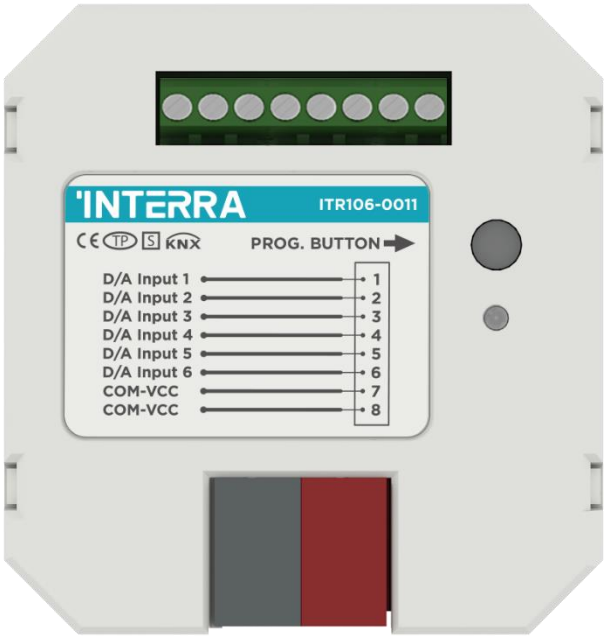
INTERRA

Developer of Uniqueness

6 Binary/Analog Input Module with 6 Thermostat

Product Manual



Contents

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1. Content of The Document

This document contains Interra ITR106-0011 coded 6 Binary/Analog Input Module with 6 Thermostat devices' electronic and all essential feature information for programming the products. In each subtitle is explained the characteristics of the device. Modifications of the product and special change requests are only allowed in coordination with product management.

This manual provides detailed technical information concerning ITR106-0011 6 Binary/Analog Input Module with 6 Thermostat. All the models have the same software functionality so, the features described in this document apply to all versions.

This user manual is intended for use by KNX installers and describes the functions and parameters of the Interra 6 Binary/Analog Input Module with 6 Thermostat family devices and how it is possible to change the settings and configurations using the ETS software tool. This document also describes the installation, programming, commissioning and use of the devices with detailed information.

2. Product Description

ITR106-0011 series 6 Binary/Analog Input Module with 6 Thermostat device is the newest product of Interra Technology. The Interra 6 Binary/Analog Input Module with 6 Thermostats are designed for using at mainly in interior areas of buildings.

The Interra 6 Binary/Analog Input Module with 6 Thermostat serves as interface for operation of KNX systems via conventional buttons/switches or coupling of binary signals (signal contacts). The devices feature a push-button for manual operation for each input. Input states can be simulated during manual operation, so that the conventional push buttons, switches or floating contacts do not need to be connected for commissioning purposes. The connection to the 6 Binary/Analog Input Module with 6 Thermostat is established using the front-side bus connection terminal.

All versions have a rear connector with 12 digital inputs that can be connected to buttons and used for switch sensor, switch/dimming sensor, shutter sensor, value/forced operation, control scene, RGB colour control, RGBW control, mode selection and command sequence.

Interra 6 Binary/Analog Input Module with 6 Thermostat has 5 logic function blocks and can be set to the logical relation AND/OR/XOR. Each block can control 5 output objects.

2.1. Technical Information

The following table shows the technical information of the 6 Binary/Analog Input Module with 6 Thermostat.

Product Code	ITR106-0011
Power Supply	KNX Power Supply
Current Consumption	10 mA
Inputs	6
Cable Length	Maximum 100 m at 1.5 mm^2
Cable Cross-Section	0.25 – 1.5 mm^2
Cable Stripping	6 mm
Type of Inputs	Dry Contact Inputs
Mode of Commissioning	S-Mode
Type of Protection	IP 20
Temperature Range	Operation (-5°C...45°C) Storage (-25°C...55°C)
Colour	Light Grey
Dimensions	90 x 36 x 71 mm (H x W x D)
Certification	KNX Certified
Configuration	Configuration with ETS

2.2. Connection Features

The figure below shows the 6 Binary/Analog Input Module with 6 Thermostat connectors. All of the ITR106-0011 models have the same connection layout.

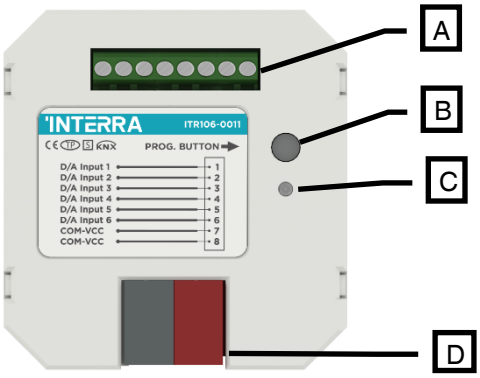

Fig. 1: Connection Features of 6 Binary/Analog Input Module with 6 Thermostat

Letter	Feature
A	Input
B	Programming Button
C	Programming LED
D	KNX Connector

2.3. Dimensions

All values given in the device dimensions are millimetres.

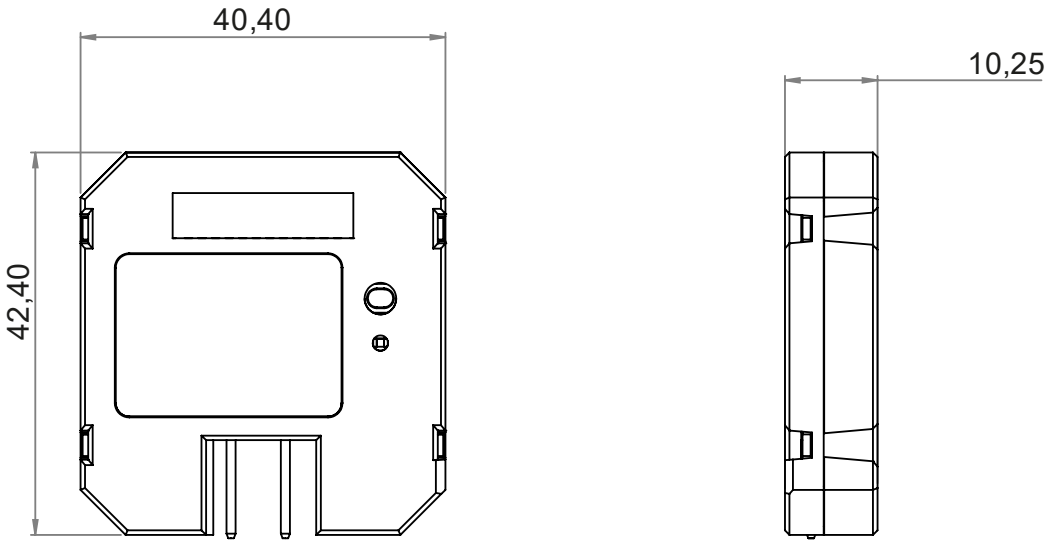

Fig. 2: Dimensions of 6 Binary/Analog Input Module with 6 Thermostat

2.4. Functionality

The complete configuration of the device is performed via ETS5 or higher. Depending on ETS configuration and settings, the product features will be different. Available functions are:

Input Functions

- Switch Sensor
- Switch / Dimming Sensor
- Shutter Sensor
- Value / Forced Operation
- Control Scene
- RGB Colour Control
- RGBW Control
- Mode Selection
- Command Sequence
- Counter

Logic Functions

Internal Inputs (max. 6)

External Inputs

- Binary Value (adj. size) (max. 3 selectable)
- Movement
- Temperature
- Brightness

Output Types (max. 5 selectable)

- Switch
- Dim
- Shutter
- Alarm
- Percentage
- Sequence
- Scene Number
- String
- Threshold

Most functions only need one input, and therefore each input might be assigned a different function. However, some functions can also use two inputs, such as “Dimming with 2 buttons” and “Shutter/Blinds with 2 buttons”.

3. ETS Parameters & Descriptions

In this chapter, the ETS parameters of ITR106-0011 6 Binary/Analog Input Module with 6 Thermostat devices are described using the parameter pages and options. The parameter page features are dynamic structures which means further parameters and parameter pages are enabled depending on the configuration.

In the ETS parameter configuration pages, each of the parameters has got a default parameter value. These default values are written in bold.

- E.g.: Enable in operation ●**no** yes

3.1. General Page

When the ITR106-0011 6 Binary/Analog Input Module with 6 Thermostat ETS configuration file is attached to the project from the ETS software, a configuration setting must be made primarily before loading. When entering the “GENERAL” in the parameter page, the configuration screen will appear as shown below. General settings for the devices are made in this window.

Fig. 3: General Page Configuration Page

3.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Delay time after voltage return	This parameter is used to determine the delay time after voltage return in seconds. When in a delayed state, the 6 Binary/Analog Input Module with 6 Thermostat does not send any KNX telegrams. Incoming telegrams are received and updated in the background. The updated values are only executed when the wait state ends and then sent according to the parametrization.	2...**4**…60
Enable In Operation	This parameter is used to determine the existence of the 6 Binary/Analog Input Module with 6 Thermostat on the KNX bus line. The cyclic telegram can be monitored by an external KNX device. If a telegram is not received, the device may be defective or the KNX cable to the transmitting device may be interrupted. **Yes:** The group object is enabled. **No:** The group object is not enabled.	**No** yes
-> In operation send[1]	This parameter is used to determine the send value of the “General - In operation” group object on the KNX bus line.	**Alive value ‘0’** Alive value ‘1’
-> In operation send interval (min)[1]	This parameter is used to set the cyclically sending time interval value of the “General - In operation” group object.	1...**5**...255

[*1] This parameter is visible when the parameter “Enable in operation” is set to “Yes”.

3.2. Inputs

Interra 6 Binary/Analog Input Module with 6 Thermostat has 6 digital inputs or 10 digital and 2 analog inputs. By connecting buttons to digital inputs, you can choose the lighting, curtains/blinds, RGB LEDs, dim devices etc. you want to control. You can control the devices by making the necessary configurations via the 6 Binary/Analog Input Module with 6 Thermostat.

3.2.1. Input – Switch Sensor

In this section, it is explained how to control the related automation unit via the 6 Binary/Analog Input Module with 6 Thermostat by switching via buttons connected to digital inputs. Detailed information on the relevant parameter configurations is described in the table below.

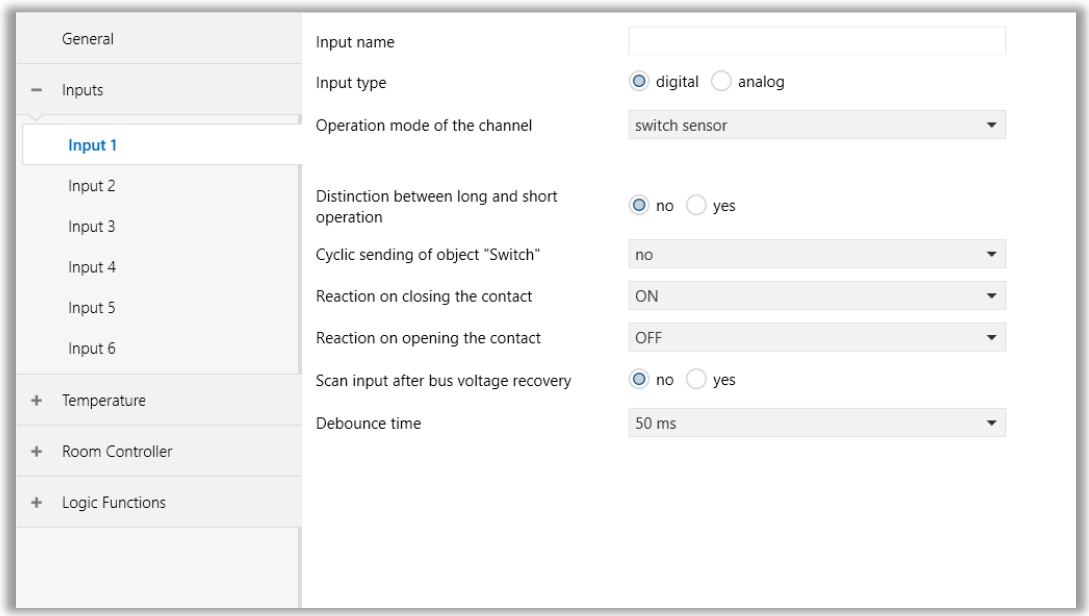

Fig. 4: Input – Switch Sensor Configuration Page

3.2.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function **Switch sensor** Switch/dimming sensor Shutter sensor Value/forced operation Control scene RGB colour control Mode selection Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can consist of up to 40 characters.	**40 bytes allowed**
Distinction between short and long operation	This parameter is used to set if the input differentiates between short and long operations. With the option “yes”, after opening/closing of the contact, it must, first of all, be ascertained if a short or long operation has occurred here. Only thereafter will a possible reaction be triggered.	**No** Yes
-> Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat input x.	Normally closed **Normally open**
-> Cyclic sending of object “Switch”	This parameter is visible if there is no distinction between short and long operations. The communication object “Switch” can be sent cyclically. If the parameter “always” is set, the object sends cyclically on the bus, regardless of its value. Should the parameter value “if telegram switch = ON” or “if telegram switch = OFF” be set, the corresponding object value is sent cyclically.	**No** If “Switch” = OFF If “Switch” = ON always
-> Reaction on closing the contact **(rising edge)**	This parameter is visible if there is no distinction between short and long operations. For each edge, you can set if the object value is to be switched ON, OFF or TOGGLE, or if no reaction should occur. If cyclical sending has been parameterized, it is possible by setting the parameter value “terminate cyclic sending” with an operation of the input, to stop cyclic sending without a new object value being sent.	**No reaction** ON OFF TOGGLE

-> Reaction on opening the contact **(Falling edge)**	This parameter is visible if there is no distinction between short and long operations. For each edge, you can set if the object value is to be switched ON, OFF or TOGGLE, or if no reaction should occur. If cyclical sending has been parameterized, it is possible by setting the parameter value “terminate cyclic sending” with an operation of the input, to stop cyclic sending without a new object value being sent.	**No reaction** ON OFF TOGGLE
-> Telegram is repeated every	This parameter is visible if the cyclical transmission is active. The send cycle time describes the time used between two cyclically transmitted telegrams	00:00:005…**00:00:300** …01:05:535
-> Scan input after bus voltage recovery	This parameter is used to determine the scanning of the inputs when the bus voltage has been recovered.	**No** Yes
-> Reaction on short operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the short press operation sending the value of the input x.	**No reaction** ON OFF TOGGLE
-> Reaction on long operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the long-press operation sending the value of the input x.	**No reaction** ON OFF TOGGLE
-> Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500** …01:05.535
-> Number of object for short/long operation	This parameter is used to determine the object count to use for short and long operations. **1 object:** short and long operations will proceed with the same object. **2 object:** Short and long operations will proceed with 2 different objects.	**1 object** 2 object
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 ms, 150 ms

3.2.2. Input – Switch / Dimming Sensor

In this section, it is explained how to control the unit of lighting unit through the 6 Binary/Analog Input Module with 6 Thermostat, both by switching and dimming, via the buttons connected to the digital inputs. Detailed information on the relevant parameter configurations is described in the table below. Make sure that the lighting unit to be controlled has a dimming feature.

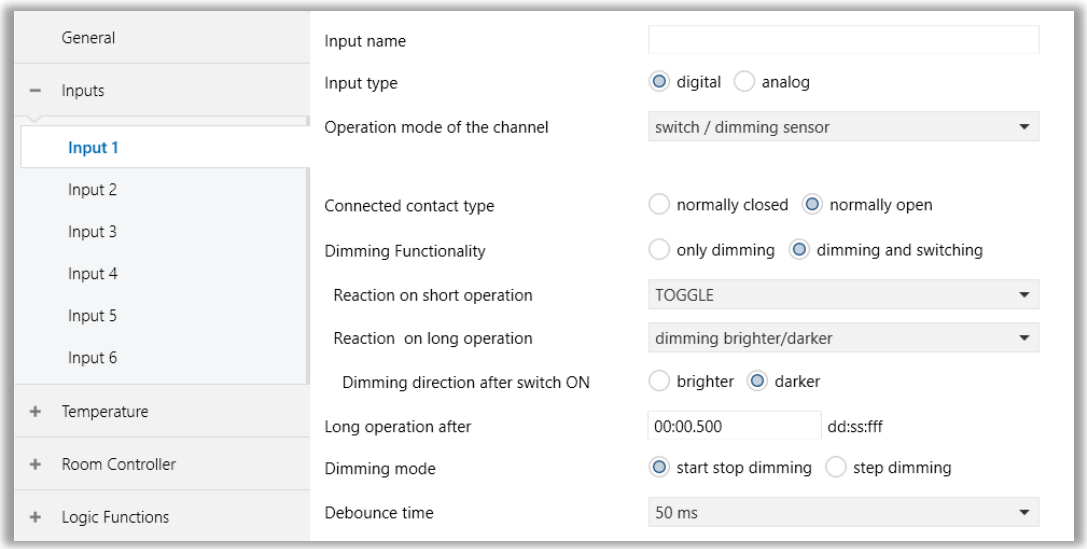

Fig. 5: Input – Switch / Dimming Sensor Configuration Page

3.2.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor **Switch/dimming sensor** Shutter sensor Value/forced operation Control scene RGB colour control Mode selection Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Dimming functionality	This parameter is used to define if the lighting can only be dimmed “Only dimming” or if additional switching is also permitted “Dimming and switching”. In this case, a long button press dims and a short button push switch.	Only dimming **Dimming and switching**
Reaction on operation	This parameter is visible if the “Only dimming” dimming functionality is set. A distinction is not made between short and long operations here.	Dimming brighter Dimming darker **Dimming brighter/darker**
-> Reaction on short operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the short press operation sending the value of the input x.	No reaction ON OFF **TOGGLE**
-> Reaction on long operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the long-press operation sending the value of the input x.	Dimming brighter Dimming darker **Dimming brighter/darker**
-> Dimming direction after switch ON	This parameter is used to determine the dimming direction when the switch object is ON long operation.	Brighter **Darker**

-> Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500** …01:05.535
Dimming mode	This parameter is used to determine the dimming mode. Normal “Start-stop-dimming” starts the dimming process with a telegram BRIGHTER or DARKER and ends the dimming process with a STOP telegram. Cyclic sending of the telegram is not necessary in this case. With “Dimming steps”, the dimming telegram is sent cyclically during a long operation. The STOP telegram ends the dimming process at the end of the operation.	**Start-stop dimming** Step Dimming
-> Brightness change on every sent telegram	This parameter is only visible with “Dimming steps”. This parameter is set to change the brightness (in per cent), which is cyclically sent with every dimming telegram.	%100 %50 **%25** %12.5 %6.25 %3.125 %1.563
-> Sending cycle time: Telegram is repeated every	This parameter is used to determine the sending cycle time. The dimming telegram is sent cyclically during a long operation if “Dimming steps” is set. The cycle time for sending corresponds with the time interval between two telegrams during cyclical sending.	0.3s, 0.4s, **0.5s**, 0.6s, 0.8s, 1s, 1.2s, 1.5s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s,
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 ms, 150 ms

3.2.3. Input – Shutter Sensor

In this section, it is explained how to control a shutter/blind unit via the buttons connected to the digital inputs via the 6 Binary/Analog Input Module with 6 Thermostat. Detailed information on the relevant parameter configurations is described in the table below.

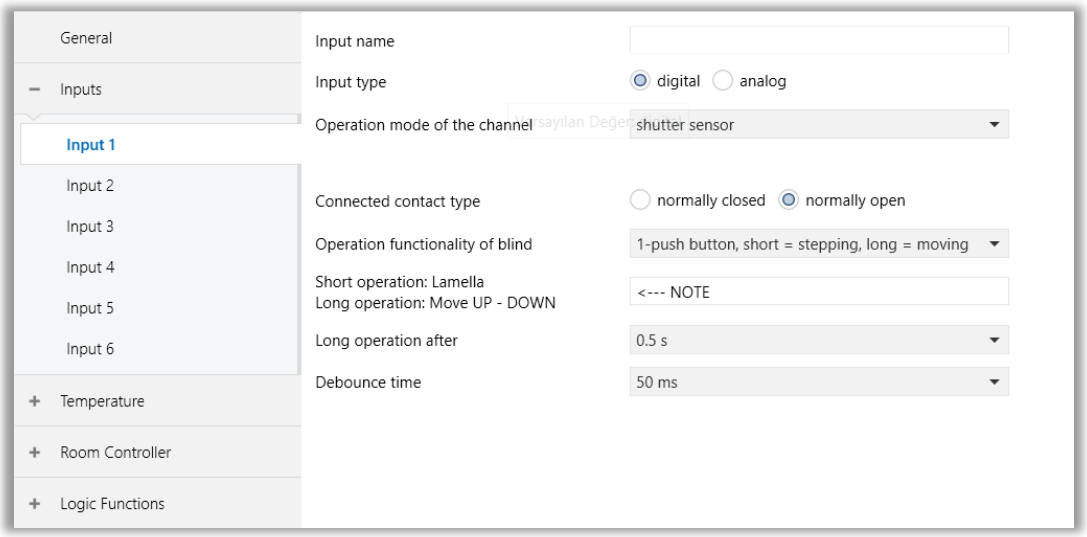

Fig. 6: Input – Shutter Sensor Configuration Page

3.2.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor **Shutter sensor** Value/forced operation Control scene RGB colour control Mode selection Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Operation Functionality of blind	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	**1-push-button, short = stepping, long = moving** 1-push-button, short = moving, long = stepping 1-push-button-operation 1-switch button operation 2-push-button, standard 2-switch-operation, moving 2-push-button, moving 2-push-button, stepping
1-push-button, short = stepping, long = moving		
Short Operation: Lamella	NOTE	NOTE

Long Operation: Move UP / DOWN		
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	0.3s, 0.4s, **0.5s**, 0.6s, 0.8s, 1s, 1.2s, 1.5s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s,
1-push-button, short = moving, long = stepping		
Short Operation: Move UP / DOWN **Long Operation: Lamella**	NOTE	NOTE
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	0.3s, 0.4s, **0.5s**, 0.6s, 0.8s, 1s, 1.2s, 1.5s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s,
"STOP/Lamella adj." is repeated every	This parameter is used to determine the time between two telegrams is set. This parameter is visible in operations in which the object "STOP/lamella adjustment" is sent cyclically on the bus during a long operation.	0.3s, **0.4s**, 0.5s, 0.6s, 0.8s, 1s, 1.2s, 1.5s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s,
1-push button operation		
On Every operation in success: **UP – STOP – DOWN - STOP**	NOTE	NOTE
1-switch button operation		
On operation: UP – DOWN **End of operation: STOP**	NOTE	NOTE
2-push button operation, standard		
Short Operation: STOP – Lamella UP / DOWN **Long Operation: Move UP / DOWN**	NOTE	NOTE
Reaction on short operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the short press operation sending the value of the input x.	**Stop / lamella up** Stop / lamella down

