long Press/Release] Stop Shutter	Release -> Stop Shutter
	1 Bit	I	C - - W -	DPT_Reset	0/1	[Ix] [Pulse Counter] Reset	0 = No Action; 1 = Reset
105, 111	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Ix] [Long Press] Dimming Status (Input)	0% - 100%
	1 Byte	I	C - - W -	DPT_Scaling	0% - 100%	[Ix] [Long Press] Shutter Status (Input)	0% = Top; 100% = Bottom
112, 116	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00° - 670760.00°	[Ix] Current Temperature	Temperature Sensor Value
113, 117	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Overcooling	0 = No Alarm; 1 = Alarm
114, 118	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Overheating	0 = No Alarm; 1 = Alarm
115, 119	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Probe Error	0 = No Alarm; 1 = Alarm
120	1 Byte	I	C - - W -	DPT_SceneNumber	0 - 63	[Motion Detector] Scene Input	Scene Value
121	1 Byte		C T - - -	DPT_SceneControl	0-63; 128-191	[Motion Detector] Scene Output	Scene Value
122, 151	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Ix] Luminosity	0-100%
123, 152	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Open Circuit Error	0 = No Error; 1 = Open Circuit Error
124, 153	1 Bit	O	C T R - -	DPT_Alarm	0/1	[Ix] Short Circuit Error	0 = No Error; 1 = Short Circuit Error
125, 154	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Ix] Presence State (Scaling)	0-100%
126, 155	1 Byte	O	C T R - -	DPT_HVACMode	1=Comfort	[Ix] Presence State (HVAC)	Auto, Comfort, Standby, Economy, Building

					2=Standby 3=Economy 4=Building Protection		Protection
127, 156	1 Bit	O	C T R - -	DPT_Occupancy	0/1	[Ix] Presence State (Binary)	Binary Value
	1 Bit	O	C T R - -	DPT_Ack	0/1	[Ix] Presence: Slave Output	1 = Motion Detected
128, 157	1 Bit	I	C - - W -	DPT_Window_Door	0/1	[Ix] Presence Trigger	Binary Value to Trigger the Presence Detection
129, 158	1 Bit	I	C - - W -	DPT_Ack	0/1	[Ix] Presence: Slave Input	0 = Nothing; 1 = Detection from slave device
130, 159	2 Bytes	I	C - - W -	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Waiting Time	0-65535 s.
131, 160	2 Bytes	I	C - - W -	DPT_TimePeriodSec	0 - 65535	[Ix] Presence: Listening Time	1-65535 s.
132, 161	1 Bit	I	C - - W -	DPT_Enable	0/1	[Ix] Presence: Enable	According to parameters
133, 162	1 Bit	I	C - - W -	DPT_DayNight	0/1	[Ix] Presence: Day/Night	According to parameters
134, 163	1 Bit	O	C T R - -	DPT_Occupancy	0/1	[Ix] Presence: Occupancy State	0 = Not Occupied; 1 = Occupied
135, 164	1 Bit	I	C - - W -	DPT_Ack	0/1	[Ix] External Motion Detection	0 = Nothing; 1 = Motion detected by an external sensor
136, 141, 146, 165, 170, 175	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[Ix] [Cx] Detection State (Scaling)	0-100%
137, 142, 147, 166, 171, 176	1 Byte	O	C T R - -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[Ix] [Cx] Detection State (HVAC)	Auto, Comfort, Standby, Economy, Building Protection
138, 143, 148, 167, 172, 177	1 Bit	O	C T R - -	DPT_Switch	0/1	[Ix] [Cx] Detection State (Binary)	Binary Value
139, 144, 149, 168, 173, 178	1 Bit	I	C - - W -	DPT_Enable	0/1	[Ix] [Cx] Enable Channel	According to parameters
140, 145, 150, 169, 174, 179	1 Bit	I	C - - W -	DPT_Switch	0/1	[Ix] [Cx] Force State	0 = No Detection; 1 = Detection
180	1 Byte	I	C - - W -	DPT_SceneControl	0-63; 128-191	[Thermostat] Scene Input	Scene Value
181	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Temperature Source 1	External Sensor Temperature
182	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Temperature Source 2	External Sensor Temperature
183	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Effective Temperature	Effective Control Temperature
184	1 Byte	I	C - - W -	DPT_HVACMode	1=Comfort 2=Standby	[T1] Special Mode	1-Byte HVAC Mode