Reaction on long operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the long-press operation sending the value of the input x.	**Move up** Move down
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	0.3s, 0.4s, **0.5s**, 0.6s, 0.8s, 1s, 1.2s, 1.5s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s,
2-switch operation, moving		
On Operation: Moving **End of Operation: STOP**	NOTE	NOTE
Reaction on operation	This parameter is used to determine the reaction when an operation occurs. A distinction is not made between short and long operations here.	**Move up** Move down
2-push button operation, moving		
On Operation: Moving **End of Operation: STOP**	NOTE	NOTE
Reaction on operation	This parameter is used to determine the reaction when an operation occurs. A distinction is not made between short and long operations here.	**Move up** Move down
2-push-button operation, stepping		
On Operation: Stepping	NOTE	NOTE
Reaction on operation	This parameter is used to determine the reaction when an operation occurs. A distinction is not made between short and long operations here.	**Stop / Lamella up** Stop / Lamella down
“STOP/Lamella adj.” is repeated every	This parameter is used to determine the time between two telegrams is set. This parameter is visible in operations in which the object “STOP/lamella adjustment” is sent cyclically on the bus during a long operation.	0.3s, **0.4s**, 0.5s, 0.6s, 0.8s, 1s, 1.2s, 1.5s, 2s, 3s, 4s, 5s, 6s, 7s, 8s, 9s, 10s
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g. due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 , 150 ms

3.2.3.2. The Functionality of Each Function

1 push button: Short Press = stepping, Long Press = moving	
Short Operation	Stop/ Lamella Adjustment
Long Operation	Toggle between “Move Up” and “Move Down”
1 push button: Short Press = moving, Long Press = stepping	
Short Operation	Toggle between “Move Up” and “Move Down”
Long Operation	Stop/Lamella Adjustment (Sent Cyclically as the button is kept pressed)
1 push button operation: Press: moving, Long Press Disabled	
On Operation	Following signals are sent in order on each press. → Move UP → Stop/Lamella Adj. Up → Move Down → Stop/Lamella Adj. Down →
1 switch Operation: Moving, Long Press Disabled	
Press Operation	Toggle between “Move Up” and “Move Down”
Release Operation	Stop/Lamella Adjustment
2 Push Button Operation: Standard	
Short Operation	“Stop/Lamella Adj. Down” or Stop/Lamella Adj. Up (Whichever is chosen as the parameter)
Long Operation	“Move Up” or “Move Down” (Whichever is chosen as the parameter)
2 Switch Operation: Moving, Long Press Disabled	
Press Operation	“Move Up” or “Move Down” (Whichever is chosen as the parameter)
Release Operation	“Stop/Lamella Adj. Down” or “Stop/Lamella Adj. Up” (Whichever is chosen)
2 Push Button Operation: Moving, Long Press Disabled	
On Operation	Whichever sequence is selected as the parameter; “ → Move Up → Stop/Lamella Adj. Up → “ or “ → Move Down → Stop/Lamella Adj. Down → “
2 Push Button Operation: Stepping, Long Press Disabled	
On Operation	Whichever signal is selected as the parameter, is sent cyclically as the button is kept pressed; “Stop/Lamella Adj. Up” or “Stop/Lamella Adj. Down”

3.2.4. Input Value / Forced Operation

In this section, it is explained how to control an automation unit via 6 Binary/Analog Input Module with 6 Thermostat via a value/forced via buttons connected to digital inputs. Detailed information on the relevant parameter configurations is described in the table below.

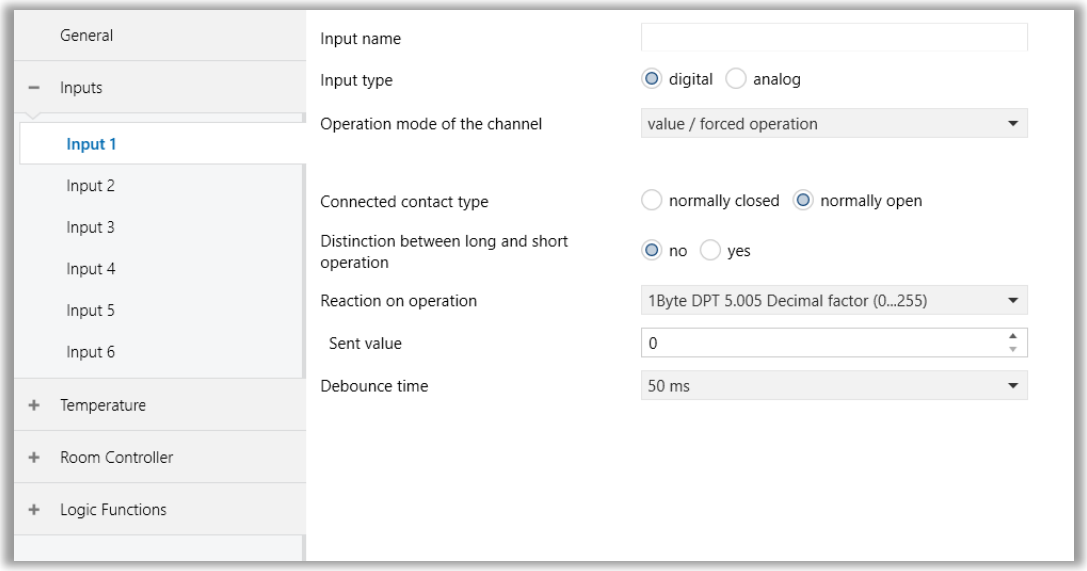

Fig. 7: Input – Value / Forced Operation Configuration Page

Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor **Value/forced operation** Control scene RGB colour control Mode selection Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Distinction between short and long operation	This parameter is used to set if the input differentiates between short and long operations. With the option “yes”, after opening/closing of the contact, it must, first of all, be ascertained if a short or long operation has occurred here. Only thereafter will a possible reaction be triggered.	**No** Yes
Reaction on operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the short press operation sending the value of the input x.	2-bit DPT 2.001 Switch Control 1-byte DPT 5.001 Percent (0…100%) **1-byte DPT 5.005 Decimal factor (0…255)** 1-byte DPT 17.001 Scene Number 2-byte DPT 7.600 Colour temperature(Kelvin) 2-byte DPT 9.001 Temperature (˚C) 2-byte DPT 9.004 Brightness (Lux)

		3-byte DPT 232.600 RGB value 3x (0…255)
-> Sent value	This parameter is used to determine the sending value to the bus when a short operation occurs.	Values depend on DPT selection.
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.200…**00:00.500** …01:05.000
Reaction on long operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the long-press operation sending the value of the input x.	2-bit DPT 2.001 Switch Control 1-byte DPT 5.001 Percent (0…100%) **1-byte DPT 5.005 Decimal factor (0…255)** 1-byte DPT 17.001 Scene Number 2-byte DPT 7.600 Color temperature(Kelvin) 2-byte DPT 9.001 Color temperature (˚C) 2-byte DPT 9.004 Brightness (Lux) 3-byte DPT 232.600 RGB value 3x (0…255)
-> Sent value	This parameter is used to determine the sending value to the bus when a long operation occurs.	Values depends on DPT selection.
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 , 150 ms

3.2.5. Input – Control Scene

In this section, it is explained how to control the related automation unit via the 6 Binary/Analog Input Module with 6 Thermostat by triggering a scenario via buttons connected to digital inputs. Detailed information on the relevant parameter configurations is described in the table below.

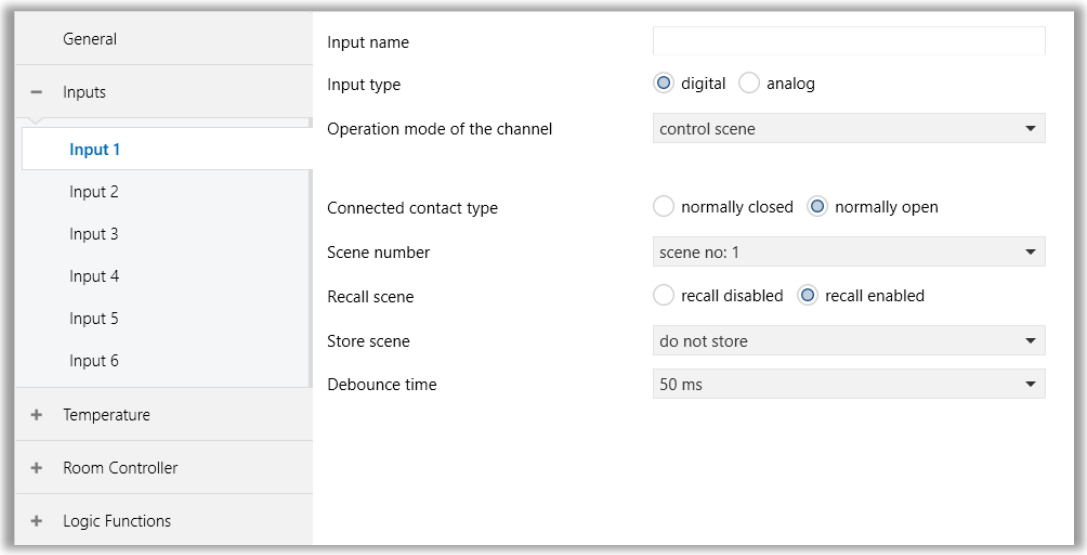

Fig. 8: Input – Control Scene Configuration Page

3.2.5.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor Value/forced operation **Control scene** RGB colour control Mode selection Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Scene Number	This parameter is used to configure the scene number to send to the KNX when a short press operation occurs.	**Scene no.1**…Scene no.64
Recall scene	This parameter is used to determine the recall of the scene. If this parameter is selected as “recall enabled” the configured scene number will be called.	Recall disabled **Recalled enabled**
Store Scene	This parameter is used to determine whether to store or not store the related scene. **On long operation:** The scene will be stored after a long operation. **With “Store scene” obj. value = 1:** The scene will be stored on operation if the Store scene object value is 1. **On long operation (“Store scene” obj. value = 1):** The scene will be stored on long operation if the Store scene object is 1.	**Do not store** On long operation With “Store scene” obj value = 1 On long operation (“Store scene” obj value = 1)
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500**…01:05.535
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 , 150 ms

3.2.6. Input – RGB Colour Control

In this section, it is explained how to control an RGB LED device through the buttons connected to the digital inputs via the 6 Binary/Analog Input Module with 6 Thermostat. Detailed information on the relevant parameter configurations is described in the table below.

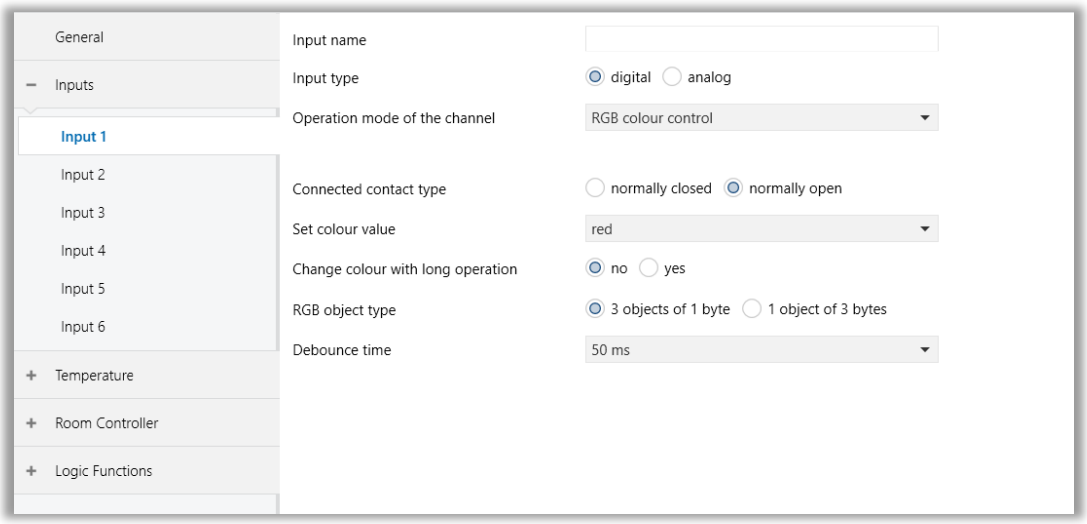

Fig. 9: Input – RGB Colour Control Configuration Page

3.2.6.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor Value/forced operation Control scene **RGB colour control** Mode selection Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Set colour value	This parameter is used to set RGB colours according to the configured values.	**Red** Orange Yellow Green-yellow Green Green-cyan Cyan Blue-cyan Blue Blue-magenta Red-magenta white
Change colour with long operation	This parameter is used to enable or disable the colour changing with long press operation.	**No** Yes
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500** …01:05.535
RGB object type	This parameter is used to determine the RGB colour object type.	**Three object of one byte** one object of three bytes
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 ms, 150 ms

3.2.7. Input – Mode Selection

In this section, it is explained how to control the operating modes of an HVAC unit via the buttons connected to the digital inputs via the 6 Binary/Analog Input Module with 6 Thermostat. Detailed information on the relevant parameter configurations is described in the table below.

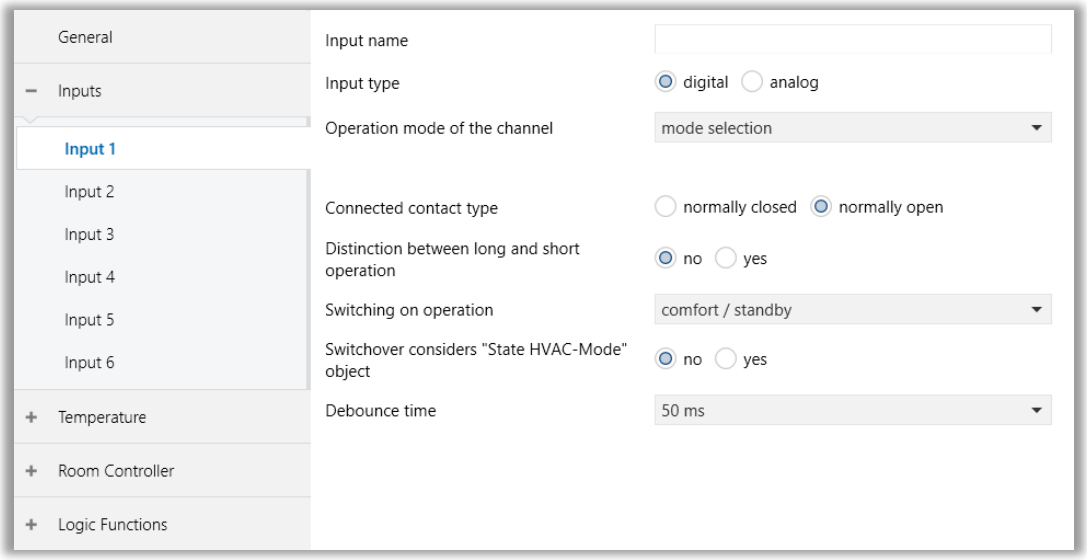

Fig. 10: Input – Mode Selection Configuration Page

3.2.7.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor Value/forced operation Control scene RGB colour control **Mode selection** Command sequence Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Distinction between short and long operation	This parameter is used to set if the input differentiates between short and long operations. With the option “yes”, after opening/closing of the contact, it must, first of all, be ascertained if a short or long operation has occurred here. Only thereafter will a possible reaction be triggered.	**No** Yes
-> Reaction on short operation **Switching on operation**	This parameter is visible if there is a distinction between short and long operations. It is used to determine the short press operation sending the value of the input x.	**Comfort / standby** Comfort / economy Comfort / standby / economy Comfort / standby / economy / frost
--> Reaction on long operation	This parameter is visible if there is a distinction between short and long operations. It is used to determine the long-press operation sending the value of the input x.	**Comfort** Standby
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500** …01:05.535
Switchover considers “State HVAC-Mode” object	This parameter is used to enable the HVAC-Mode state object to change the current HVAC mode via KNX.	**No** Yes
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 ms, 150 ms

3.2.8. Input – Command Sequence

In this section, it is explained how the command sequence function works. Up to 4 commands are attainable with either 1-bit, 1-byte (percentage) or 1-byte (0..255) objects. Each press event toggles through the used commands (Object A, B, C, D) via the assigned buttons. Detailed information on the relevant parameter configurations is described in the table below.

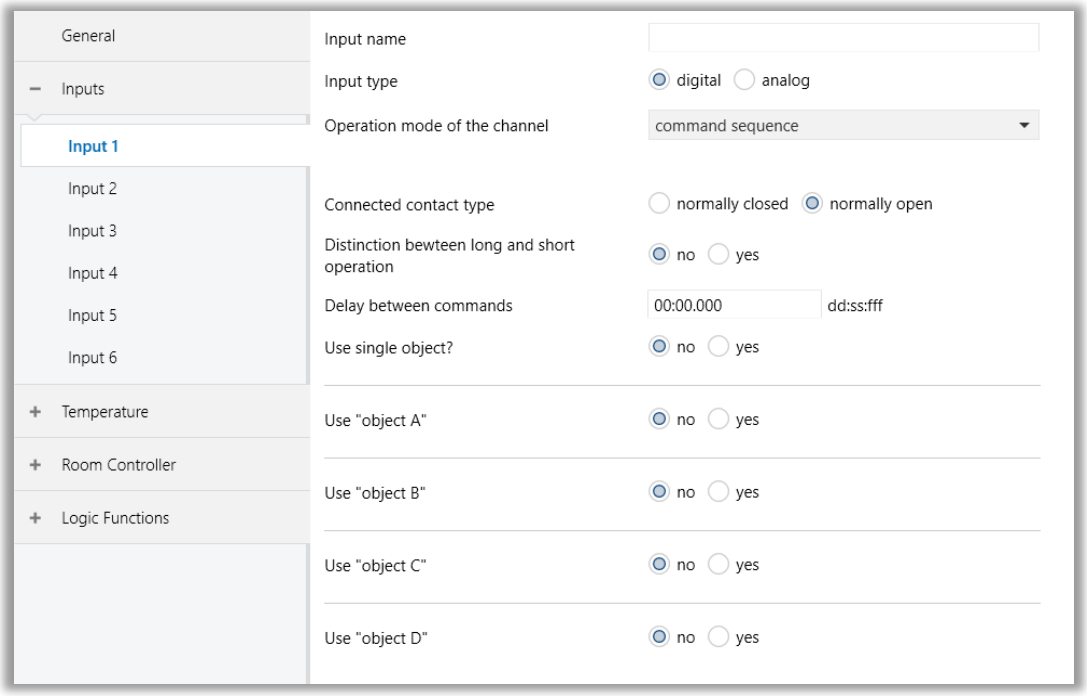

Fig. 11: Input – Command sequence Configuration Page

3.2.8.1. Parameter List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor Value/forced operation Control scene RGB colour control Mode selection **Command sequence** Counter RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat input x.	Normally closed **Normally open**
Distinction between short and long operation	This parameter is used to set if the input differentiates between short and long operations. With the option “yes”, after opening/closing of the contact, it must, first of all, be ascertained if a short or long operation has occurred here. Only thereafter will a possible reaction be triggered.	**No** Yes
Delay between commands	This parameter is visible if there is a distinction between short and long operations. It is used to determine the short press operation sending the value of the input x.	**00:00.000**…00:20.000
-> Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500** …01:05.535
Use single object?	This parameter decides whether each object is sent to a single object or objects assigned to each command.	**No** Yes
-> Value Amount	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	2 **3** 4

-> Data type	This parameter is used to determine the sending value to the bus when a short operation occurs.	1 bit 1 byte(0…255) 1byte (0…100%) HVAC mode
Use “object X”	This parameter is used to enable each command object when they are set to yes.	**No** Yes
-> Data type	This parameter is used to determine the sending value to the bus when a short operation occurs.	Values depends on DPT selection.
-> Value ‘X’	This parameter is used to determine the sending value to the bus when a short operation occurs.	Values depends on DPT selection
-> Value ‘X’ for long operation	This parameter is used to determine the sending value to the bus when a long operation occurs.	Values depends on DPT selection

3.2.9. Counter

In this section, it is explained how to count input pulses on the 6 Binary/Analog Input Module with 6 Thermostat.

Detailed information on the relevant parameter configurations is described in the table below.

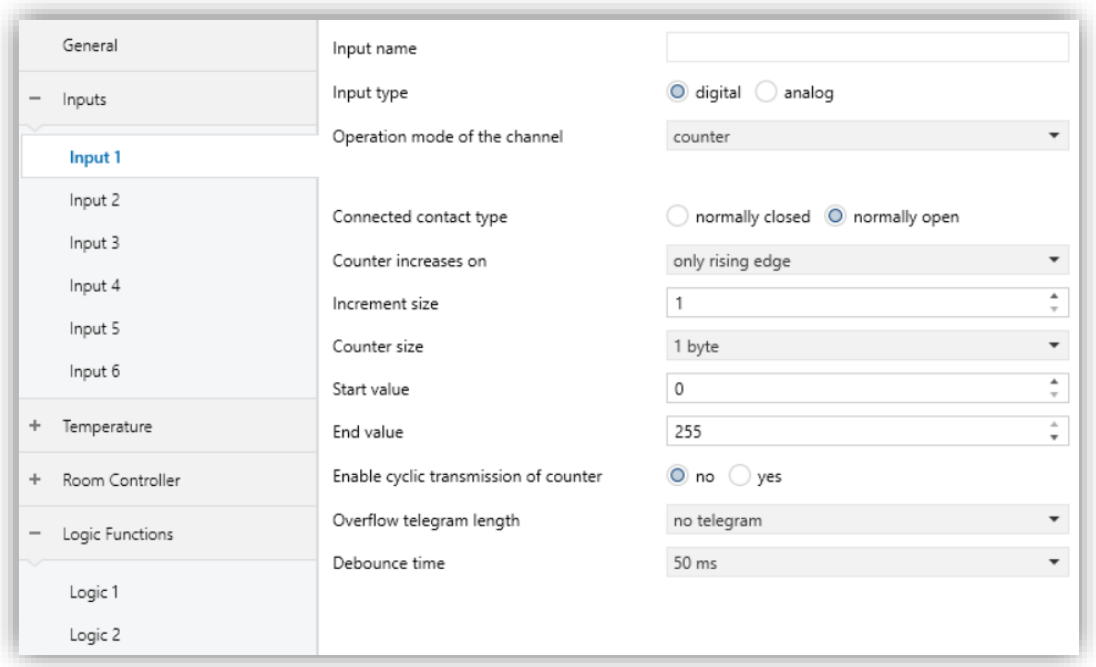

Fig. 12: Input – Counter Configuration Page

3.2.9.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor Value/forced operation Control scene RGB colour control Mode selection Command sequence **Counter** RGBW control
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Counter increases on	This parameter is used to set how the input pulse is to be generated.	**Only rising edge** Only falling edge Both edges
Increment size	This parameter is used to assign the increment size when a press event occurs.	**1**…255
Counter size	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	**1 byte** 2 byte 4 byte
Start Value	This parameter is used to set the initial value of the counter after a reset or failure.	Values depends on DPT selection.
End Value	This parameter is used to set the end value of the counter.	Values depends on DPT selection.
Enable cyclic transmission of counter	This parameter is used to determine if the counter value is sent cyclically on the bus	**No** Yes
-> Repeated transmit cycle period	This parameter is used to determine the sending value to the bus when a short operation occurs.	00:00.005…**00:00.30** …18:12:15
Overflow telegram length	This parameter is used to set the length of the overflow telegram which will be sent to the bus when the counter value exceeds the end value set in the Parameters List.	**No telegram** 1 bit 1 byte
-> Overflow telegram value	This parameter is used to determine the sending value to the bus when a short operation occurs.	Values depends on DPT selection.
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 ms, 150 ms

3.2.10. Input – RGBW control

In this section, it is explained how to control an RGBW device through the buttons connected to the digital inputs via the 6 Binary/Analog Input Module with 6 Thermostat. Detailed information on the relevant parameter configurations is described in the table below.

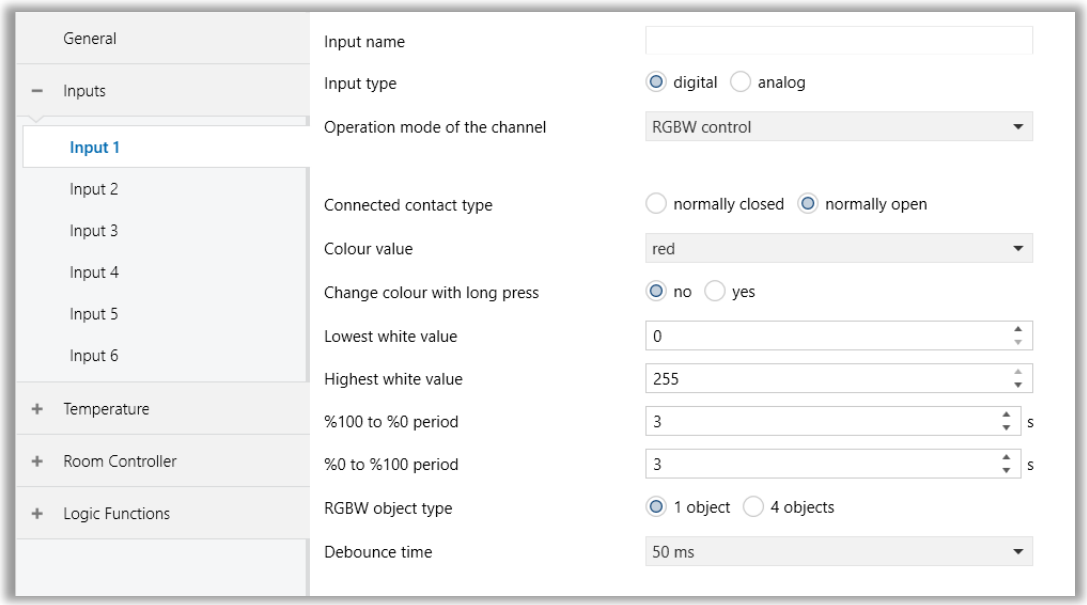

Fig. 13: Input – RGBW Control Configuration Page

3.2.10.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Operation Mode of the channel	This parameter is used to determine the input x operation mode. If no function is selected, the input x will not be used. For other choices, all functionalities are configured separately.	No function Switch sensor Switch/dimming sensor Shutter sensor Value/forced operation Control scene RGB colour control Mode selection Command sequence Counter **RGBW control**
Input Name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 bytes allowed**
Connected contact type	This parameter is used to specify the contact type that is connected to the 6 Binary/Analog Input Module with 6 Thermostat x.	Normally closed **Normally open**
Set colour value	This parameter is used to set RGB colours according to the configured values.	**red** orange yellow green-yellow green green-cyan cyan blue-cyan blue blue-magenta red-magenta white
Change colour with long press	This parameter is used to enable or disable the colour changing with long press operation.	**No** Yes
Long operation after	This parameter is used to determine long operation detection after the button press operation. For making a long operation, the button should be pressed at least the configured value.	00:00.005…**00:00.500** …01:05.535
Lowest white value	This parameter is set to the lowest white value.	**0**..254
Highest white value	This parameter is set to the highest white value.	1…**255**

%100 to %0 period	This parameter is used to set how long it takes to go from 100% to 0%.	1s...**3s**…10s
%0 to %100 period	This parameter is used to set how long it takes to go from 0% to 100%.	1s...**3s**…10s
Object type	This parameter is used to determine the RGB colour object type.	**1 object** 4 objects
Debounce time	This parameter is used to determine the debounce time. Debouncing prevents unwanted multiple operations of the input, e.g., due to bouncing of the contact.	10 ms, 20 ms, 30 ms 40 ms, **50 ms,** 70 ms 100 ms, 150 ms

3.2.11. Input - Additional Probe

This section describes how to configure a parameter for an NTC sensor that can be connected to the analog input of the Binary/Analog Input Module. After obtaining the necessary information about the NTC sensor to be connected from the relevant document, you should configure it.

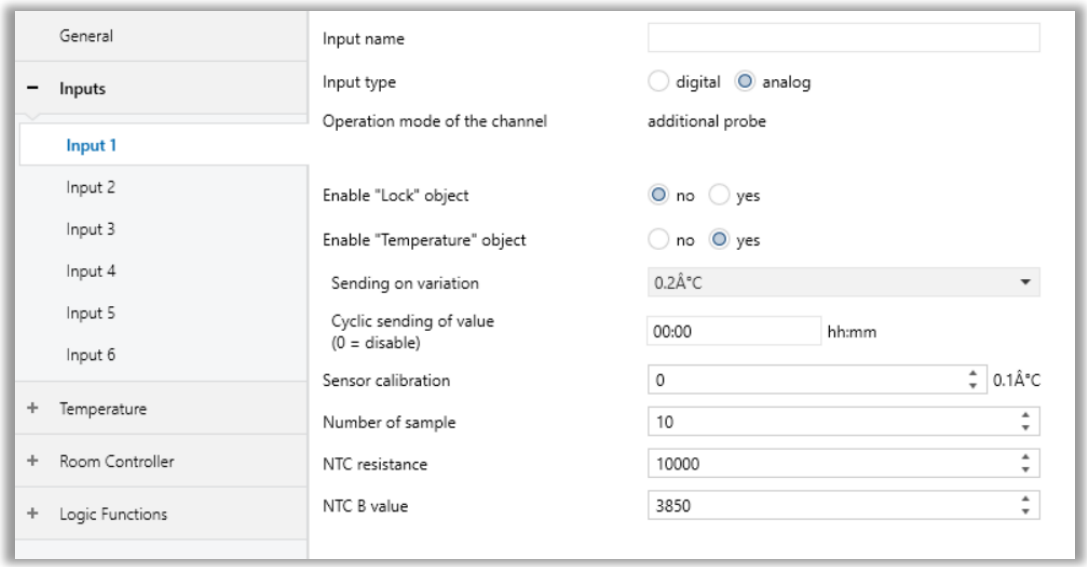

Fig. 14: Input- Additional Probe Configuration Page

3.2.11.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Input name	This parameter is used to type an input name. The name can be consisting of 40 characters.	**40 Bytes allowed**
Input type	This parameter is used to specify whether the relevant channel will operate digital or analog.	Digital **analog**
Operation Mode of the channel	This parameter is used to determine the input function.	**Additional probe**
Enable "Lock" Object	This parameter is used to enable or disable the lock object.	**No** Yes
-> Lock initial state[1]	This parameter is used to determine the initial state of the lock status. If it is selected as enable, the initial status of the lock will be enabled.	**Disable** Enable
-> Lock Activation Telegram[1]	This parameter is used to determine the telegram value to activate the lock. E.g., if it is selected as telegram 1, a "1" value telegram will lock and a "0" value telegram will unlock. Vice versa also applies.	Telegram 0 **Telegram 1**
Enable "Temperature" Object	This parameter is used to enable or disable the Temperature object to send the measured temperature values of the ambient to the bus.	No **Yes**
-> Sending On Variation[2]	This parameter is used to determine the temperature variation value. If it is selected as never, the current value will be sent.	Never, 0.1 ˚C, **0.2 ˚C** 0.3 ˚C, 0.4 ˚C 0.5 ˚C, 0.6 ˚C 0.7 ˚C, 0.8 ˚C 0.9 ˚C, 1.0 ˚C 1.1 ˚C, 1.2 ˚C 1.3 ˚C, 1.4 ˚C 1.5 ˚C
-> Cyclic sending of value (0 = disable)[2]	This parameter is used to determine the cyclic sending period value of the measured temperature value.	**00:00**…23.59
Sensor Calibration	This parameter is used to determine the calibration value of the analogue probe. E.g., the Measured value is 25 ˚C, and the calibration value is selected as 10. The calibrated value is 25 – (10 x 0.1) = 24 ˚C. 0.1 is a constant factor value.	**-**100…**0**…100
Number of Sample	This parameter is used to determine the number of samples of the temperature values to calculate the ambient temperature.	1…**10**…255

NTC resistance	This parameter is used to determine the NTC resistance value that will be connected to the analogue input of the KNX sensor.	0…**10000**…65535
NTC B value	This parameter is used to determine the NTC B value that will be connected to the analogue input of the KNX sensor.	0…**3850**…65535

*1 This parameter is visible when the parameter “Enable “Lock” Object” is set to “Yes”.
*2 This parameter is visible when the parameter “Enable “Temperature” Object” is set to “Yes”.

3.3. Temperature

Temperature is a quantity that should always be measured for a comfortable life in building automation systems. Temperature measurements can be made from a variety of sources. Interra KNX valence sensor temperature measurement can be made with the internal temperature sensor, an external NTC sensor that can be connected to its analog input, or the values obtained over the KNX bus line.

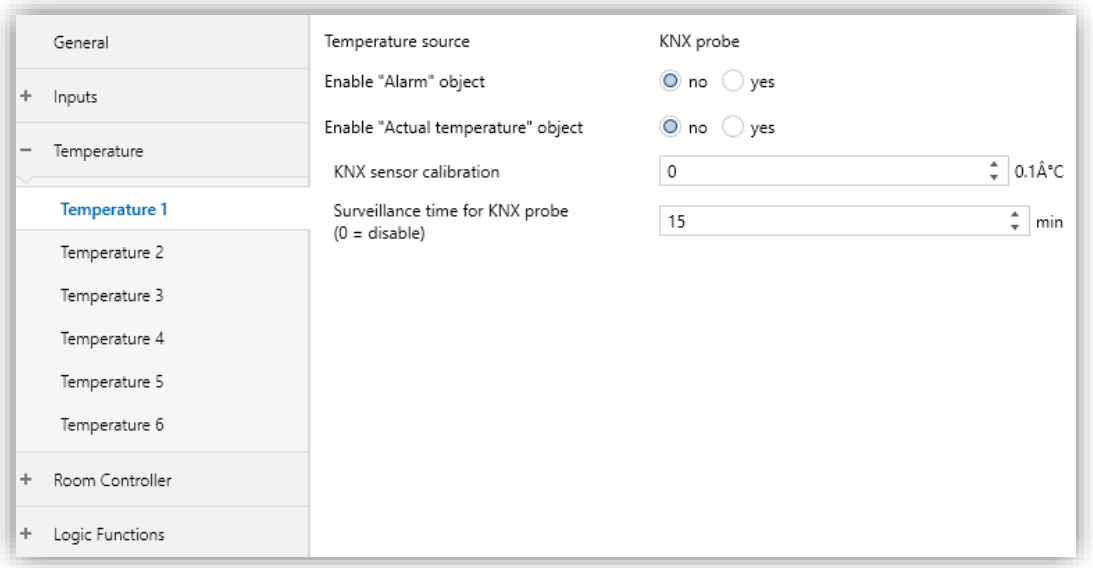

Fig. 15: Temperature Configuration Page

3.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Temperature source	This parameter is used to determine the temperature source for measuring the ambient temperature. **Several options can be made:** you can choose a single source or also a mix of 2 different sources according to needs.	**External probe** KNX probe Mix of external and KNX probe
Enable "Alarm" Object	This parameter is used to enable the "Alarm" object to define a threshold value for alarm information.	**No** Yes
Enable "Actual Temperature" Object	This parameter is used to enable the "Actual Temperature" object to send the actual ambient temperature value to the bus.	**No** Yes
-> Cyclic sending of temperature value (0 = disable)[6]	This parameter is used to determine the cyclic sending period time of the current temperature value. If it is selected as 00:00, the cyclic sending will be disabled.	**00:00**…23.59
-> Sending on variation[6]	This parameter is used to determine the temperature variation value. If it is selected as never, the current value will be sent.	**Never** 0.1˚C,0.2˚C...1.5 ˚C
Weight Of External Probe[5]	This parameter is used to determine the weight of the external probe. E.g., the temperature source is selected as Mix of the internal and external probe. The external probe weight is selected as %50. So, the calculated temperature value will be : Calculated Temperature : Internal Temperature * 0.5 + External Temperature * 0.5.	%10, %20, %30, %40, **%50**, %60, %70, %80, %90
External Sensor Calibration[2]	This parameter is used to determine the calibration value of the external sensor. E.g., the Measured value is 26 ˚C, and the calibration value is selected as -20. The calibrated value is 26 – (20 x 0.1) = 24 ˚C.	-100…**0**…100
KNX Sensor Calibration[4]	This parameter is used to determine the calibration value is received from the KNX Probe temperature object. E.g., the Measured value is 20 ˚C, and the calibration value is selected as 20. The calibrated value is 20 + (20 x 0.1) = 22 ˚C.	-100…**0**…100

Surveillance time for KNX probe[4] **(0 = disable)**	This parameter is used to determine the surveillance time for the KNX probe. E.g., if this parameter is configured as 10. Every 10 min the received value from KNX is taken into account for temperature calculation.	0…**15**…255

[*1] This parameter is visible when the parameter “Temperature source” is set to “internal probe” or “mix of internal and external probe” or “mix of internal and KNX probe”.

[*2] This parameter is visible when the parameter “Temperature source” is set to “external probe” or “mix of internal and external probe” or “mix of external and KNX probe”.

[*3] This parameter is visible when the parameter “Temperature source” is set to “mix of internal and external probe” or “mix of internal and KNX probe”.

[*4] This parameter is visible when the parameter “Temperature source” is set to “KNX probe” or “mix of internal and KNX probe” or “mix of external and KNX probe”.

[*5] This parameter is visible when the parameter “Temperature source” is set to “mix of external and KNX probe”.

[*6] This parameter is visible when the parameter “Enable “Actual temperature” object” is set to “Yes”.

3.4. Room Controller – Thermostat

All configurations related to thermostat control on the Binary/Analog Input Module are described in the sections of this chapter. This parameter page will be shown when it is enabled in the “General” parameter page section. The information about the “General” parameter configuration section is described after the theoretical control type expressions that are given below.

- 2 points/Proportional fan controller that can be used by main and additional heating/cooling systems.
- Thermostat weekly program.
- Energy saving function for thermostat functions.
- Temperature limitation for thermostat functions.

3.4.1. Control Types Theoretical Explanations

The room controller device can be used for only heating, only cooling or heating and cooling. If the room controller is in heating and cooling mode, the transition from heating to cooling or vice versa can occur automatically. The thermostat measures the actual temperature of the ambient air and continuously compares it to the set temperature, and the controller automatically calculates whether to send a control signal for heating or cooling.

The control algorithm based on the difference between the desired setpoint temperature values and the measured actual temperature values processes a command value that can be either percentage or ON / OFF. The command, periodically or depending on the event, is transmitted to a KNX actuator device via a bus line with communication objects.

3.4.1.1. 2-Points Control

This control algorithm, also known as ON / OFF, is the most classic and popular one. The algorithm follows a hysteresis cycle, allowing the system to switch ON / OFF. Hence, 2 switching levels are considered for switching.

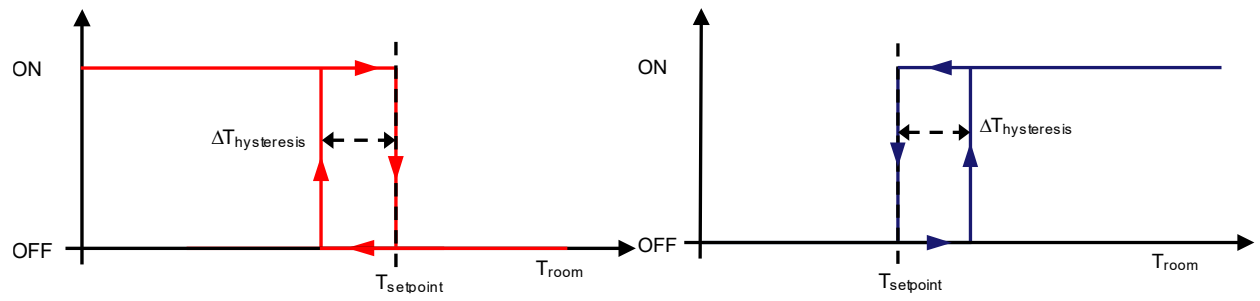

Fig. 16: 2 – Points Control Hysteresis Cycle

Heating mode

When the measured temperature is lower than the difference between the setpoint and the hysteresis value ($T_{setpoint} - \Delta T_{hysteresis}$), the device activates the heating system by sending the KNX command to the actuator that controls the heating system via connected to a related group address. When the measured temperature reaches the setpoint temperature, the device sends a related command and deactivates the heating system. In this way, there are 2 decision thresholds to activate and deactivate the heating system. The first one is the temperature at which the device activates the system ($T_{setpoint} - \Delta T_{hysteresis}$), and the second one is the temperature at which the device deactivates the heating system ($T_{setpoint}$).

Cooling mode

When the measured temperature is higher than the difference between the setpoint and the hysteresis value ($T_{setpoint} - \Delta T_{hysteresis}$), the device activates the heating system by sending the KNX command to the actuator that controls the cooling system via connected to a related group address. When the measured temperature reaches the setpoint temperature, the device sends a related command and deactivates the cooling system. In this way, there are 2 decision thresholds to activate and deactivate the cooling system. The first one is the temperature at which the device activates the system ($T_{setpoint} + \Delta T_{hysteresis}$), and the second one is the temperature at which the device deactivates the heating system ($T_{setpoint}$). There are 2 different parameters for heating and cooling hysteresis values in the ETS programmer. Values differ depending on the system type.

3.4.1.2. Continuous (PI) Control

Proportional – Integral control (PI control) is explained by the relationship shown below:

$$\boldsymbol{control\ variable(t)\ =\ Kp\ \times\ error(t)\ +\ Ki\ \times \int_0^t error(t)\ dt}$$

whereby:

$$error(t)\ =\ (Setpoint\ -\ Measured\ temperature)\ in\ heating$$
$$error(t)\ =\ (Measured\ temperature\ -\ Setpoint)\ in\ cooling$$
$$Kp\ =\ proportional\ constant$$
$$Ki\ =\ integral\ constant$$

The control variable contains integral and proportional (Ki and Kp) constants to eliminate errors. In practice, intuitively generated values are generally used.

Ex 1:

$$\boldsymbol{Proportional\ band\ BP\ [K]\ =\ 100\ /\ Kp} \qquad \boldsymbol{Integral\ time\ Ti\ [min]\ =\ Kp\ /\ Ki}$$

The proportional band is the error value that determines the maximum deflection output as 100%.

For example, a regulator with a proportional band of 5 K provides a 100% control output when the Setpoint = 20°C and the measured temperature is ≤ 15°C in heating; in the cooling conduction mode, it provides a 100% control output when the Setpoint = 24°C and the measured temperature is ≥ 29°C. As shown in the figure, a regulator with a small proportional band tends to provide higher values of the control variable for small errors than a regulator with a higher proportional band.

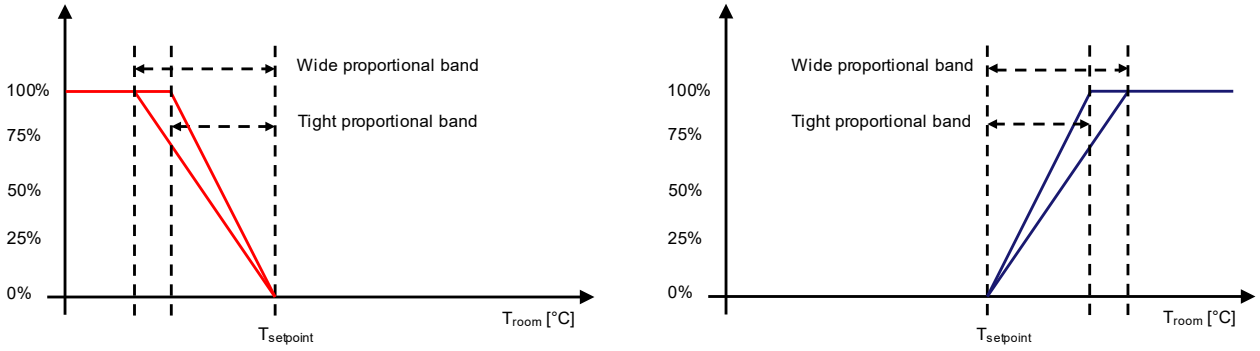

Fig. 17: Continuous PI Control Proportional Band Widths

The integral time is the time required to repeat the value of the control variable of a purely proportional regulator when the error remains constant in time.

Ex 2:

For example, with a purely proportional controller in heating and with a value of proportional band of 4 K, if the setpoint is = 20°C and the measured temperature is = 18°C, the control variable assumes the value of 50%. With an integral time = 60 minutes, if the error remains constant, the control variable will take the value = 100% after 1 hour, i.e., a contribution equal to the value given by only proportional contribution will be added to the control variable. In heating and air conditioning systems, a purely proportional controller is not able to guarantee the achievement of the setpoint. You should always introduce an integrated action for achieving the Setpoint: that is why the integral action is also called automatic reset

3.4.1.3. PWM (PI) Control

The PWM (Pulse Width Modulation) proportional-integral controller allows the digital output to be set to ON and OFF by sampling an analogue control variable within a specified period. The controller runs periodically through a cycle and keeps its output ON for each period in proportion to the value of the control variable. As shown in the below figure, by varying the ratio between the “ON” time and the “OFF” time, the average activation time of the output changes, and as a result, the average heating or cooling power supplied by the room changes.