					3=Economy 4=Building Protection		
185	1 Bit	I	C - - W -	DPT_Ack	0/1	[T1] Special Mode: Comfort	0 = Nothing; 1 = Trigger
	1 Bit	I	C - - W -	DPT_Switch	0/1	[T1] Special Mode: Comfort	0 = Off; 1 = On
186	1 Bit	I	C - - W -	DPT_Ack	0/1	[T1] Special Mode: Standby	0 = Nothing; 1 = Trigger
	1 Bit	I	C - - W -	DPT_Switch	0/1	[T1] Special Mode: Standby	0 = Off; 1 = On
187	1 Bit	I	C - - W -	DPT_Ack	0/1	[T1] Special Mode: Economy	0 = Nothing; 1 = Trigger
	1 Bit	I	C - - W -	DPT_Switch	0/1	[T1] Special Mode: Economy	0 = Off; 1 = On
188	1 Bit	I	C - - W -	DPT_Ack	0/1	[T1] Special Mode: Protection	0 = Nothing; 1 = Trigger
	1 Bit	I	C - - W -	DPT_Switch	0/1	[T1] Special Mode: Protection	0 = Off; 1 = On
189	1 Bit	I	C - - W -	DPT_Window_Door	0/1	[T1] Window Status (Input)	0 = Closed; 1 = Open
190	1 Bit	I	C - - W -	DPT_Ack	0/1	[T1] Comfort Prolongation	0 = Nothing; 1 = Timed Comfort
191	1 Byte	O	C T R - -	DPT_HVACMode	1=Comfort 2=Standby 3=Economy 4=Building Protection	[T1] Special Mode Status	1-Byte HVAC Mode
192	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Setpoint	Thermostat Setpoint Input
	2 Bytes	I	C - - W -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Basic Setpoint	Reference Setpoint
193	1 Bit	I	C - - W -	DPT_Step	0/1	[T1] Setpoint Step	0 = Decrease Setpoint; 1 = Increase Setpoint
194	2 Bytes	I	C - - W -	DPT_Value_Tempd	-670760.00° - 670760.00°	[T1] Setpoint Offset	Float Offset Value
195	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Setpoint Status	Current Setpoint
196	2 Bytes	O	C T R - -	DPT_Value_Temp	-273.00° - 670760.00°	[T1] Basic Setpoint Status	Current Basic Setpoint
197	2 Bytes	O	C T R - -	DPT_Value_Tempd	-670760.00° - 670760.00°	[T1] Setpoint Offset Status	Current Setpoint Offset
198	1 Bit	I	C - - W -	DPT_Reset	0/1	[T1] Setpoint Reset	Reset Setpoint to Default
	1 Bit	I	C - - W -	DPT_Reset	0/1	[T1] Offset Reset	Reset Offset
199	1 Bit	I	C - - W -	DPT_Heat_Cool	0/1	[T1] Mode	0 = Cool; 1 = Heat
200	1 Bit	O	C T R - -	DPT_Heat_Cool	0/1	[T1] Mode Status	0 = Cool; 1 = Heat
201	1 Bit	I	C - - W -	DPT_Switch	0/1	[T1] On/Off	0 = Off; 1 = On
202	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] On/Off Status	0 = Off; 1 = On
203	1 Bit	I/O	C - R W -	DPT_Switch	0/1	[T1] Main System (Cool)	0 = System 1; 1 = System 2
204	1 Bit	I/O	C - R W -	DPT_Switch	0/1	[T1] Main System (Heat)	0 = System 1; 1 = System 2
205	1 Bit	I	C - - W -	DPT_Enable	0/1	[T1] Enable/Disable Secondary System	0 = Disable; 1 = Enable

						(Cool)	
206	1 Bit	I	C - - W -	DPT_Enable	0/1	[T1] Enable/Disable Secondary System (Heat)	0 = Disable; 1 = Enable
207, 213	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[T1] [Sx] Control Variable (Cool)	PI Control (Continuous)
208, 214	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[T1] [Sx] Control Variable (Heat)	PI Control (Continuous)
	1 Byte	O	C T R - -	DPT_Scaling	0% - 100%	[T1] [Sx] Control Variable	PI Control (Continuous)
209, 215	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] Control Variable (Cool)	2-Point Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] Control Variable (Cool)	PI Control (PWM)
210, 216	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] Control Variable (Heat)	2-Point Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] Control Variable (Heat)	PI Control (PWM)
	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] Control Variable	2-Point Control
	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] Control Variable	PI Control (PWM)
211, 217	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] PI State (Cool)	0 = PI Signal 0%; 1 = PI Signal Greater than 0%
212, 218	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] PI State (Heat)	0 = PI Signal 0%; 1 = PI Signal Greater than 0%
	1 Bit	O	C T R - -	DPT_Switch	0/1	[T1] [Sx] PI State	0 = PI Signal 0%; 1 = PI Signal Greater than 0%

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