The cycle time for the control value for the PWM signal calculated from the PI controller's control value is specified. Depending on the control value, the selected cycle time is divided into an ON and OFF signal. Therefore, a control value output of 50 % with a PWM cycle of 12 min signifies an ON phase of 6 min. and an OFF phase of 6 min.

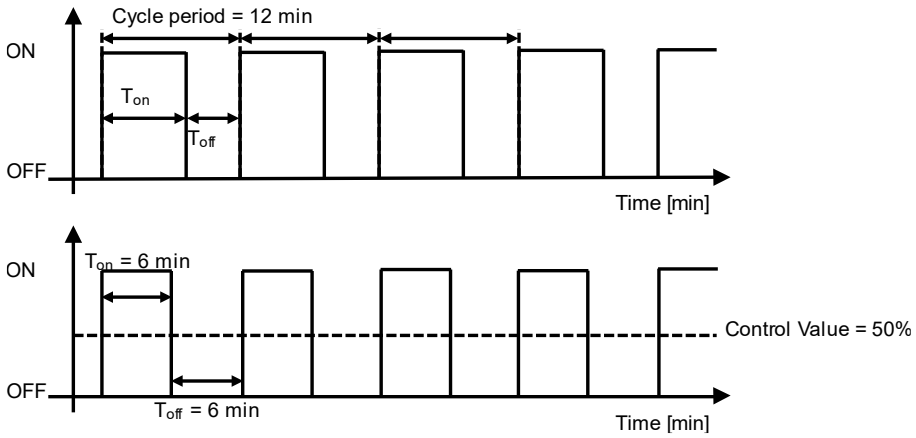

Fig. 18: PWM Control Sampling

This type of control is well suited for use with ON / OFF actuators, such as electrothermal actuators and drives for zone valves, which are less expensive than proportional actuators.

A distinctive advantage of this type of control is that it eliminates the inertia of the system: it allows significant energy savings because unnecessary interventions on the system introduced by the 2-point control with hysteresis are avoided and only the power is required to compensate for the losses.

Every time the changes the desired temperature setpoint is, the cycle time is interrupted, the control output is reprocessed and the PWM restarts with a new cycle: this allows the system to reach its steady state more quickly.

Terminal Type	Proportional Ban [K]	Integral Time [min]	Cycle Period [min]
Radiators	5	150	15-20
Electrical heaters	4	100	15-20
Fan-coil	4	90	15-20
Floor radiant panels	5	240	15-20
Ceiling radiant panels	5	100	15-20

Guidelines for choosing the proper parameters of a PMW Proportional-Integral controller:

- Cycle time: for low-inertial systems such as heating and air conditioning systems, short cycle times must be chosen (10-15 minutes) to avoid oscillations of the room temperature.
- Narrow proportional band: wide and continuous oscillations of the room temperature, short setpoint settling time.
- Wide proportional band: small or no oscillations of the room temperature, long setpoint settling time.
- Short integral time: short setpoint settling time, continuous oscillations of the room temperature.
- Long integral time: long setpoint settling time, no oscillations of the room temperature.

3.4.2. Thermostat X

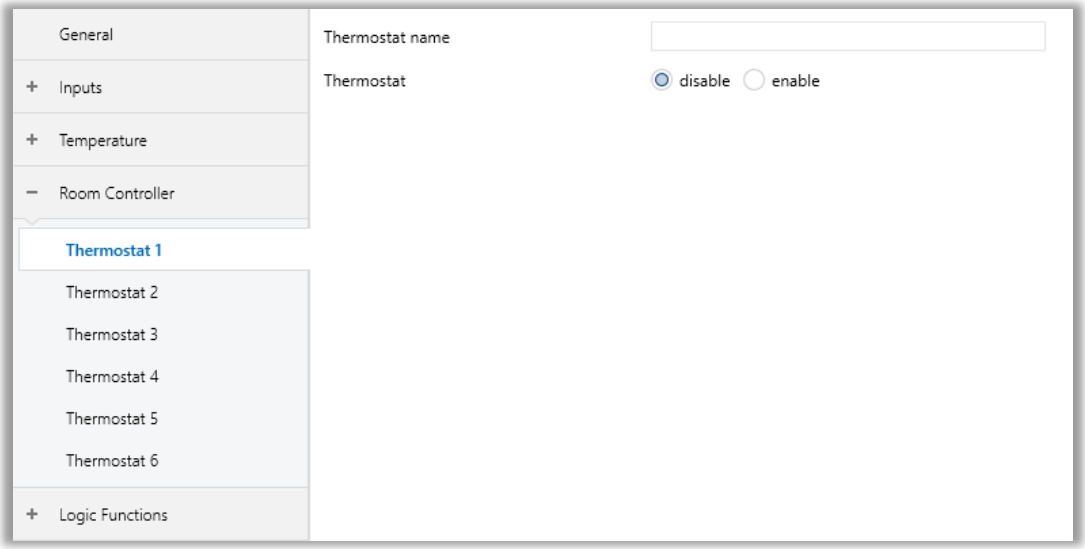

Fig.19: Thermostat Configuration Page

3.4.2.1. Parametres List

PARAMETERS	DESCRIPTION	VALUES
Thermostat name	This parameter is used to type a Thermostat name. The name can be consisting of 40 characters.	**40 Bytes allowed**
Thermostat	This parameter is used to control the thermostat features.	**Disable** Enable

3.4.3. Thermostat General

The thermostat function can be selected as the “master” controller or “slave” controller in the configuration settings in this section. When the selection is made as to the “master” controller, configuration sections and the communication objects are opened to define the thermostat functions. When the selection is made as to the “slave” controller, some configuration sections related to the thermostat functions are disabled. The slave controller must be connected to the master controller with the KNX communication object as it will operate as a dependent controller with commutations object. In thermostat slave mode, setpoint adjustment, thermostat activation control, heating/cooling switchover and operation mode control can be made. Also, LCD can be used as fan indicator in slave operation or fan controller isn’t used for thermostat.

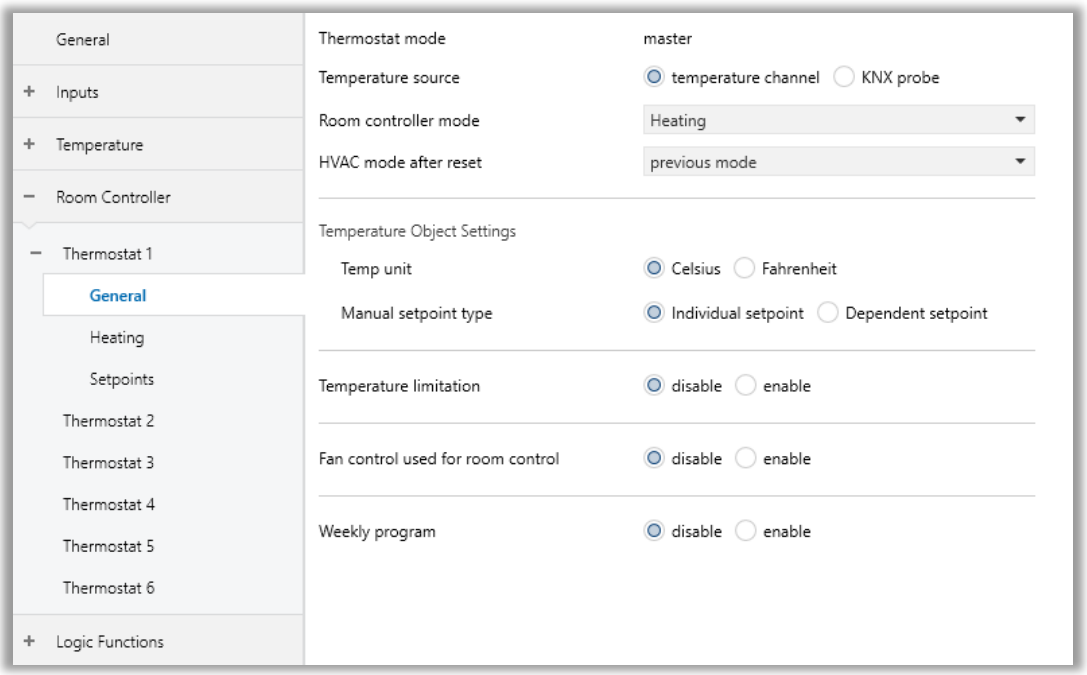

Fig.20: Thermostat General Configuration Page

3.4.3.1. Parameters List

PARAMETER	DESCRIPTION	VALUES
Thermostat mode	The thermostat function's operating type is determined with this parameter.	**Master**
Temperature source	This parameter determines the temperature source of room controller. If thermostat temperature value is higher/lower than the setpoints of the protection mode's setpoint max/min limit values, the active operation mode is changed as Protection mode. After that the end-users can change the operation mode again.	**Temperature channel** KNX probe
Room controller mode[1]	Room controller mode is determined with this parameter.	**Heating** Cooling Heating & Cooling
HVAC mode after reset[1]	This parameter determines the operating mode of the room controller after a reset occurs. **Ex:** When a power failure occurs.	Comfort Standby Economy Protection **Previous mode**
Command value object[2]	The object types of temperature command values for heating and cooling mode are determined with this parameter.	**Common** Separated
Switch-over heating / cooling[2]	This parameter determines how the heating/cooling transition is made. If heating/cooling switch-over mode isn't Automatic, the user can be configured heating or cooling setpoint. If heating/cooling switch-over mode is Automatic, the user can't be configured that the cooling setpoint is higher than the heating setpoint. In automatic mode the cooling setpoint is equal the heating setpoint at least. If an input value that is higher than heating setpoint, is received over "Cooling [Operation Mode] Setpoint Temperature" object, received telegram is ignored.	**Via communication object** Automatic

Room controller mode after reset[3]	This parameter determines the room controller mode of the room controller after a reset occurs. **Ex:** When a power failure occurs.	Heating Cooling **Previous mode**
Temp Unit	The temperature unit type to be used by thermostat objects is defined by this parameter.	**Celsius** Fahrenheit
Manual setpoint type	The desired temperature value can be controlled with individual or dependent setpoints by this parameter. **Individual setpoint:** The input value must be the desired setpoint. **Dependent setpoint:** The input value must be the difference of desired setpoint according to base setpoint.	**Individual** Dependent
Temperature limitation	This parameter enables temperature limitation function of thermostat.	**Disable** Enable
Fan control used for room control[1]	This parameter determines the fan controls that are used inside or outside of the thermostat function. If the it is selected to use outside of the thermostat function, just the fan states will be displayed on the device as fan indicators.	**Disable** Enable
Weekly program	This parameter enables weekly program of thermostat.	**Disable** Enable

[*1] This parameter is visible when the parameter “Thermostat mode” is set to “Master”.

[*2] This parameter is visible when the parameter “Room controller mode” is set to “Heating / cooling”.

[*3] This parameter is visible when the parameter “Switch-over heating/cooling” is set to “Via object”.

3.4.4. Thermostat – Heating

The device's operation principle of the heating feature is as follows: When the measured temperature is lower than the setpoint temperature, the device activates the heating system by sending a KNX command to the actuator that controls the heating system via connected to the related group address. When the measured temperature reaches the setpoint temperature, the device sends a related command and deactivates the heating system. The heating feature can be controlled with different types of configuration settings. These configuration settings are as follows;

Selection of the "Heating 2 – Points Control" parameter, 1-bit / 1-byte on/off control can be selected.
Selection of the "Heating PWM Control" parameter, 1-bit / 1-byte on/off control can be selected.
Selection of the "Heating Continuous Control" parameter, 1-byte proportional-integral control.

3.4.4.1. Heating 2-Points Control

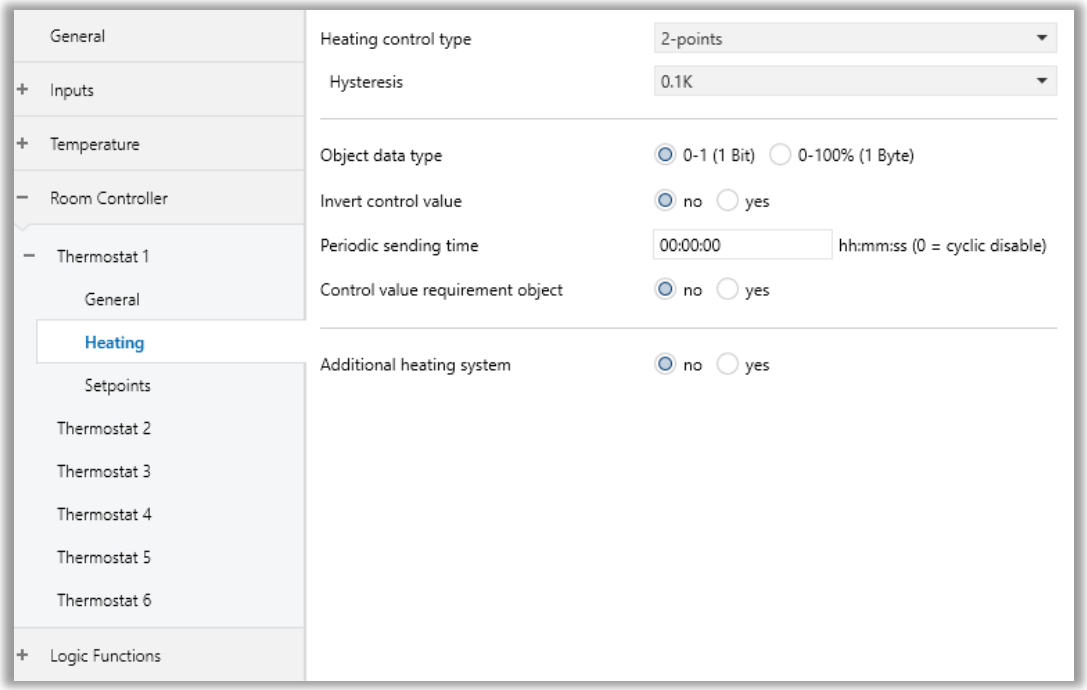

Fig.21: Heating 2-Points Control Configuration Page

3.4.4.2. Parameters List

PARAMETER	DESCRIPTION	VALUES
Heating control type	This parameter determines the heating control type.	**2 – points** PWM Continuous
Hysteresis	This parameter determines the hysteresis value.	0.1K…2.0K
Object data type	This parameter is used to determine data type of control value object.	**0-1 (1 bit)** 0-100% (1 byte)
Invert control value	This parameter is used to invert control output.	**No** Yes
Periodic sending time	This parameter is used to periodically send the commands to the bus line.	**00:00:00** … 18:12:15
Control value requirement object	This parameter is used to send status information about the controller value of the heating system.	**No** Yes
Additional heating system	This parameter activates the additional heating system.	**No** Yes

3.4.4.3. Heating PWM Control

The PWM (Pulse Width Modulation) proportional-integral controller allows the digital output to be set to ON and OFF by sampling an analogue control variable within a specified period. The controller runs periodically through a cycle and keeps its output ON for each period in proportion to the value of the control variable. By varying the ratio between the “ON” time and the “OFF” time of the heating system, the average activation time of the output changes, and as a result, the average heating power supplied by the room changes.

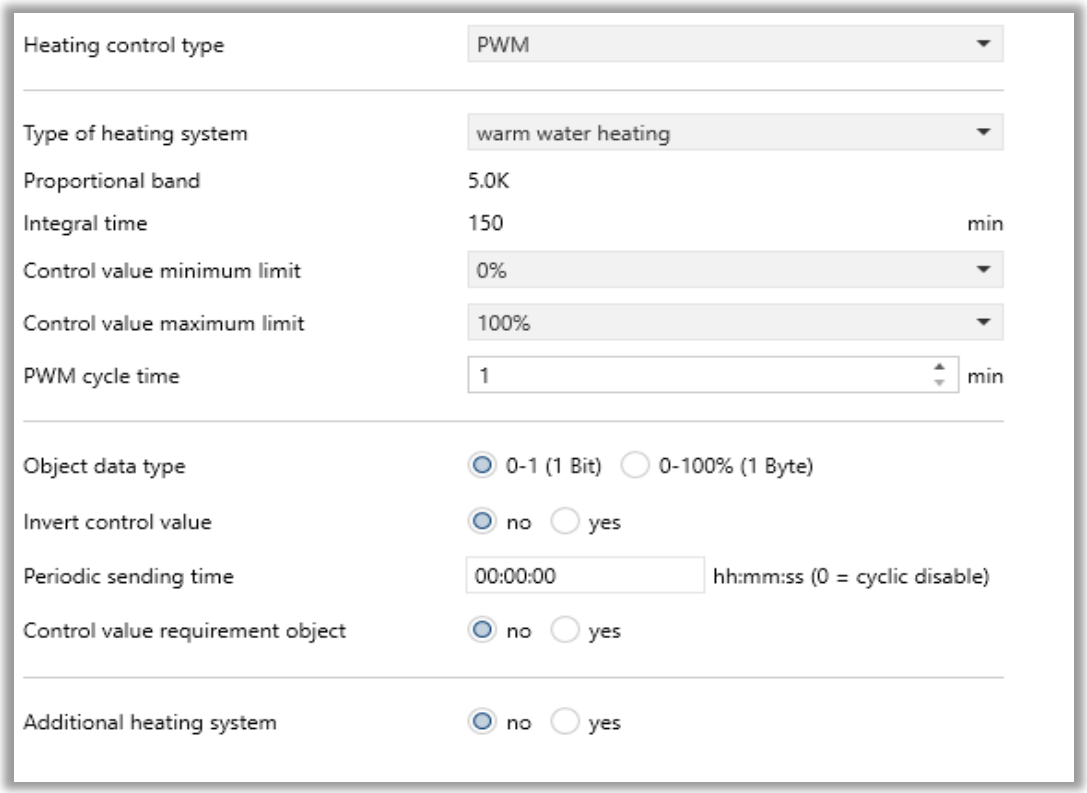

Fig. 22: Heating PWM Control Configuration Page

3.4.4.4. Parameters List

PARAMETER	DESCRIPTION	VALUES
Type of heating system	This parameter determines the heating system to be controlled.	**Warm water heating** Electric heating Floor heating Split unit Fan coil User defined
Proportional band (K)	This parameter determines the proportional band.	**5.0K** (0.5K…10.0K)
Integral time (min)	This parameter determines the integral time.	**150** (0…255)
Control value minimum (%)	This parameter determines the output object's minimum control value.	**0%** (0%, 5%, 10%, 15%, 20%, 25%, 30%)
Control value maximum (%)	This parameter determines the output object's maximum control value.	**100%** (70%, 75%, 80%, 85%, 90%, %95, 100%)
PWM cycle time (min)	This parameter determines the PWM cycle time.	**1**…255
Object data type	This parameter is used to determine data type of control value object.	**0-1 (1 bit)** 0-100% (1 byte)
Invert control value	This parameter is used to invert control output.	**No** Yes
Periodic sending time	This parameter is used to periodically send the commands to the bus line.	**00:00:00** … 18:12:15
Control value requirement object	This parameter is used to send status information about the controller value of the heating system.	**No** Yes

3.4.4.5. Heating Continous Control

Proportional – Integral control (PI control) is explained by the relationship shown below:

$$\boldsymbol{control\ variable(t)\ =\ Kp\ \times\ error(t)\ +\ Ki\ \times \int_0^t error(t)\ dt}$$

whereby:

$$error(t)\ =\ (Setpoint\ -Measured\ temperature)\ in\ heating$$
$$error(t)\ =\ (Measured\ temperature\ -Setpoint)\ in\ cooling$$
$$Kp\ =\ proportional\ constan$$
$$Ki\ =\ integral\ constant$$

The control variable contains integral and proportional (Ki and Kp) constants to eliminate errors. In practice, intuitively generated values are generally used.

Ex 1:

$$\boldsymbol{Proportional\ band\ BP\ [K] = \frac{100}{Kp}}$$

$$\boldsymbol{Integral\ time\ Ti\ [min]\ =\ Kp\ /\ Ki}$$

The proportional band is the error value that determines the maximum deflection output as 100%.

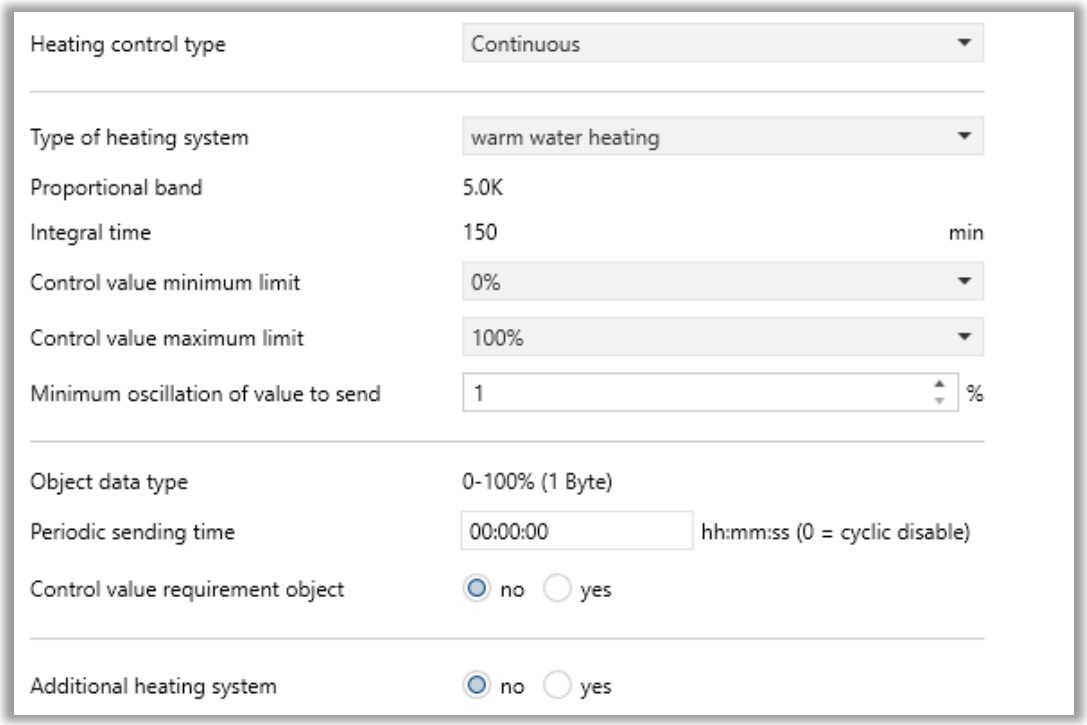

Fig. 23: Heating Continous Control Configuration Page

3.4.4.6. Parameters List

PARAMETER	DESCRIPTION	VALUES
Type of heating system	This parameter determines the heating system to be controlled.	**Warm water heating** Electric heating Floor heating Split unit Fan coil User defined
Proportional band (K)	This parameter determines the proportional band.	**5.0K** (0.5K … 10.0K)
Integral time (min)	This parameter determines the integral time.	**150** (0 … 255)
Control value minimum limit (%)	This parameter determines the output object's minimum control value.	**0%** (0%, 5%, 10%, 15%, 20%, 25%, 30%)
Control value maximum limit (%)	This parameter determines the output object's maximum control value.	**100%** (70%, 75%, 80%, 85%, 90%, 95%, 100%)
Minimum oscillation of value to send (%)	This parameter determines the minimum oscillation value for the output object to send a value.	**1** (0…100)
Periodic sending time	This parameter is used to periodically send the commands to the bus line.	**00:00:00** … 18:12:15
Control value requirement object	This parameter is used to send status information about the controller value of the heating system.	**No** Yes

3.4.4.7. Additional Heating System

All types of heating controls (2-points, PWM and continuous control) have additional heating system options. The additional heating system works in all control types with the same characteristics. The system activates itself according to the offset configuration. If ($T_{setpoint}$ – ΔT_{offset}) is lower than the ambient room temperature, the additional heating system will be activated according to controller type.

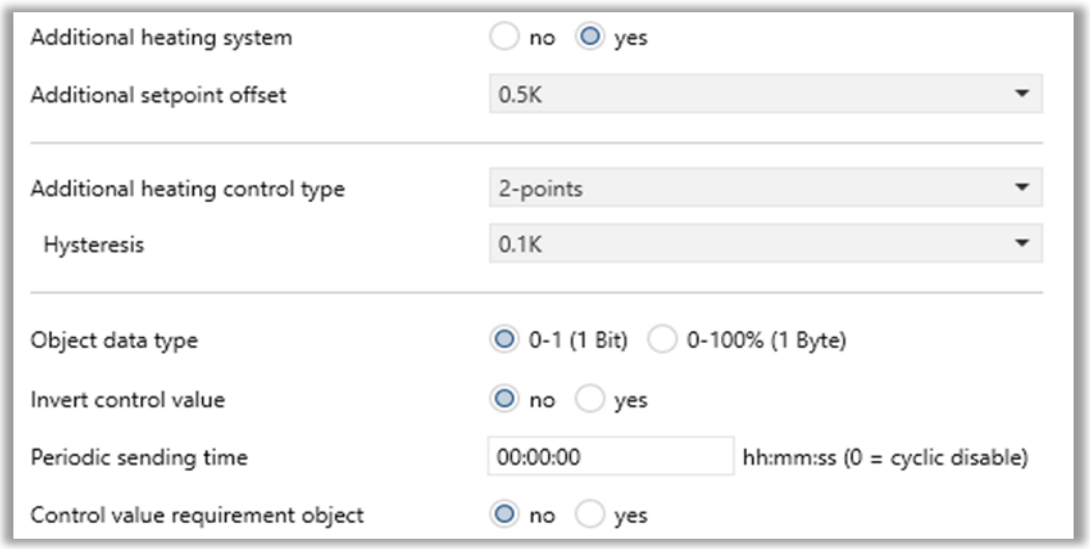

Fig. 24: Additional Heating System Configuration Page

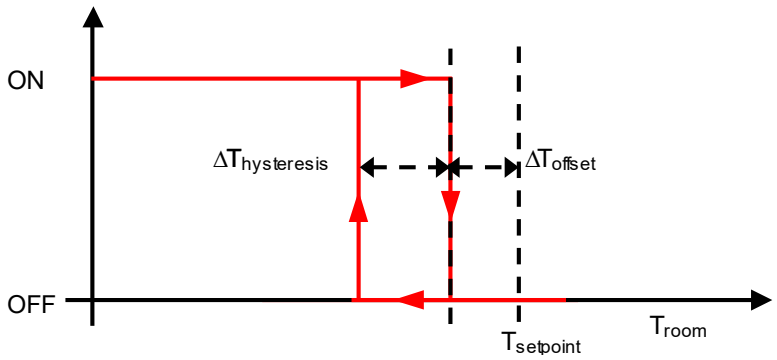

Fig. 25: 2 – Points Hysteresis Cycle for Additional Heating Control

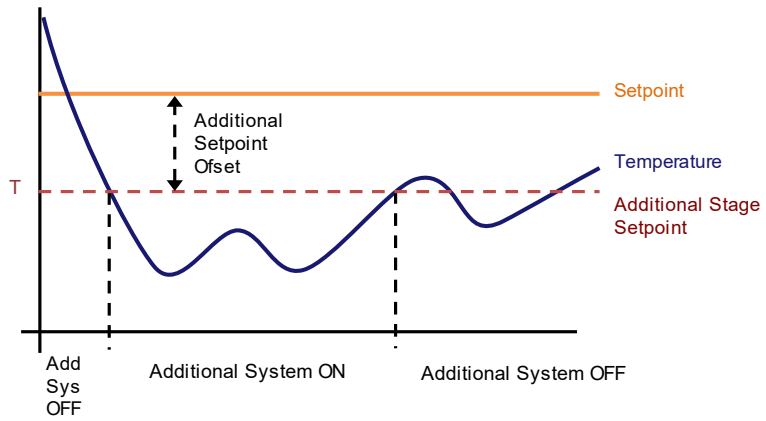

Fig. 26: PI Continuous Graph for Additional Heating Control

3.4.4.8. Parameters List

PARAMETER	DESCRIPTION	VALUES
Additional heating system	This parameter activates the additional heating system.	**No** Yes
Additional setpoint offset	This parameter determines the difference between the setpoint temperature value and the additional heating system's setpoint temperature value.	**0.5K** … 5.0K (°C) **0.9K** … 9.0K (°F)
Additional heating control type	This parameter determines the additional heating system's control object type.	**2 – points** PWM Continuous
Additional heating control type: 2-points		
Hysteresis Value	This parameter determines the hysteresis value.	**0.1K**…2.0K (°C) **0.18K**…3.6K (°F)
Object type	This parameter is used to determine the data type of the control value object.	**0-1 (1 bit)** 0-100% (1 byte)
Invert control value	This parameter is used to invert control output.	**No** Yes
Periodic sending time	This parameter determines the time of control value to be sent periodically.	**00:00:00** … 18:12:15
Control value requirement object	This parameter is used to send status information about the controller value of the additional heating system.	**No** Yes
Additional heating control type: PWM		
Type of additional heating system	This parameter determines the heating system to be controlled.	Warm water heating Electric heating Floor heating Split unit **Fan coil** User defined
Proportional band	This parameter determines the proportional band.	0.5K… **4.0K** … 10.0K (°C) 0.9K… **7.2K** … 18.0K (°F)
Integral time	This parameter determines the integral time.	0 … **90** … 255

Control value minimum limit	This parameter determines the output object's minimum control value.	**0%**, 5%, 10%, 15%, 20%, 25%, 30%)
Control value maximum limit	This parameter determines the output object's maximum control value.	70%, 75%, 80%, 85%, 90%, %95, **100%**
PWM cycle time (min)	This parameter determines the PWM cycle time.	**1**…255
Object data type	This parameter is used to determine data type of control value object.	**0-1 (1 bit)** 0-100% (1 byte)
Invert control value	This parameter is used to invert control output.	**No** Yes
Periodic sending time	This parameter is used to periodically send the commands to the bus line.	**00:00:00** … 18:12:15
Control value requirement object	This parameter is used to send status information about the controller value of the additional heating system.	**No** Yes
Additional heating control type: Continuous		
Type of additional heating system	This parameter determines the heating system to be controlled.	Warm water heating Electric heating Floor heating Split unit **Fan coil** User defined
Proportional band	This parameter determines the proportional band.	0.5K… **5.0K** … 10.0K (°C) 0.9K… **9.0K** … 18.0K (°F)
Integral time	This parameter determines the integral time.	0 … **90** … 255
Control value minimum limit	This parameter determines the output object's minimum control value.	**0%** (0%, 5%, 10%, 15%, 20%, 25%, 30%)
Control value maximum limit	This parameter determines the output object's maximum control value.	**100%** (70%, 75%, 80%, 85%, 90%, %95, 100%)
Minimum oscillation of value to send	This parameter determines the minimum oscillation value for the output object to send a value.	**1** … 100
Periodic sending time	This parameter is used to periodically send the commands to the bus line.	**00:00:00** … 18:12:15
Control value requirement object	This parameter is used to send status information about the controller value of the additional heating system.	**No** Yes

3.4.5. Thermostat – Set Points

When the measured temperature is higher than the difference between the setpoint and the hysteresis value ($T_{setpoint} + \Delta T_{hysteresis}$), the device activates the cooling system by sending a KNX command to the actuator that controls the cooling system via connected to a related group address. When the measured temperature reaches the setpoint temperature, the device sends a related command and deactivates the cooling system. In this way, there are 2 decision thresholds to activate and deactivate the cooling system. The first one is the temperature at which the device activates the cooling system ($T_{setpoint} + \Delta T_{hysteresis}$), and the second one is the temperature at which the device deactivates the cooling system ($T_{setpoint}$).

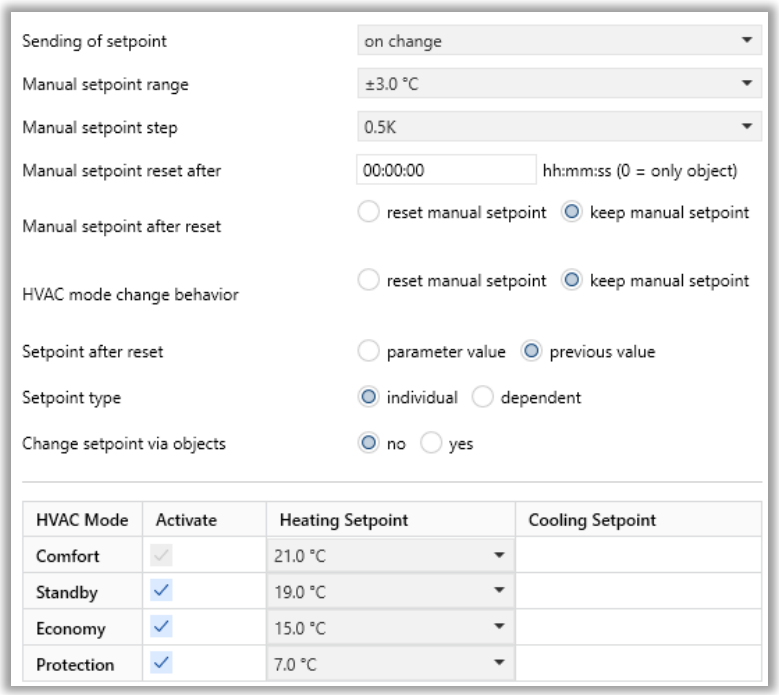

Fig. 27: Thermostat – Set Points Configuration Page

3.4.5.1. Parameters List

PARAMETER	DESCRIPTION	VALUES
Sending of setpoint	This parameter allows sending the setpoint temperature value information. **On change:** The Temperature value information is sent when the setpoint temperature value changes by 1 K. **Periodically:** The Temperature value information is sent periodically. **Periodically and on change:** The Temperature value information is sent periodically or when the setpoint temperature value changed 1 K.	Disable **On change** Cyclic On change & cyclic
Setpoint sending time	This parameter determines the time of the setpoint temperature value to be sent periodically.	00:00:01… **00:01:00**… 18:12:15
Manual setpoint range	This parameter configures the maximum and minimum limit values for the setpoint temperature value.	±1.0 ... **±3.0** ... ±12.5 (˚C) ±1.8 ... **±5.4** ... ±22.5 (˚F)
Manual setpoint step	This parameter configures the maximum and minimum limit values for the setpoint temperature value.	0.1K … **0.5K** … 3.5K (˚C) 0.18K … **0.9K** … 6.3K (˚F)
Manual setpoint reset after	This parameter determines the time of value to be sent setpoint reset after.	**00:00:00** … 18:12:15
Manual setpoint after reset	This parameter determines the behaviour of the manual setpoint's value after device reset. **Reset manual setpoint:** The manual setpoint is reset after device reset. **Keep manual setpoint:** The manual setpoint is continued after device reset.	Reset manual setpoint **Keep manual setpoint**
HVAC mode change behaviour	This parameter determines the behaviour of the manual setpoint's value after receiving the new set mode. **Reset manual setpoint:** The manual setpoint is reset after the new setting mode is received with this option. **Keep manual setpoint:** The manual setpoint is continued after the new setting mode is received with this option.	Reset manual setpoint **Keep manual setpoint**

Setpoint after reset	This parameter determines the setpoint temperature after a reset for any reason, such as power failure.	Parameter value **Previous value**
Setpoint type	The desired temperature value can be controlled with individual or dependent setpoints by this parameter. If dependent mode is selected the setpoints of comfort and protect can be configured as individual setpoint. Standby and economy mode's setpoints can be configured as dependent setpoint. Even dependent mode is selected, all of the operation mode's setpoints can be change via object separately. So, if the comfort's setpoint is changed economy or standby's setpoints aren't updated according to comfort setpoint.	**Individual Setpoint** Dependent Setpoint
Change setpoint via objects	With this parameter, setpoint objects for all operation mode are visible.	**No** Yes
Comfort Mode Activate	This parameter is used to determine the activation of comfort mode. If this parameter is checked, comfort mode can be useable.	Checked **Unchecked**
Comfort Mode Heating Setpoint (˚C)	The desired temperature value for comfort mode is configured with this parameter.	10.0 … **21.0** … 40 (˚C) 50.0 … **69.8** … 104 (˚F)
Comfort Mode Cooling Setpoint (˚C)	The desired temperature value for comfort mode is configured with this parameter.	10.0 … **21.0** … 40 (˚C) 50.0 … **69.8** … 104 (˚F)
Standby Mode Activate	This parameter is used to determine the activation of standby mode. If this parameter is checked, standby mode can be useable.	**Checked** Unchecked
Standby Mode Heating Setpoint (˚C)	The desired temperature value of heating for standby mode is configured with this parameter.	10.0 … **19.0** … 40 (˚C) 50.0 … **66.2** … 104 (˚F)
Standby Mode Cooling Setpoint (˚C)	The desired temperature value for standby mode is configured with this parameter.	10.0 … **25.0** … 40 (˚C) 50.0 … **77.0** … 104 (˚F)
Economy Mode Activate	This parameter is used to determine the activation of economy mode. If this parameter is checked, economy mode can be useable.	**Checked** Unchecked
Economy Mode Heating Setpoint (˚C)	The desired temperature value of heating for economy mode is configured with this parameter.	10.0 … **15.0** … 40 (˚C) 50.0 … **59.0** … 104 (˚F)

Economy Mode Cooling Setpoint (˚C)	The desired temperature value of cooling for economy mode is configured with this parameter	10.0 … **27.0** … 40 (˚C) 50.0 … **80.6** … 104 (˚F)
Protection Mode Activate	This parameter is used to determine the activation of protection mode. If this parameter is checked, protection mode can be useable.	**Checked** Unchecked
Protection Mode Heating Setpoint (˚C)	The desired temperature value of heating for protection mode is configured with this parameter.	0.0 … **7.0** … 15.5 (˚C) 32.0…**44.6** … 59.9 (˚F)
Protection Mode Heating Setpoint (˚C)	The desired temperature value of cooling for protection mode is configured with this parameter	25.0…**35.0**…45.0 (˚C) 77.0…**95.0**…113.0 (˚F)

3.5. Logic Channels

This section describes the logical function modules of the Interra 6 Binary/Analog Input Module with 6 Thermostat. With the logical function blocks on the 6 Binary/Analog Input Module with 6 Thermostat, a logical expression can be created with the ambient temperature, the brightness level of the environment, whether there is a presence detection in the environment, the data coming through the local digital inputs or external inputs, and various 'TRUE' or 'FALSE' results can be obtained. actions can be taken and scenarios can be triggered.

3.5.1. Logic Channels – General

This section describes the general parameters of the logical association module of the Interra 6 Binary/Analog Input Module with 6 Thermostat. Parameters must be configured separately for each logic block.

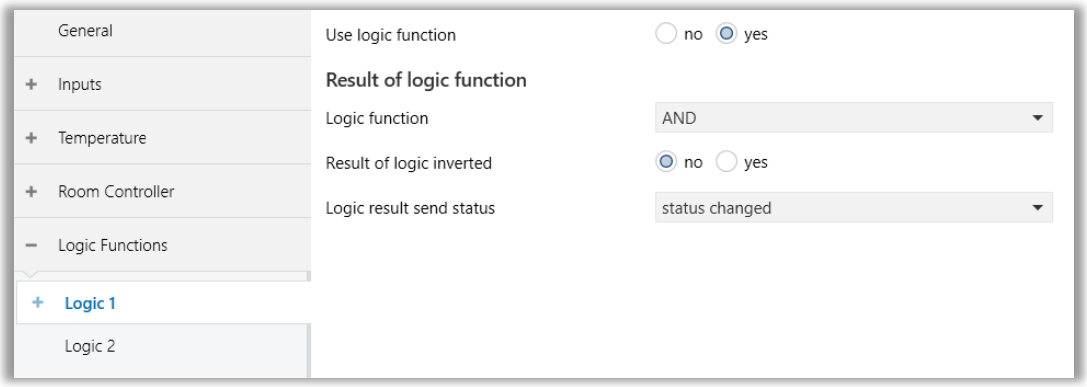

Fig. 28: Logic Functions – General Configuration Page

3.5.1.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Use Logic Function	This parameter is used to enable or disable the related logic function gate.	**No** Yes
Logic Function	This parameter is used to determine the logical relation of the parameterized logic inputs. **AND:** All inputs are put into the 'AND' operation. **OR:** All inputs are put into the 'OR' operation. **XOR:** All inputs are put into the 'XOR' operation.	**AND** OR XOR
Result of Logic Inverted	This parameter is used to invert or not invert the calculated logic function block. If it is selected as yes for example, when the logic function gate output is 'TRUE', the output will be 'FALSE'. Vice versa also applies.	**No** Yes
Logic result send status	This parameter is used to determine the logic function block result sending status to the KNX bus.	**Status changed** Status is TRUE Status is FALSE Status changed and periodically Status is TRUE periodically Status is FALSE periodically

3.5.2. Logic Functions – Internals Inputs

This section describes the input parameters of the logical association module of the Interra 6 Binary/Analog Input Module with 6 Thermostat. Parameters must be configured separately for each logic block.

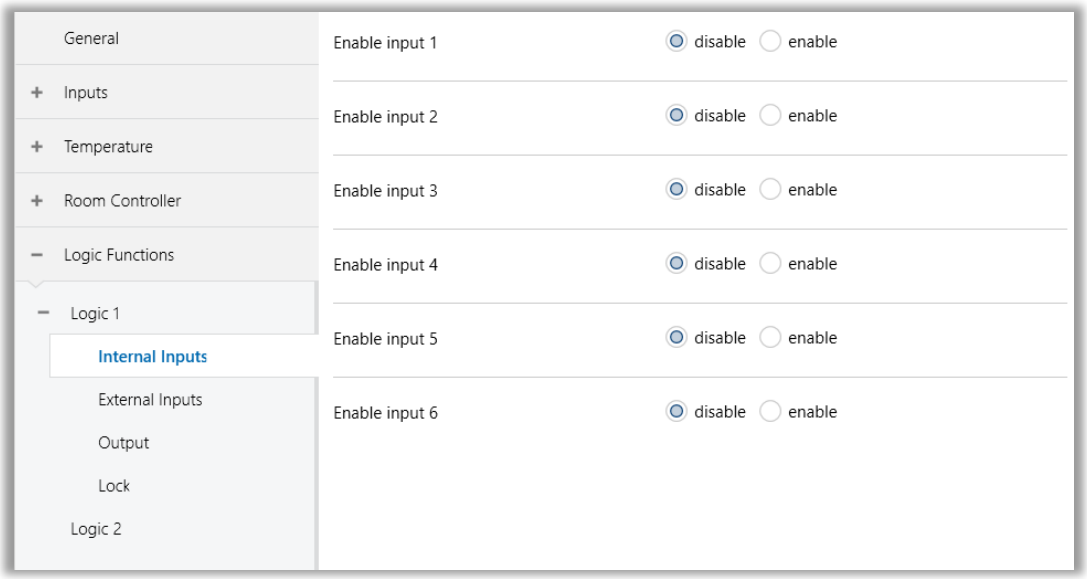

Fig. 29: Logic Functions – Internal Inputs Configuration Page

3.5.2.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable Input 1	This parameter is used to enable or disable input 1 for logic function block as input	**Disable** Enable
->> Contact Input Status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Pressed TRUE else FALSE** Pressed FALSE else TRUE
Enable Input 2	This parameter is used to enable or disable input 2 for logic function block as input	**Disable** Enable
->> Contact Input Status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Pressed TRUE else FALSE** Pressed FALSE else TRUE
Enable Input 3	This parameter is used to enable or disable input 1 for logic function block as input	**Disable** Enable
->> Contact Input Status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Pressed TRUE else FALSE** Pressed FALSE else TRUE
Enable Input 4	This parameter is used to enable or disable input 2 for logic function block as input	**Disable** Enable
->> Contact Input Status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Pressed TRUE else FALSE** Pressed FALSE else TRUE
Enable Input 5	This parameter is used to enable or disable input 1 for logic function block as input	**Disable** Enable
->> Contact Input Status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Pressed TRUE else FALSE** Pressed FALSE else TRUE
Enable Input 6	This parameter is used to enable or disable input 2 for logic function block as input	**Disable** Enable
->> Contact Input Status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Pressed TRUE else FALSE** Pressed FALSE else TRUE

3.5.3. Logic Functions – External Inputs

This section describes the external inputs parameters of the logical association module of the Interra 6 Binary/Analog Input Module with 6 Thermostat. Parameters must be configured separately for each logic block.

Fig. 30: Logic Functions – External Input Configuration Page

3.5.3.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Enable External Input 1	This parameter is used to enable or disable input 1 for logic function block as input	**disable** enable
->> External Input type	This parameter is used to determine the external input type of the enabled input 1 object.	**1-bit value('1'/'0')** 1-byte threshold (0..255) 2-byte threshold (0..65535) 2-byte float threshold (-50C..100C) 4-byte threshold (0..4294967295)
->> External Input Threshold	This parameter is used to determine the external input threshold value to evaluate the input status as TRUE or FALSE.	**0**…255 **0**…65535 -500…0…1000 0…10000…4294967295
External input status	This parameter is used to determine the input status as TRUE or FALSE according to the value. (This is visible if the input is not selected as 1 bit)	**TRUE if input value >= threshold else FALSE** FALSE if input value <= threshold else TRUE
Enable External Input 2	This parameter is used to enable or disable input 2 for logic function block as input	**disable** enable
->> External Input type	This parameter is used to determine the external input type of the enabled input 2 object.	**1-bit value('1'/'0')** 1-byte threshold (0..255) 2-byte threshold (0..65535) 2-byte float threshold (-50C..100C) 4-byte threshold (0..4294967295)
External input status	This parameter is used to determine the input status as TRUE or FALSE according to the value. (This is visible if the input is not selected as 1 bit)	**TRUE if input value >= threshold else FALSE**

		FALSE if input value <= threshold else TRUE
Enable External Input 3	This parameter is used to enable or disable input 1 for logic function block as input	**Disable** enable
->> External Input type	This parameter is used to determine the external input type of the enabled input 2 object.	**1-bit value('1'/'0')** 1-byte threshold (0..255) 2-byte threshold (0..65535) 2-byte float threshold (-50C..100C) 4-byte threshold (0..4294967295)
External input status	This parameter is used to determine the input status as TRUE or FALSE according to the value. (This is visible if the input is not selected as 1 bit)	**TRUE if input value >= threshold else FALSE** FALSE if input value <= threshold else TRUE
Enable External movement	This parameter is used to enable or disable input 1 for logic function block as input	**Disable movement** External movement
->> External movement sensor status	This parameter is used to determine when a press occurs on the local input is accounted as TRUE or FALSE.	**Movement detected is False else is True** Movement detected is True else is False
Enable External Brightness	This parameter is used to enable or disable input 2 for logic function block as input	**Disable brightness** Enable brightness
->> Threshold brightness upper	This parameter is used to determine the lower threshold brightness value.	1…**300**…1200
->> Threshold brightness lower	This parameter is used to determine the upper threshold brightness value.	1…**100**…1200
->> Brightness Status	This parameter is used to determine when the ambient brightness value is accounted as TRUE or FALSE.	**In range is TRUE, else is FALSE** Out range is TRUE, else is FALSE

		Under lower is TRUE, above upper is FALSE Under lower is FALSE, above upper is TRUE
->> Change brightness via bus	This parameter is used to determine when a press occurs on the local input is accounted as YES or NO.	**No** Yes
Enable External Temperature	This parameter is used to enable or disable input 2 for logic function block as input	**Disable temperature** Enable temperature
->> Threshold temperature upper	This parameter is used to determine the lower threshold temperature value.	-300…**260**…700°C
->> Threshold temperature lower	This parameter is used to determine the upper threshold temperature value.	-300…**220**…700°C
->> Temperature Status	This parameter is used to determine when the ambient temperature value is accounted as TRUE or FALSE.	**In range is TRUE, else is FALSE** Out range is TRUE, else is FALSE Under lower is TRUE, above upper is FALSE Under lower is FALSE, above upper is TRUE
->> Change temperature threshold via bus	This parameter is used to determine when a press occurs on the local input is accounted as YES or NO.	**No** Yes

3.5.4. Logic Functions – Output General

This section describes the general parameters of the logic output functions. The property of each respective output channel is set by configuring the parameters in this section. Also, repetitive sending of output values can be set here.

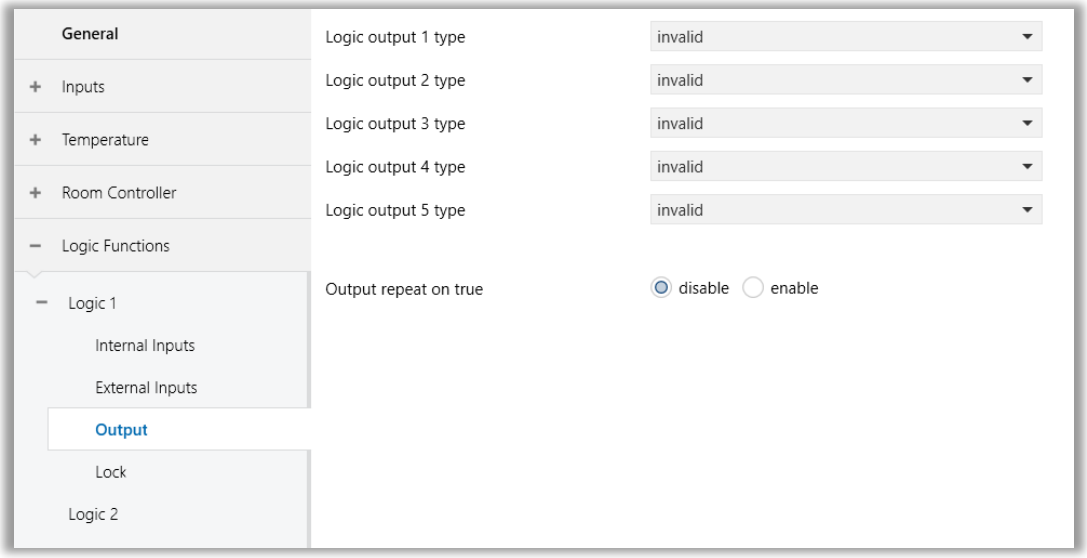

Fig. 31: Logic Functions – Output General Configuration Page

3.5.4.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Logic Output X type (1...5)	This parameter is used to specify the related logic output x channel functionality. If this parameter is selected as invalid, the related output channel will not be used. Other selected options will be configured separately.	**Invalid** Switch controller Dim controller Shutter controller Alarm controller Percentage control. Sequence control. Scene controller String controller Threshold controller
Output repeat on true	This parameter is used to enable or disable the output repeating time for all output channels when the logic gate state is true.	**Disable** Enable
-> Repeated time interval	This parameter is used to determine the repeated time for all enabled output channels to send output channel values when the logic gate state is true.	0…**120**…65535

3.5.5. Logic Functions – Outputs 1-2

This section describes parameter configurations for each logic output channel. Although the working principle is the same for all output channels, only the type of values to be sent changes depending on the selected output functionality. For this reason, parameters are described in a common table about only one feature.

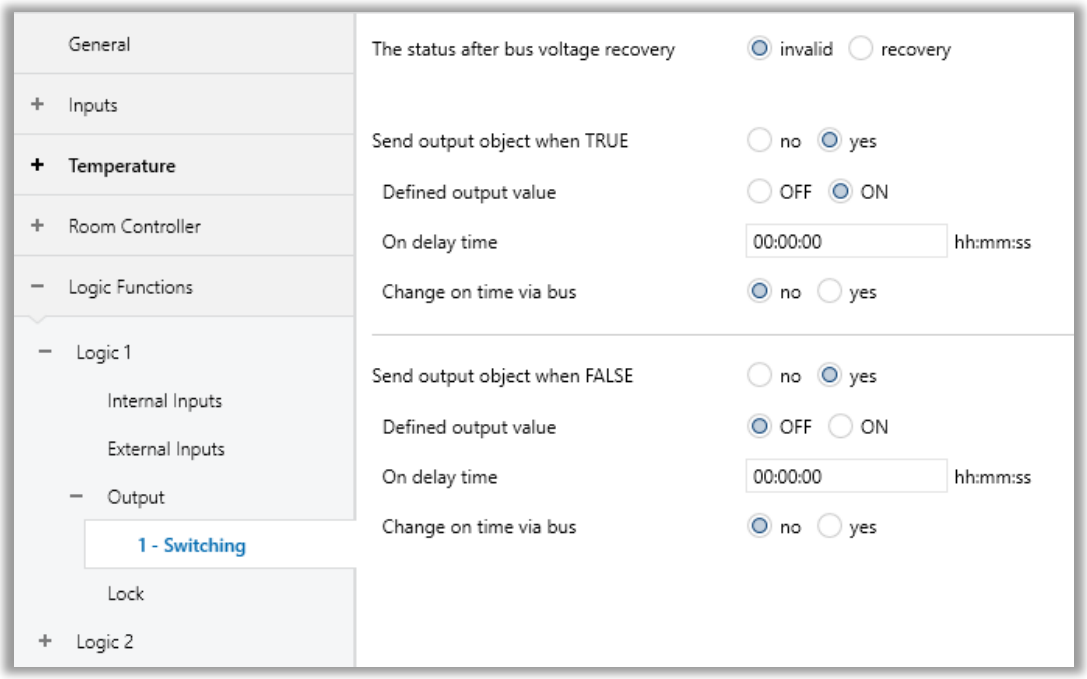

Fig. 32: Logic Functions – Output: Dimming Configuration Page

3.5.5.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
The status after bus voltage recovery	This parameter is used to determine the logic output channel x status after bus voltage recovery.	**Invalid** Recovery
-> Recovery Defined Value	This parameter is used to determine the output channel x value when the bus voltage has been recovered.	On…**Off** **%0**…%100 **Up**…Down **No alarm**…alarm **Stop**…start **Scene no. 1**…64 14 bytes string **0**…65535
Send output object when TRUE	This parameter is used to enable or disable the sending output object when the logic gate is true.	No **yes**
-> Defined Output Value	This parameter is used to determine the logic output channel x defined value when the logic gate is true.	On…**Off** **%0**…%100 **Up**…Down **No alarm**…alarm **Stop**…start **Scene no. 1** … scene no64 14 bytes string **0**…65535
-> On Delay Time	This parameter is used to determine the on-delay time of the related logic output channel x when the logic gate is true.	**00:00:00**…23:59:59
-> Change on Time Via Bus	This parameter is used to enable or disable the on-delay time object for changing the delay time on the true state.	**No** yes
Send output object when FALSE	This parameter is used to enable or disable the sending output object when the logic gate is false.	No **yes**
-> Defined Output Value	This parameter is used to determine the logic output channel x defined value when the logic gate is false.	On…**Off** **%0**…%100 **Up**…Down **No alarm**…alarm **Stop**…start **Scene no. 1** … 64 14 bytes string **0**…65535

-> On Delay Time	This parameter is used to determine the on-delay time of the related logic output channel x when the logic gate is false.	**00:00:00**…18:12:15
-> Change on Time Via Bus	This parameter is used to enable or disable the on-delay time object for changing the delay time on the false state.	**No** yes

3.5.6. Logic Functions – Lock

In this section, the locking feature of the logic functions is mentioned. The locking feature is for each logic function gate and is configured separately. Since there are 5 different logic function gates in the 6 Binary/Analog Input Module with 6 Thermostat device, a separate configuration is required for each. Since the parameter page for each section is the same, only 1 is explained in this section.

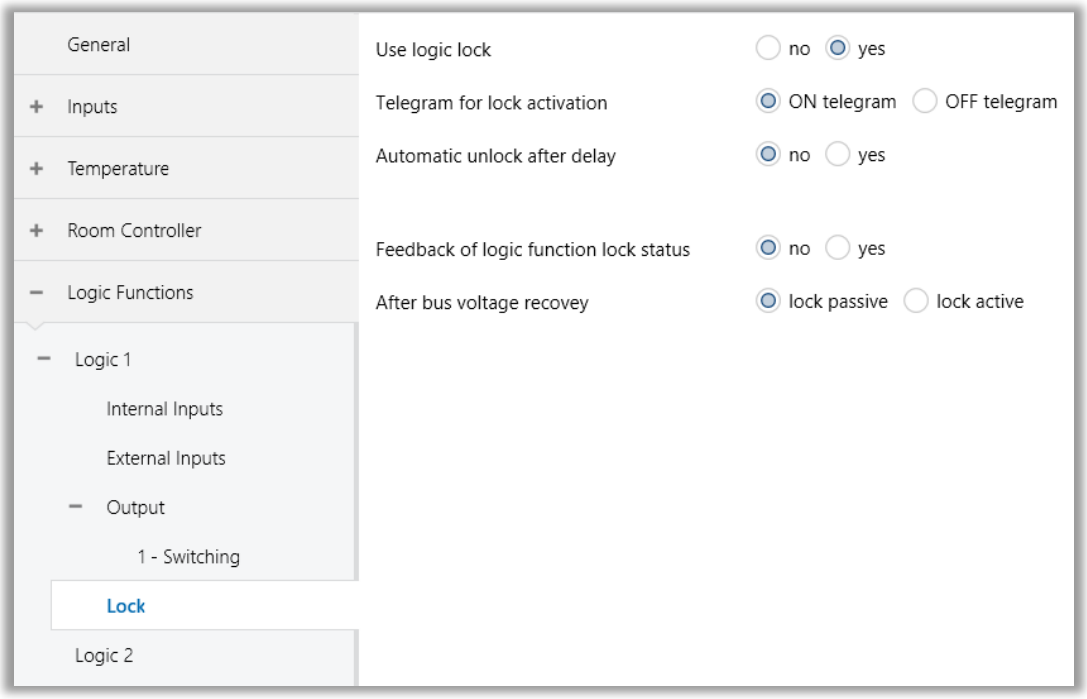

Fig. 33: Logic Functions – Lock Configuration Page

3.5.6.1. Parameters List

PARAMETERS	DESCRIPTION	VALUES
Use Logic Lock	This parameter is used to lock the related logic function gate.	**No** Yes
Telegram for Lock Activation	This parameter is used to determine the telegram value that locks the related logic function gate.	**On telegram** Off telegram
Automatic Unlock After Delay	This parameter is used to enable or disable the automatic unlock to unlock the logic gate after a while.	**No** Yes
->> Automatic unlock time	This parameter is used to determine the automatically unlock period to unlock the logic function gate.	00:00:00…**00:00:30**... 18:12:15
Feedback of logic function lock status	This parameter is used to enable or disable the feedback of the logic lock status object.	**No** Yes
After Bus Voltage Recovery	This parameter is used to determine the logic function gate lock status after the bus voltage recovery.	**Lock Passive** Lock Active

4. ETS Objects List & Descriptions

The Interra 6 Binary/Analog Input Module with 6 Thermostat can communicate via the KNX bus line. In this section, the group objects of the Interra 6 Binary/Analog Input Module with 6 Thermostats are described. All of the communication objects listed below are available to the Universal Interface. Which of these group objects are visible and capable of being linked with group addresses are explained in sub-sections.

No	Name	Function	DTP Type	Length	Flags				
					C	R	W	T	U
1	General	In operation	1.002	1 bit	X			X	
2, 7, 12, 17, 22, 27,	Input x	Lock	1.003	1 bit	X		X		
3, 8, 13, 18, 23, 28	Input X	Switch	1.001	1 bit	X		X	X	
		Shutter UP/DOWN	1.008	1 bit	X		X	X	
		Forced operation	2.001	2 bit	X			X	
		Percent value	5.001	1 byte	X			X	
		Decimal value	5.005	1 byte	X			X	
		Scene number	17.001	1 byte	X			X	
		Colour Temperature	7.600	2 bytes	X			X	
		Temperature value	9.001	2 bytes	X			X	
		Brightness value	9.004	2 bytes	X			X	
		Percent value (RGB)	232.600	3 bytes	X			X	
		8-bit Scene	18.001	1 byte	X			X	
		RGB Colour	232.600	3 bytes	X	X		X	
		Red Colour	5.010	1 byte	X	X		X	
		Mode Selection	20.102	1 byte	X	X		X	
		Sequence – 1 bit	1.001	1 bit	X	X		X	
		Sequence – 1 byte	5.001	1 byte	X	X		X	
			5.010	1 byte	X	X		X	
			20.102	1 byte	X	X		X	
		Sequence A – 1 bit	1.001	1 bit	X	X		X	
		Sequence A – 1 byte	5.001	1 byte	X	X		X	
			5.010	1 byte	X	X		X	
			20.102	1 byte	X	X		X	
		Counter Value – 1 byte	5.010	1 byte	X	X		X	
		Counter Value – 2 bytes	7.001	2 bytes	X	X		X	
		Counter Value – 4 bytes	12.001	4 bytes	X	X		X	
		Percent Value (RGBW)	251.600	6 byte	X			X	
		Red colour	5.010	1 byte	X	X		X	
4, 9, 14, 19, 24, 29	Input X	Switch - long	1.001	1 bit	X			X	
		Dimming	3.007	4 bit	X			X	
		STOP/lamella adjustment	1.007	1 bit	X			X	

	Input X: Value/Forced op.	Forced – long	2.001	2 bit	X			X	
		Percent value – long	5.001	1 byte	X			X	
		Decimal value - long	5.005	1 byte	X			X	
		Scene number – long	17.001	1 byte	X			X	
		Colour Temperature – long	7.600	2 bytes	X			X	
		Temperature value – long	9.001	2 bytes	X			X	
		Brightness value – long	9.004	2 bytes	X			X	
		Percent value (RGB) – long	232.600	3 bytes	X			X	
	Input X	Store scene	1.003	1 bit	X	X	X		
		Green colour	5.010	1 byte	X			X	
		HVAC-Mode State	20.102	1 byte	X		X		
		Sequence B – 1 bit	1.001	1 bit	X	X		X	
		Sequence B – 1 byte	5.001	1 byte	X	X		X	
			5.010	1 byte	X	X		X	
			20.102	1 byte	X	X		X	
		Reset Counter	1.001	1 bit	X	X	X	X	
		Green colour	5.010	1 byte	X			X	
5, 10, 15, 20, 25, 30	Input X	Upper limit position	1.002	1 bit	X		X		
		Blue colour	5.010	1 byte	X			X	
		Sequence C – 1 bit	1.001	1 bit	X	X		X	
		Sequence C – 1 byte	5.001	1 byte	X	X		X	
			5.010	1 byte	X	X		X	
			20.102	1 byte	X	X		X	
		Overflow – 1 bit	1.001	1 bit	X	X	X	X	
		Overflow – 1 byte	5.010	1 byte	X	X	X	X	
		Blue colour	5.010	1 byte	X			X	
6, 11, 16, 21, 26, 31	Input X	Lower limit Position	1.002	1 bit	X		X		
		Sequence D – 1 bit	1.001	1 bit	X	X		X	
		Sequence D – 1 byte	5.001	1 byte	X	X		X	
			5.010	1 byte	X	X		X	
			20.102	1 byte	X	X		X	
		White colour	5.010	1 byte	X	X		X	
3, 8, 13, 18, 23, 28	Input X: Analog	Temperature	1.003	1 bit	X		X		
4, 9, 14, 19, 24, 29,	Input X: Analog	Alarm	1.005	1 bit	X	X	X	X	
32, 35, 38, 41, 44, 47	Temperature X	Alarm	1.005	1 Bit	X	X	X	X	
33, 36, 39, 42, 45, 48	Temperature X	Actual temperature	9.001	2 Byte	X	X		X	
34, 37, 40, 43, 46, 49	Temperature X	KNX Probe Temperature	9.001	2 Byte	X	X		X	
	Thermostat X	Disabling	1.003	1 bit	X		X		

50, 121, 192, 263, 334, 405		Disabling	1.003	1 bit	X	X		X	
51, 122, 193, 264, 335, 406	Thermostat X	Status	1.003	1 bit	X		X		
		Status	1.003	1 bit	X	X		X	
54, 125, 196, 267, 338, 409	Thermostat X	Operation Mode	20102	1 bit	X		X	X	
		Operation Mode	20102	1 bit	X		X		
55, 126, 197, 268, 339, 410	Thermostat X	Operation Mode Forced	20.102	1 byte	X		X		
56, 127, 198, 269, 340, 411	Thermostat X	Operation Mode Status	20.102	1 byte	X	X		X	
		Operation Mode Feedback	20.102	1 byte	X		X		X
57, 128, 199, 270, 341, 412	Thermostat X	Operation Mode [Comfort]	1.001	1 bit	X	X	X		
58, 129, 200, 271, 342, 413	Thermostat X	Operation Mode [Standby]	1.001	1 bit	X	X	X		
59, 130, 201, 272, 343, 414	Thermostat X	Operation Mode [Economy]	1.001	1 bit	X	X	X		
60, 131, 202, 273, 344, 415	Thermostat X	Operation Mode [Protection]	1.001	1 bit	X	X	X		
61, 132, 203, 274, 345, 416	Thermostat X	Heating/Cooling Switchover	1.100	1 bit	X		X		
		Heating/Cooling Switchover	1.100	1 bit	X	X		X	
62, 133, 204, 275, 346, 417	Thermostat X	Heating/Cooling Status	1.100	1 bit	X	X		X	
		Heating/Cooling Feedback	1.100	1 bit	X		X		
63, 134, 205, 276, 347, 418	Thermostat X	Heating Control Disabling	1.001	1 bit	X		X		
64, 135, 206, 277, 348, 419	Thermostat X	Heating Control Running	1.001	1 bit	X	X		X	
		Heating Control Running	1.001	1 bit	X		X		
65, 136, 207, 278, 349, 420	Thermostat X	Heating Value (1-bit)	1.001	1 bit	X	X		X	
		Heating Value (1-byte)	5.001	1 byte	X	X		X	
		Heating/Cooling Value (1-bit)	1.001	1 bit	X	X		X	
		Heating/Cooling Value (1-byte)	5.001	1 byte	X	X		X	
66, 137, 208, 279, 350, 421	Thermostat X	Heating Value Request	1.016	1 bit	X		X		
		Heating/Cooling Value Request	1.016	1 bit	X		X		
67, 138, 209, 280, 351, 422	Thermostat X	Cooling Control Disabling	1.001	1 bit	X		X		
68, 139, 210, 281, 352, 423	Thermostat X	Cooling Control Running	1.001	1 bit	X	X		X	
		Cooling Control Running	1.001	1 bit	X		X		
69, 140, 211, 282, 353, 424	Thermostat X	Cooling Value (1-bit)	1.001	1 bit	X	X		X	
		Cooling Value (1-byte)	5.001	1 byte	X	X		X	
70, 141, 212, 283, 354, 425	Thermostat X	Cooling Value Request	1.016	1 bit	X		X		
71, 142, 213, 284, 355, 426	Thermostat X	Additional Heating Control Disabling	1.001	1 bit	X		X		

72, 143, 214, 285, 356, 427	Thermostat X	Additional Heating Control Running	1.001	1 bit	X	X		X	
73, 144, 215, 286, 357, 428	Thermostat X	Additional Heating Value(1-Bit)	1.001	1 bit	X	X		X	
		Additional Heating Value(1-Byte)	5.001	1 byte	X	X		X	
74, 145, 216, 287, 358, 430	Thermostat X	Additional Heating Value Request	1.016	1 bit	X		X		
75, 146, 217, 288, 359, 430	Thermostat X	Additional Cooling Control Disabling	1.003	1 bit	X		X		
76, 147, 218, 289, 360, 431	Thermostat X	Additional Cooling Control Running	1.002	1 bit	X	X		X	
77, 148, 219, 290, 361, 431	Thermostat X	Additional Cooling Value (1-Bit)	1.001	1 bit	X	X		X	
		Additional Cooling Value (1-Byte)	5.001	1 byte	X	X		X	
78, 149, 220, 291, 362, 433	Thermostat X	Additional Cooling Value Request	1.016	1 bit	X		X		
79, 150, 221, 292, 363, 434	Thermostat X	Room Temperature Output - Celsius	9.001	2 bytes	X	X		X	
		Room Temperature Input - Celsius	9.001	2 bytes	X		X		
		Room Temperature Output - Fahrenheit	9.027	2 bytes	X	X		X	
		Room Temperature Input - Fahrenheit	9.027	2 bytes	X		X		
80, 151, 222, 293, 364, 435	Thermostat X	Actual Setpoint Output	9.001	2 bytes	X	X		X	
					X		X		
			9.002	2 bytes	X	X		X	
					X		X		
			9.027	2 bytes	X	X		X	
					X		X		
81, 152, 223, 294, 365, 436	Thermostat X	Manual Setpoint Input	9.001	2 bytes	X		X		
					X	X		X	
			9.002	2 bytes	X		X		
					X	X		X	
			9.027	2 bytes	X	X		X	
					X		X		
82, 153, 224, 295, 366, 437	Thermostat X	Manual Setpoint Reset	1.015	1 bit	X		X		
83, 154, 225, 296, 367, 438	Thermostat X	Heating Comfort Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
84, 155, 226, 297, 368, 439	Thermostat X	Heating Standby Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
	Thermostat X		9.001	2 bytes	X		X		

85, 156, 227, 298, 369, 440		Heating Economy Setpoint Temperature	9.027	2 bytes	X		X		
86, 157, 228, 299, 370, 441	Thermostat X	Heating Protection Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
87, 158, 229, 300, 371, 442	Thermostat X	Cooling Comfort Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
88, 159, 230, 301, 372, 443	Thermostat X	Cooling Standby Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
89, 160, 231, 302, 373, 444	Thermostat X	Cooling Economy Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
90, 161, 232, 303, 374, 445	Thermostat X	Cooling Protection Setpoint Temperature	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
91, 162, 233, 304, 375, 446	Thermostat X	Fan Controller Disable	1.003	1 bit	X		X		
92, 163, 234, 305, 376, 447	Thermostat X	Fan Controller Status	1.003	1 bit	X	X		X	
93, 164, 235, 306, 377, 448	Thermostat X	Fan Controller Working Mode	1.001	1 bit	X		X		
94, 165, 236, 307, 378, 449	Thermostat X	Fan Controller Working Mode Status	1.001	1 bit	X	X		X	
95, 166, 237, 308, 379, 450	Thermostat X	Fan Controller Proportional Output	5.001	1 byte	X	X		X	
96, 167, 238, 309, 380, 451	Thermostat X	Fan Controller Manual Step	1.007	1 bit	X		X		
		Fan Controller Manual Up/Down	1.008	1 bit	X		X		
97, 168, 239, 310, 381, 452	Thermostat X	Fan Controller Manual Stage	5.100	1 byte	X		X		
98, 169, 240, 311, 382, 453	Thermostat X	Fan Controller Speed (1 Byte)	5.001	1 byte	X	X		X	
		Fan Controller Speed (1 Byte)	5.100	1 byte	X	X		X	
99, 170, 241, 312, 383, 454	Thermostat X	Fan Controller Speed Feedback (1 Byte)	5.001	1 byte	X		X		X
		Fan Controller Speed Feedback (1 Byte)	5.100	1 byte	X		X		X
100, 171, 242, 313, 384, 455	Thermostat X	Fan Level 1	1.001	1 bit	X	X		X	
101, 172, 243, 314, 385, 456	Thermostat X	Fan Level 2	1.001	1 bit	X	X		X	
102, 173, 244, 315, 386, 457	Thermostat X	Fan Level 3	1.001	1 bit	X	X		X	

103, 174, 245, 316, 387, 458	Thermostat X	Fan Level 4	1.001	1 bit	X	X		X	
104, 175, 246, 317, 388, 459	Thermostat X	Fan Level 5	1.001	1 bit	X	X		X	
105, 176, 247, 318, 389, 460	Thermostat X	Fan Level 1 Feedback Input	1.001	1 bit	X		X		X
106, 177, 248, 319, 390, 461	Thermostat X	Fan Level 2 Feedback Input	1.001	1 bit	X		X		X
107, 178, 249, 320, 391, 462	Thermostat X	Fan Level 3 Feedback Input	1.001	1 bit	X		X		X
108, 179, 250, 321, 392, 463	Thermostat X	Fan Level 4 Feedback Input	1.001	1 bit	X		X		X
109, 180, 251, 322, 393, 464	Thermostat X	Fan Level 5 Feedback Input	1.001	1 bit	X		X		X
116, 187, 258, 329, 400, 471	Thermostat X	Temperature Limit Heating Source	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
117, 188, 259, 330, 401, 472	Thermostat X	Temperature Limit Cooling Source	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
118, 189, 260, 331, 402, 473	Thermostat X	Temperature Limit Additional Heating Source	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
119, 190, 261, 332, 403, 474	Thermostat X	Temperature Limit Additional Cooling Source	9.001	2 bytes	X		X		
			9.027	2 bytes	X		X		
120, 191,262, 333, 404, 474	Thermostat X	Time	10.001	3 bytes	X		X		
476, 504	Logic x:	Lock	1.003	1 bit	X		X		
477, 505	Logic x:	Lock Feedback	1.003	1 bit	X	X		X	
478, 506	Logic x: Input	External movement	1.001	1 bit	X		X		
479, 507	Logic x: Input	External brightness	9.004	2 bytes	X		X	X	X
480, 508	Logic x: Input	Lower brightness threshold	9.004	2 bytes	X		X	X	X
481, 509	Logic x: Input	Upper brightness threshold	9.004	2 bytes	X		X	X	X
482, 510	Logic x: Input	External temperature	9.001	2 bytes	X		X		X
483, 511	Logic x: Input	Lower temperature threshold	9.001	2 bytes	X		X	X	X

484, 512	Logic x: Input	Upper temperature threshold	9.001	2 bytes	X		X	X	X
485, 513	Logic x: Input	External input 1 – 1 bit	1.001	1 bit	X		X		X
		External input 1 – 1 byte	5.010	1 byte	X		X		X
		External input 1 – 2 bytes	7.001	2 bytes	X		X		X
		External input 1 – 2 bytes (float threshold)	9.001	2 bytes	X		X		X
		External input 1 – 4 bytes	12.001	4 bytes	X		X		X
486, 514	Logic x: Input	External input 2 – 1 bit	1.001	1 bit	X		X		X
		External input 2 – 1 byte	5.010	1 byte	X		X		X
		External input 2 – 2 bytes	7.001	2 bytes	X		X		X
		External input 2 – 2 bytes (float threshold)	9.001	2 bytes	X		X		X
		External input 2 – 4 bytes	12.001	4 bytes	X		X		X
487, 515	Logic x: Input	External input 3 – 1 bit	1.001	1 byte	X		X		X
		External input 3 – 1 byte	5.010	1 byte	X		X		X
		External input 3 – 2 bytes	7.001	2 bytes	X		X		X
		External input 3 – 2 bytes (float threshold)	9.001	2 bytes	X		X		X
		External input 3 – 4 bytes	12.001	4 bytes	X		X		X
488, 516	Logic x: Output	Result status	1.002	1 bit	X			X	
489, 517	Logic x: Output y:	Switching	1.001	1 bit	X	X		X	
		Absolute dimming	5.001	1 byte	X	X		X	
		Shutter	1.008	1 bit	X	X		X	
		Alarm	1.005	1 bit	X	X		X	
		Scene	17.001	1 byte	X	X		X	
		String	16.000	14 bytes	X	X		X	
		Threshold	7.001	2 bytes	X	X		X	
490, 518	Logic x: Output y:	Delay time on TRUE state	7.005	2 bytes	X		X	X	X
491, 519	Logic x: Output y:	Delay time on FALSE state	7.005	2 bytes	X		X	X	X
504 -531	Logic 2								

4.1. General Objects

This section describes the "general" group objects and their properties. General group objects, as the name suggests, indicate the general characteristics of the 6 Binary/Analog Input Module with 6 Thermostat.

Object No	Object Name	Function	Type	Flags
1	**General**	**In operation**	**1 bit**	**CT**
This object is used to monitor the presence of the device on the KNX bus line regularly. However, monitoring telegrams can be sent cyclically on the KNX bus line. DPT: 1.002 (Boolean)				

4.2. Inputs

This section contains information about KNX objects and their properties related to the input channels. The types, flags and properties of the objects are explained in detail below. There are 12 digital inputs and 2 analog inputs channels with the same functionality and an additional probe channel. In this section, digital and analog input objects are described only for one channel due to their identity.

X: 1…6

Object No	Object Name	Function	Type	Flags
2, 7, 12, 17, 22, 27,	**Input x**	**Block**	**1 bit**	**CW**
This object is used to lock the universal interface channel. It becomes visible when the "use universal interface lock" parameter is set to yes. Depending on the parameter setting, when an ON or OFF telegram is sent to this object, the corresponding presence channel is locked. For example, when "ON telegram" is selected in the parameter page for locking, it will be locked when an ON telegram is received from the KNX bus line, and when an OFF telegram is received, the universal interface channel will be unlocked. Depending on the parameter configuration, an output value can also be sent when the locking operation is performed. DPT: 1.003 (enable)				
3, 8, 13, 18, 23, 28	**Input X:** **Switch function**	**Switch**	**1 bit**	**CT / CWT**
This communication object changes in functionality depending on the selected input function. In accordance with the parameter setting, this communication object can be switched by actuation of the input to ON, OFF or TOGGLE. DPT: 1.001 (switch)				
4, 9, 14, 19, 24, 29,	**Input X:** **Switch function**	**Switch - long**	**1 bit**	**CT / CWT**
This communication object changes in functionality depending on the selected input function In accordance with the parameter setting, this communication object can be switched by actuation of the input to ON, OFF or TOGGLE. DPT: 1.001 (switch)				
3, 8, 13, 18, 23, 28	**Input X: Switch/Dim function**	**Switch**	**1 bit**	**CWT**
This communication object changes in functionality depending on the selected input function. In accordance with the parameter setting, this communication object can be switched by actuation of the input to ON, OFF DPT: 1.001 (switch)				

4, 9, 14, 19, 24, 29,	**Input X: Switch/Dim function**	**Dimming**	**1 bit**	**CT**

This communication object changes in functionality depending on the selected input function. In accordance with the parameter setting, A long operation at the input has the effect that BRIGHTER or DARKER dim telegrams are sent via this communication object on the bus. A STOP telegram is sent and the cyclic sending of dim telegrams is stopped at the end of the actuation with START-STOP-DIMMING.

DPT: 3.007 (Dimming)

3, 8, 13, 18, 23, 28	**Input X: Shutter function**	**Shutter UP/DOWN**	**1 bit**	**CWT**

This communication object changes in functionality depending on the selected input function. This communication object sends a shutter motion telegram UP or DOWN on the bus. By receiving telegrams, the device also recognizes movement telegrams of another sensor, e.g. parallel operation.

DPT: 1.007 (step)

4, 9, 14, 19, 24, 29	**Input X: Shutter function**	**STOP/lamella adjustment**	**1 bit**	**CT**

This communication object changes in functionality depending on the selected input function. This communication object sends a STOP telegram or slat adjustment.

DPT: 1.002 (Boolean)

5, 10, 15, 20, 25, 30	**Input X: Shutter function**	**Upper limit position**	**1 bit**	**CW**

This communication object changes in functionality depending on the selected input function. According to the input configuration on the ETS parameter page, the object usage changes. If the shutter function is selected, ‘0’ is no upper limit operation, and ‘1’ upper-end operation.

DPT: 1.002 (Boolean)

6, 11, 16, 21, 26, 31	**Input X: Shutter function**	**Lower limit position**	**1 bit**	**CW**

This object is used for the shutter actuator indicate if it is in the lower limit position (“shutter/blind closed”). The object is intended for a 1-button operation. ‘0’ is no lower limit operation, and ‘1’ lower end operation.

DPT: 1.002 (Boolean)

3, 8, 13, 18, 23, 28	**Input X: Valued/Forced Op**	**Decimal Value**	**2 bit / 1 byte / 2 bytes/ 3 bytes**	**CT**

This communication object changes in functionality depending on the selected input function. This communication object sends a value on the bus with short operation when opening or closing of the contact. Depending on the configuration, the data type of this object changes. forced, percent value, decimal value, Scene number, temperature value, brightness value and percent value (RGB) can be performed on this object.

DPT: According to parameter selection

3, 8, 13, 18, 23, 28	**Input X: Control Scene**	**8-bit Scene**	**1 byte**	**CT**

This communication object stores the value of the active scene number (1 - 64).

DPT: 18.001 (scene control)

4, 9, 14, 19, 24, 29	**Input X: Control Scene**	**Store Scene**	**1 bit**	**CT**

This communication object, when active, decides whether to call or store the preset 8-bit scene number in the Parameters List. When the store scene object is enabled the preset scene number is stored, but, when disabled preset scene number is called to be active.

DPT: 1.003 (enable)

3, 8, 13, 18, 23, 28	**Input X: RGB control**	**Red colour / RGB colour**	**1 byte / 3 bytes**	**CT / CRT**

This object either keeps the 1-Byte Red value of the RGB or keeps the entire 3-Byte RGB value. Decision is made in the Parameters List as either “1 object of 3 bytes” or 3 objects of 1 byte”.

DPT: 5.010 (counter pulses(0…255)) / 232.600 (RGB value 3x(0…255))

4, 9, 14, 19, 24, 29	**Input X: RGB control**	**Green colour**	**1 byte**	**CT**

This object keeps the 1-Byte green value of RGB if the “3 objects of 1 Byte” option is selected in the Parameters List.

DPT: 5.010 (counter pulses(0…255))

5, 10, 15, 20, 25, 30	**Input X: RGB control**	**Blue colour**	**1 byte**	**CT**

This object keeps the 1-Byte blue value of RGB if the “3 objects of 1 Byte” option is selected in the Parameters List.

DPT: 5.010 (counter pulses(0…255))

3, 8, 13, 18, 23, 28	**Input X: Mode Selection**	**Mode Selection**	**1 byte**	**CRT**

This object keeps the active HVAC state that can be toggled through press events.

Note: There can be up to 4 different HVAC states(comfort, standby, economy, building protection) selected and each press event toggles through the HVAC states that are set as available in the Parameters List.

DPT: 20.102 (HVAC mode)

4, 9, 14, 19, 24, 29	**Input X: Mode Selection**	**HVAC-Mode State**	**1 byte**	**CW**

This object takes the HVAC state changed via the bus.

Note: Whenever this object is updated from the bus, the HVAC state that this object holds will be considered as the valid HVAC state and press events will act as if the last HVAC state is what this object is updated with.

DPT: 20.102 (HVAC mode)

3, 8, 13, 18, 23, 28	**Input X: Command Sequence**	**Sequence**	**1 bit / 1 byte**	**CRT**

This object keeps the current command that can be toggled through press events. Used for “Single Object” parameter selection.

Note: Each state (State A, B, C, D) holds a different value with adjustable data length. Each press event puts the next available state’s data to the “Sequence” object.

DPT: According to parameter selection

3, 8, 13, 18, 23, 28	**Input X: Command Sequence**	**Sequence A**	**1 bit / 1 byte**	**CRT**

This object keeps the current command that can be toggled through press events. Used for “Multiple Object” parameter selection.

Note: Each object (Object A, B, C, D) holds a different value with adjustable data length. Each press event puts the next available state’s data to the “Sequence X” object and whichever object is holds the current state is sent to bus with its data.

DPT: According to parameter selection

4, 9, 14, 19, 24, 29	**Input X: Command Sequence**	**Sequence B**	**1 bit / 1 byte**	**CRT**

This object keeps the current command that can be toggled through press events. Used for “Multiple Object” parameter selection.

Note: Each object (Object A, B, C, D) holds a different value with adjustable data length. Each press event puts the next available state’s data to the “Sequence X” object and whichever object is holds the current state is sent to bus with its data.

DPT: According to parameter selection

5, 10, 15, 20, 25, 30	**Input X: Command Sequence**	**Sequence C**	**1 bit / 1 byte**	**CRT**

This object keeps the current command that can be toggled through press events. Used for “Multiple Object” parameter selection.

Note: Each object (Object A, B, C, D) holds a different value with adjustable data length. Each press event puts the next available state’s data to the “Sequence X” object and whichever object is holds the current state is sent to bus with its data.

DPT: According to parameter selection

6, 11, 16, 21, 26, 31	**Input X: Command Sequence**	**Sequence D**	**1 bit / 1 byte**	**CRT**

This object keeps the current command that can be toggled through press events. Used for “Multiple Object” parameter selection.

Note: Each object (Object A, B, C, D) holds a different value with adjustable data length. Each press event puts the next available state’s data to the “Sequence X” object and whichever object is holds the current state is sent to bus with its data.

DPT: According to parameter selection

3, 8, 13, 18, 23, 28	**Input X: Counter**	**Counter Value**	**1 byte / 2 bytes/ 4 bytes**	**CRT**

This object keeps the current value of the press counter.

DPT: According to parameter selection

4, 9, 14, 19, 24, 29	**Input X: Counter**	**Reset Counter**	**1 bit**	**CRWT**

This object is used to reset the counter value to preset start value that can be set from Parameters List.

DPT: According to parameter selection

5, 10, 15, 20, 25, 30	**Input X: Counter**	**Overflow Value**	**1 bit / 1 byte**	**CRWT**

This object is sent to bus with the preset value from the Parameters List when the counter value exceeds the preset end value of the counter.

DPT: 1.001 (switch) / 5.010 (counter pulses(0…255))

3, 8, 13, 18, 23, 28	**Input X: RGBW control**	**Red colour / Percent Value (RGBW)**	**1 byte / 6 bytes**	**CRT / CT**

If the “object type” is set to “1 object”, this object keeps the 6-Byte RGBW value, but, if the “object type” is set to “4 objects”, this object keeps the 1-Byte Red value of the RGBW.

DPT: 5.010 (counter pulses(0…255)) / 251.600 (RGBW value 4x(0..100%))

4, 9, 14, 19, 24, 29	**Input X: RGBW control**	**Green colour**	**1 byte**	**CT**

If the “object type” is set to “4 objects”, this object keeps the 1-Byte Green value of the RGBW.

DPT: 5.010 (counter pulses(0…255))

5, 10, 15, 20, 25, 30	**Input X: RGBW control**	**Blue colour**	**1 byte**	**CT**

If the “object type” is set to “4 objects”, this object keeps the 1-Byte Blue value of the RGBW.

DPT: 5.010 (counter pulses(0…255))

6, 11, 16, 21, 26, 31	**Input X: RGBW control**	**White colour**	**1 byte**	**CRT**

If the “object type” is set to “4 objects”, this object keeps the 1-Byte Green value of the RGBW.

DPT: 5.010 (counter pulses(0…255))

3, 8, 13, 18, 23, 28	**Input X - Analog**	**Temperature**	**2 byte**	**CRT**

This object is the object used to send the temperature data read from the temperature probe plugged into the Input 3 port, located physically on the back of the device, to the KNX line.

DPT: 9.001 (temperature (°C))

4, 9, 14, 19, 24, 29	**Input X - Analog**	**Alarm**	**1 bit**	**CRWT**

This object is used to send the additional probe alarm when the probe is short/ open circuit.
Note: Temperature sensor calibration is required for the measurements to be healthier and more accurate.
DPT: 1.005 (alarm)

4.3. Temperature

This section contains information about KNX objects and their properties related to the temperature channel. The types, flags and properties of the objects are explained in detail below.

X: 1...6

Object No	Object Name	Function	Type	Flags
32, 35, 38, 41, 44, 47	**Temperature X**	**Alarm**	**1 bit**	**CRT**

This object is used to send the alarm temperature value calculated by the Binary/Analog Input Module to the KNX bus line. Also, temperature measuring sources (internal, external and KNX) can be configured via ETS parameters.

Note: Temperature sensor calibration is required for the measurements to be healthier and more accurate.

DPT: 1.005 (alarm)

33, 36, 39, 42, 45, 48	**Temperature X**	**Actual Temperature**	**2 bytes**	**CRT**

This object is used to send the actual temperature value calculated by the Binary/Analog Input Module to the KNX bus line. Depending on the parameter configuration, the measured data can be sent to the bus line periodically or according to the amount of change. Also, temperature measuring sources can be configured via ETS parameters.

Note: Temperature sensor calibration is required for the measurements to be healthier and more accurate.

DPT: 9.001 (temperature (°C)

34, 37, 40, 43, 46, 49	**Temperature X**	**KNX Probe Temperature**	**2 bytes**	**CW**

This object is used to receive the temperature value from the KNX bus line. This value can be used as a single temperature source or mixing part for the temperature calculation by the Binary/Analog Input Module.

DPT: 9.001 (temperature (°C)

4.4. Room Controller – Thremostat

In this section, Thermostat objects are described in the table below. In the first column name of the object, in the second column function name, the third column data type and fourth column the objects flags, information is given.

X: 1…6

Object No	Object Name	Function	Type	Flags
50, 121, 192, 263, 334, 405	**Thermostat X**	**Thermostat Disabling**	**2 byte**	**CW**

This object is used to set the Binary/Analog Input Module thermostat status. “Enabled” or “Disabled” telegram is received via this object.
For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the Binary/Analog Input Module thermostat will continue working.
*This object is used as feedback object in thermostat slave mode.
DPT: 1.003 (enable)

51, 122, 193, 264, 335, 406	**Thermostat X**	**Thermostat Status**	**2 byte**	**CWT**

This object is used to watch thermostat status. “Enabled” or “Disabled” telegram is transmitted to KNX bus via this object when thermostat status is changed over device.

*This object is used as input object in thermostat slave mode.

DPT: 1.003 (enable)

54, 125, 196, 267, 338, 409	**Thermostat X**	**Thermostat Operation Mode**	**1 byte**	**CW/CRT**

This object switches over the operating modes with a 1-byte value.

*This object is used as feedback object in thermostat slave mode.

DPT: 20.102 (HVAC mode)

55, 126, 197, 268, 339, 410	**Thermostat X**	**Thermostat Operation Mode Forced**	**1 byte**	**CW**

This object is used to set operation mode of thermostat. Its priority is highest including thermostat energy saving functions except window contact and the mode cannot be changed until “Auto” is received via this object. If “Auto” is received, the operation mode is back the HVAC mode that before enter the forced operation mode.

DPT: 20.102 (HVAC mode)

56, 127, 198, 269, 340, 411	**Thermostat X**	**Thermostat Operation Mode Status**	**1 byte**	**CRT**

This object indicates the status of the operating mode with a 1-byte value.

*This object is used as input object in thermostat slave mode.
DPT: 20.102 (HVAC mode)

57, 128, 199, 270, 341, 412	**Thermostat X**	**Operation Mode [Comfort]**	**1 bit**	**CRW**

The Comfort mode activation command is sent via this object. If “On” telegram is received via this object, operation mode is changed as Comfort. If active operation mode is Comfort and “Off” telegram is received via this object, the operating mode is changed as Auto. If weekly program isn’t active, the operating mode isn’t changed and keep current state.

DPT: 1.001 (switch)

58, 129, 200, 271, 342, 413	**Thermostat X**	**Operation Mode [Standby]**	**1 bit**	**CRW**

The Standby mode activation command is sent via this object. If “On” telegram is received via this object, operation mode is changed as Standby. If active operation mode is Standby and “Off” telegram is received via this object, the operating mode is changed as Auto. If weekly program isn’t active, the operating mode isn’t changed and keep current state.

DPT: 1.001 (switch)

59, 130, 201, 272, 343, 414	**Thermostat X**	**Operation Mode [Economy]**	**1 bit**	**CRW**

The Economy mode activation command is sent via this object. If “On” telegram is received via this object, operation mode is changed as Economy. If active operation mode is Economy and “Off” telegram is received via this object, the operating mode is changed as Auto. If weekly program isn’t active, the operating mode isn’t changed and keep current state.

DPT: 1.001 (switch)

60, 131, 202, 273, 344, 415	**Thermostat X**	**Operation Mode [Protection]**	**1 bit**	**CRW**

The Protection mode activation command is sent via this object. If “On” telegram is received via this object, operation mode is changed as Protection. If active operation mode is Protection and “Off” telegram is received via this object, the operating mode is changed as Auto. If weekly program isn’t active, the operating mode isn’t changed and keep current state.

DPT: 1.001 (switch)

61, 132, 203, 274, 345, 416	**Thermostat X**	**Thermostat Heating/Cooling Switchover**	**1 bit**	**CW/CRT**

This object is used to change over the heating/cooling modes.

*This object is used as feedback object in thermostat slave mode.

DPT: 1.100 (cooling/heating)

62, 133, 204, 275, 346, 417	**Thermostat X**	**Thermostat Heating/Cooling Status**	**1 bit**	**CRT**

Heating/cooling status information is indicated via this object.

*This object is used as input object in thermostat slave mode.

DPT: 1.100 (cooling/heating)

62, 133, 204, 275, 346, 417	**Thermostat X**	**Thermostat Heating/Cooling Feedback**	**1 bit**	**CW**

Heating/cooling status information is indicated via this object.

*This object is used as input object in thermostat slave mode.

DPT: 1.100 (cooling/heating)

63, 134, 205, 276, 347, 418	**Thermostat X**	**Thermostat Heating Control Disabling**	**1 bit**	**CW**

This object activates or deactivates the heating system.

DPT: 1.001 (switch)

64, 135, 206, 277, 348, 419	**Thermostat X**	**Thermostat Heating Control Running**	**1 bit**	**CW/CRT**

This object is used to inform about the heating control. If the heating control is active and the control value is higher than zero, ON telegram is transmitted to KNX bus. If the heating control is not active and the control value is zero, OFF telegram is transmitted to KNX bus.

*This object is used as input object in thermostat slave mode.

DPT: 1.001 (switch)

65, 136, 207, 278, 349, 420	**Thermostat X**	**Thermostat Heating Value**	**1 bit/ 1 byte**	**CRT**

The output value of thermostat control is transmitted via the object.

DPT: 1.001 (switch) / 5.001 (scaling)

65, 136, 207, 278, 349, 420	**Thermostat X**	**Thermostat Heating/Cooling Value**	**1 bit/ 1 byte**	**CRT**

The output value of thermostat control is transmitted via the object.

DPT: 1.001 (switch) / 5.001 (scaling)

66, 137, 208, 279, 350, 421	**Thermostat X**	**Thermostat Heating Value Request**	**1 bit**	**CW**

This object is used to get the output value of heating controller. If “Acknowledge command” telegram is received via this object, current value of the heating controller is transmitted to KNX bus.

DPT: 1.016 (acknowledge)

66, 137, 208, 279, 350, 421	**Thermostat X**	**Thermostat Heating/Cooling Value Request**	**1 bit**	**CW**

This object is used to get the output value of heating controller. If “Acknowledge command” telegram is received via this object, current value of the heating controller is transmitted to KNX bus.

DPT: 1.016 (acknowledge)

67, 138, 209, 280, 351, 422	**Thermostat X**	**Thermostat Cooling Control Disabling**	**1 bit**	**CW**

This object activates or deactivates the cooling system.

DPT: 1.003 (enable)

68, 139, 210, 281, 352, 423	**Thermostat X**	**Thermostat Cooling Control Running**	**1 bit**	**CW/CRT**

This object is used to inform about the cooling control. If the cooling control is active and the control value is higher than zero, ON telegram is transmitted to KNX bus. If the cooling control is not active and the control value is zero, OFF telegram is transmitted to KNX bus.

*This object is used as input object in thermostat slave mode.

DPT: 1.002 (boolean)

69, 140, 211, 282, 353, 424	**Thermostat X**	**Thermostat Cooling Value**	**1 bit / 1 byte**	**CRT**

The output value of thermostat cooling control is transmitted via the object.

DPT: 1.001 (switch) / 5.004 (percentage (0...255%))

70, 141, 212, 283, 354, 425	**Thermostat X**	**Thermostat Cooling Value Request**	**1 bit**	**CW**

This object is used to get the output value of cooling controller. If “Trigger” telegram is received via this object, current value of the heating controller is transmitted to KNX bus.

DPT: 1.016 (acknowledge)

71, 142, 213, 284, 355, 426	**Thermostat X**	**Thermostat Additional Heating Control Disabling**	**1 bit**	**CW**

This object activates or deactivates the additional heating system.

DPT: 1.001 (switch)

72, 143, 214, 285, 356, 427	**Thermostat X**	**Thermostat Additional Heating Control Running**	**1 bit**	**CRT**

This object is used to inform about the additional heating control. If the additional heating control is active and the control value is higher than zero, ON telegram is transmitted to KNX bus. If the additional heating control is not active and the control value is zero, OFF telegram is transmitted to KNX bus.

DPT: 1.001 (switch)

73, 144, 215, 286, 357, 428	**Thermostat X**	**Thermostat Additional Heating Value**	**1 bit / 1byte**	**CRT**

The output value of thermostat additional heating control is transmitted via the object.

DPT: 1.001 (switch) / 5.001 (percentage)

74, 145, 216, 287, 358, 429	**Thermostat X**	**Thermostat Additional Heating Value Request**	**1 bit**	**CW**

This object is used to get the output value of additional heating controller. If “Trigger” telegram is received via this object, current value of the heating controller is transmitted to KNX bus.

DPT: 1.016 (acknowledge)

75, 146, 217, 288, 359, 430	**Thermostat X**	**Thermostat Additional Cooling Control Disabling**	**1 bit**	**CW**

This object activates or deactivates the additional cooling system.

DPT: 1.003 (enable)

76, 147, 218, 289, 360, 431	**Thermostat X**	**Thermostat Additional Cooling Control Running**	**1 bit**	**CRT**

This object is used to inform about the additional cooling control. If the additional cooling control is active and the control value is higher than zero, ON telegram is transmitted to KNX bus. If the additional cooling control is not active and the control value is zero, OFF telegram is transmitted to KNX bus.

DPT: 1.003 (enable)

77, 148, 219, 290, 361, 432	**Thermostat X**	**Thermostat Additional Cooling Value**	**1 bit/1 byte**	**CRT**

The output value of thermostat additional cooling control is transmitted via the object.

DPT: 1.001 (switch) / 5.004 (percentage (0...255%))

78, 149, 220, 291, 362, 433	**Thermostat X**	**Thermostat Additional Cooling Value Request**	**1 bit/1 byte**	**CRT**

This object is used to get the output value of additional cooling controller. If “Trigger” telegram is received via this object, current value of the heating controller is transmitted to KNX bus.

DPT: 1.016 (acknowledge)

79, 150, 221, 292, 363, 434	**Thermostat X**	**Room Temperature Input (C) - Room Temperature Input (F)**	**1 bit**	**CRT / CW***

This object is used to inform about the temperature value that room controller uses.

*This object is used as input object if thermostat temperature source is selected as “Temperature object”.

DPT: 9.001 (temperature (°C)) / 9.027 (temperature difference (K))

80, 151, 222, 293, 364, 435	**Thermostat X**	**Actual Setpoint Output**	**2 bytes**	**CRT / CW***

The pre-configured setpoint temperature is obtained with this object.

*This object is used as input object in thermostat slave mode.

DPT: According to parameter selection

81, 152, 223, 294, 365, 436	**Thermostat X**	**Manual Setpoint Input**	**2 byte**	**CW/CRT**

The setpoint temperature is configured manually with this object. If HVAC mode is Build Protection, the setpoint can't be changed via this object.

If the difference between the active setpoint and received value is higher than the "Manual setpoint range" parameter, Manual Setpoint value is set maximum or minimum limit value according to "Manual setpoint range" parameter.

*This object is used as feedback object in thermostat slave mode.

DPT: According to parameter selection

82, 153, 224, 295, 366, 437	**Thermostat X**	**Manual Setpoint Reset**	**1 bit**	**CW**

The setpoint temperature that is desired to configure manually can be reset with this object.

DPT: 1.015 (reset)

83, 154, 225, 296, 367, 438	**Thermostat X**	**Heating Comfort Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for heating comfort mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

84, 155, 226, 297, 368, 439	**Thermostat X**	**Heating Standby Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for heating standby mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

85, 156, 227, 298, 369, 440	**Thermostat X**	**Heating Economy Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for heating economy mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

86, 157, 228, 299, 370, 441	**Thermostat X**	**Heating Protection Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for heating protection mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

87, 158, 229, 300, 371, 442	**Thermostat X**	**Cooling Comfort Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for cooling comfort mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

88, 159, 230, 301, 372, 443	**Thermostat X**	**Cooling Standby Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for cooling standby mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

89, 160, 231, 302, 373, 444	**Thermostat X**	**Cooling Economy Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for cooling economy mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

90, 161, 232, 303, 374, 445	**Thermostat X**	**Cooling Protection Setpoint Temperature**	**2 byte**	**CW**

The setpoint temperature value for cooling protection mode is configured with this object.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

91, 162, 233, 304, 375, 446	**Thermostat X**	**Fan Controller Disable**	**1 bit**	**CW**

This object is used to set the 6 Chanel Thermostat Binary fan controller status. “Enabled” or “Disabled” telegram is received via this object.

For example, it will be disabled when an “Enabled” telegram is received from the KNX bus line, and when a “Disabled” telegram is received, the 6 Chanel Thermostat Binary fan controller will continue working.

*This object is used as feedback object in thermostat slave mode.

DPT: 1.003 (enable)

92, 163, 234, 305, 376, 447	**Thermostat X**	**Fan Controller Status**	**1 bit**	**CRT**

This object is used to watch fan controller status. “Enabled” or “Disabled” telegram is transmitted to KNX bus via this object when fan controller status is changed over device.

DPT: 1.003 (enable)

93, 164, 235, 306, 377, 448	**Thermostat X**	**Fan Controller Working Mode**	**1 bit**	**CW**

This object is used to switch over to automatic or manual fan speed control mode.

DPT: 1.001 (switch)

94, 165, 236, 307, 378, 449	**Thermostat X**	**Fan Controller Working Mode Status**	**1 bit**	**CRT**

This object indicates the manual / automatic fan operating mode with 1 bit value.

DPT: 1.001 (switch)

95, 166, 237, 308, 379, 450	**Thermostat X**	**Fan Controller Proportional Output**	**1 byte**	**CRT**

This object is used to send the output value of the fan proportional controller.

DPT: 5.001 (percentage (0...100%))

96, 167, 238, 309, 380, 451	**Thermostat X**	**Fan Controller Manual Step**	**1 bit**	**CW**

This object is used to increase or decrease the fan speed

DPT: 1.007 (step)

96, 167, 238, 309, 380, 451	**Thermostat X**	**Fan Controller Manual Up/Down**	**1 bit**	**CW**

This object is used to increase or decrease the fan speed

DPT: 1.008 (up/down)

97, 168, 239, 310, 381, 452	**Thermostat X**	**Fan Controller Manual Stage**	**1 byte**	**CW**

This object allows the manual fan speed to be controlled with 1-byte value.

DPT: 5.100 (fan stage (0...255))

98, 169, 240, 311, 382, 453	**Thermostat X**	**Fan Controller Speed (1 byte)**	**1 bit/ 1 byte**	**CRT**

This object allows the manual fan speed to be controlled with 1-byte value.

DPT: 5.001 (percentage (0…100%), 5.100 (fan stage (0...255))

99, 170, 241, 312, 383, 454	**Thermostat X**	**Fan Controller Speed Feedback Input (1 byte)**	**1 bit/ 1 byte**	**CWU**

This object waits the fan speed feedback with a 1-byte value.

DPT: 5.001 (percentage (0...100%))

100, 171, 242, 313, 384, 455	**Thermostat X**	**Fan Level 1**	**1 bit**	**CRT**

This object indicates the Fan Level 1 value with a 1-bit value.

DPT: 1.001 (switch)

101, 172, 243, 314, 385, 456	**Thermostat X**	**Fan Level 2**	**1 bit**	**CRT**

This object indicates the Fan Level 2 value with a 1-bit value.

DPT: 1.001 (switch)

102, 173, 244, 315, 386, 457	**Thermostat X**	**Fan Level 3**	**1 bit**	**CRT**

This object indicates the Fan Level 3 value with a 1-bit value.

DPT: 1.001 (switch)

103, 174, 245, 316, 387, 458	**Thermostat X**	**Fan Level 4**	**1 bit**	**CRT**

This object indicates the Fan Level 4 value with a 1-bit value.

DPT: 1.001 (switch)

104, 175, 246, 317, 388, 459	**Thermostat X**	**Fan Level 5**	**1 bit**	**CRT**

This object indicates the Fan Level 5 value with a 1-bit value.

DPT: 1.001 (switch)

105, 176, 247, 318, 389, 460	**Thermostat X**	**Fan Level 1 Feedback Input**	**1 bit**	**CWU**

This object indicates the Fan Level 1 status with a 1-bit value.

DPT: 1.001 (switch)

106, 177, 248, 319, 390, 461	**Thermostat X**	**Fan Level 2 Feedback Input**	**1 bit**	**CWU**

This object indicates the Fan Level 2 status with a 1-bit value.

DPT: 1.001 (switch)

107, 178, 249, 320, 391, 462	**Thermostat X**	**Fan Level 3 Feedback Input**	**1 bit**	**CWU**

This object indicates the Fan Level 3 status with a 1-bit value.

DPT: 1.001 (switch)

108, 179, 250, 321, 392, 463	**Thermostat**	**Fan Level 4 Feedback Input**	**1 bit**	**CWU**

This object indicates the Fan Level 4 status with a 1-bit value.

DPT: 1.001 (switch)

109, 180, 251, 322, 393, 464	**Thermostat X**	**Fan Level 5 Feedback Input**	**1 bit**	**CWU**

This object indicates the Fan Level 5 status with a 1-bit value.

DPT: 1.001 (switch)

116, 187, 258, 329, 400, 471	**Thermostat X**	**Temperature Limit Heating Source**	**2 byte**	**CW**

This group object receives the limit temperature for heating stage. The temperature value received here is used to evaluate the limit temperature. The limit becomes active when the temperature set in the parameter is exceeded.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

117, 188, 259, 330, 401, 472	**Thermostat X**	**Temperature Limit Cooling Source**	**2 byte**	**CW**

This group object receives the limit temperature for cooling stage. The temperature value received here is used to evaluate the limit temperature. The limit becomes active when the temperature set in the parameter is fallen below.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

118, 189, 260, 331, 402, 473	**Thermostat X**	**Temperature Limit Additional Heating Source**	**2 byte**	**CW**

This group object receives the limit temperature for additional heating stage. The temperature value received here is used to evaluate the limit temperature. The limit becomes active when the temperature set in the parameter is exceeded.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

119, 190, 261, 332, 403, 474	**Thermostat X**	**Temperature Limit Additional Cooling Source**	**2 byte**	**CW**

This group object receives the limit temperature for additional cooling stage. The temperature value received here is used to evaluate the limit temperature. The limit becomes active when the temperature set in the parameter is exceeded.

DPT: 9.001 (temperature (°C)) / DPT: 9.027 (temperature (°F))

120, 191, 262, 333, 404, 475	**Thermostat X**	**Time**	**3 byte**	**CW**

This object is used to set date and time. Date and time are used thermostat weekly program. If weekly program is active but any telegram hasn't received over "Time" object yet, the weekly program doesn't run.
DPT: 10.001 (time of day)

4.5. Logic Function

This section contains information about KNX objects and their properties related to the logic function channels. The types, flags and properties of the objects are explained in detail below. There are 6 identical logic channels in the 6 Binary/Analog Input Module with 6 Thermostat, so only one logical channel is described here. The X values can be between 1…2 and Y values also can be 1…5. Please do not forget to take this into account.

Object No	Object Name	Function	Type	Flags
476, 504	**Logic X:**	**Lock function**	**1 bit**	**CW**
This object is used to lock the related logic channel x. It becomes visible when the "use logic lock" parameter is set to yes. Depending on the parameter setting, when an ON or OFF telegram is sent to this object, the corresponding logical channel is locked. For example, when "ON telegram" is selected in the parameter page for locking, it will be locked when an ON telegram is received from the KNX bus line, and when an OFF telegram is received, the logic channel will be unlocked. DPT: 1.003 (enable)				
477, 505	**Logic X:**	**Feedback of block**	**1 bit**	**CRT**
This object is used to send feedback on the lock status for the related logic channel x. It becomes visible when the "use logic lock" parameter is set to yes. If a status change occurs on the lock function, the changed status value will be sent from this object. DPT: 1.001 (switch)				
478, 506	**Logic X: Input**	**External movement**	**1 bit**	**CW**
This object is used to receive movement information from the KNX bus line. According to the ETS parameter configuration, the ‘0’ or ‘1’ value is accounted as there is a movement detection occurs. DPT: 1.001 (switch)				
479, 507	**Logic X: Input**	**External brightness**	**2 bytes**	**CWTU**
This object is used to obtain a brightness value from the KNX bus line. The received brightness value will be used to evaluate the input status according to the brightness thresholds. DPT: 9.004 (lux)				

480, 508	Logic X: Input	Brightness threshold lower	2 bytes	CWTU

This object is used to receive the brightness threshold lower value from the KNX bus line. The value read on this object is will be used as a new brightness threshold lower value. This object becomes visible when the "Change brightness threshold via bus" parameter is set to yes

Note: The values which can be sent are between 1-1200 lux. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value.

DPT: 9.004 (lux)

481, 509	Logic X: Input	Brightness threshold Upper	2 bytes	CWTU

This object is used to receive the brightness threshold upper value from the KNX bus line. The value read on this object is will be used as a new brightness threshold upper value. This object becomes visible when the "Change brightness threshold via bus" parameter is set to yes

Note: The values which can be sent are between 1-1200 lux. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value.

DPT: 9.004 (lux)

482, 510	Logic X: Input	External temperature	2 bytes	CW

This object is used to obtain temperature values from the KNX bus line. The received temperature value will be used to evaluate the input status according to the temperature thresholds.

DPT: 9.001 (temperature (°C))

483, 511	Logic X: Input	Temperature threshold lower	2 bytes	CWTU

This object is used to receive the temperature threshold lower value from the KNX bus line. The value read on this object is will be used as a new temperature threshold lower value. This object becomes visible when the "Change temperature via bus" parameter is set to yes

Note: The values which can be sent are between **-30 ˚C - 70 ˚C**. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value.

DPT: 9.001 (temperature (°C))

484, 512	Logic X: Input	Temperature threshold upper	2 bytes	CWTU

This object is used to receive the temperature threshold upper value from the KNX bus line. The value read on this object is will be used as a new temperature threshold upper value. This object becomes visible when the "Change temperature via bus" parameter is set to yes

Note: The values which can be sent are between -30 ˚C - 70 ˚C. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value.

DPT: 9.001 (temperature (°C))

485, 513	**Logic X: Input**	**External input-1**	**1 bit / 1 byte / 2 bytes/ 4 bytes**	**CWU**

This object is used to obtain external input 1 information from the KNX bus line. According to the ETS parameter configuration, the received values are accounted as TRUE or FALSE for this external input. For 1-bit configuration, there are only '1' or '0' values for calculating the input status. But for other inputs (such as 1 byte, etc.) the received value is compared to the external input value parameter.

DPT: According to parameter selection, DPT changes.

486, 514	**Logic X: Input**	**External input-2**	**1 bit / 1 byte / 2 bytes/ 4 bytes**	**CWTU**

This object is used to obtain external input 2 information from the KNX bus line. According to the ETS parameter configuration, the received values are accounted as TRUE or FALSE for this external input. For 1-bit configuration, there are only '1' or '0' values for calculating the input status. But for other inputs (such as 1 byte, etc.) the received value is compared to the external input value parameter.

DPT: According to parameter selection, DPT changes.

487, 515	**Logic X: Input**	**External input-3**	**1 bit / 1 byte / 2 bytes/ 4 bytes**	**CWU**

This object is used to obtain external input 3 information from the KNX bus line. According to the ETS parameter configuration, the received values are accounted as TRUE or FALSE for this external input. For 1-bit configuration, there are only '1' or '0' values for calculating the input status. But for other inputs (such as 1 byte, etc.) the received value is compared to the external input value parameter.

DPT: According to parameter selection, DPT changes.

488, 516	**Logic X: Output**	**Result status**	**1 bit**	**CT**

This object is used to send the related logic function block's result status to the KNX bus line. According to the ETS parameter configuration, this value can be sent periodically, on change or only configured value(TRUE or FALSE).

DPT: According to parameter selection

489, 517	**Logic X: Output: Y**	**Switching …. Threshold**	**1 bit / 1 byte / 2 bytes/ 14bytes**	**CRT**

This object is used to send the related output object's value to the KNX bus line. When the logic function block's status changes, the sending value also can be configured separately. In addition, according to the output type, the object's value type will be changed.

DPT: 7.005 (time(s))

490, 518	**Logic X: Output: Y**	**Delay time on the TRUE state**	**2 bytes**	**CWTU**

This object is used to receive the 'delay time on TRUE state' value from the KNX bus line. When a new value is received from this object, the received value is used as the output on delay time for the TRUE state value. The configured parameter value will not be used anymore. This object becomes visible when the "Change on time via bus" parameter is set to yes

DPT: 7.005 (time(s))

491, 519	**Logic X: Output: Y**	**Delay time on FALSE state**	**2 bytes**	**CWTU**

This object is used to receive the 'delay time on FALSE state' value from the KNX bus line. When a new value is received from this object, the received value is used as the output on delay time for the FALSE state value. The configured parameter value will not be used anymore. This object becomes visible when the "Change on time via bus" parameter is set to yes

DPT: 7.005 (time(s))

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