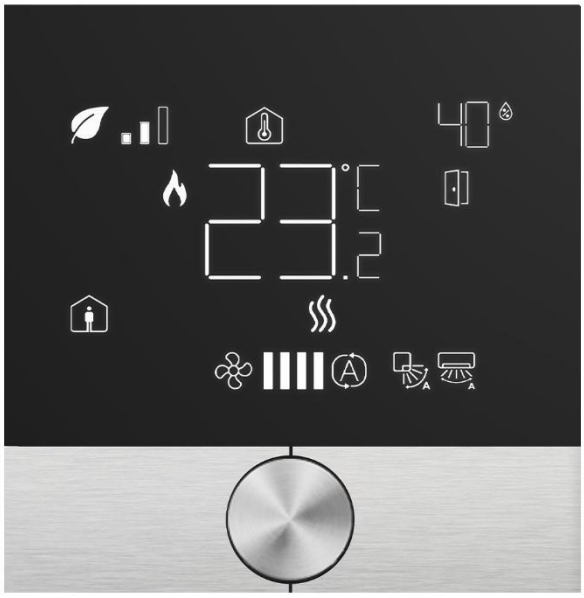
User Manual

Eclipse Thermostat v2



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Product Code: CR-ECT-86-XX-XXX

Table Of Contents

1. Presentation

Many multi-functional thermostats offer a complicated user experience that can be frustrating for users to navigate. However, the Eclipse thermostat is designed with simplicity in mind while still offering powerful control over heating and cooling systems.

Verdant

LARGE SCREEN

CONTROL WİTH KNOB

AIR QUALITY MEASUREMENT

ECLIPSE DESIGN LINE

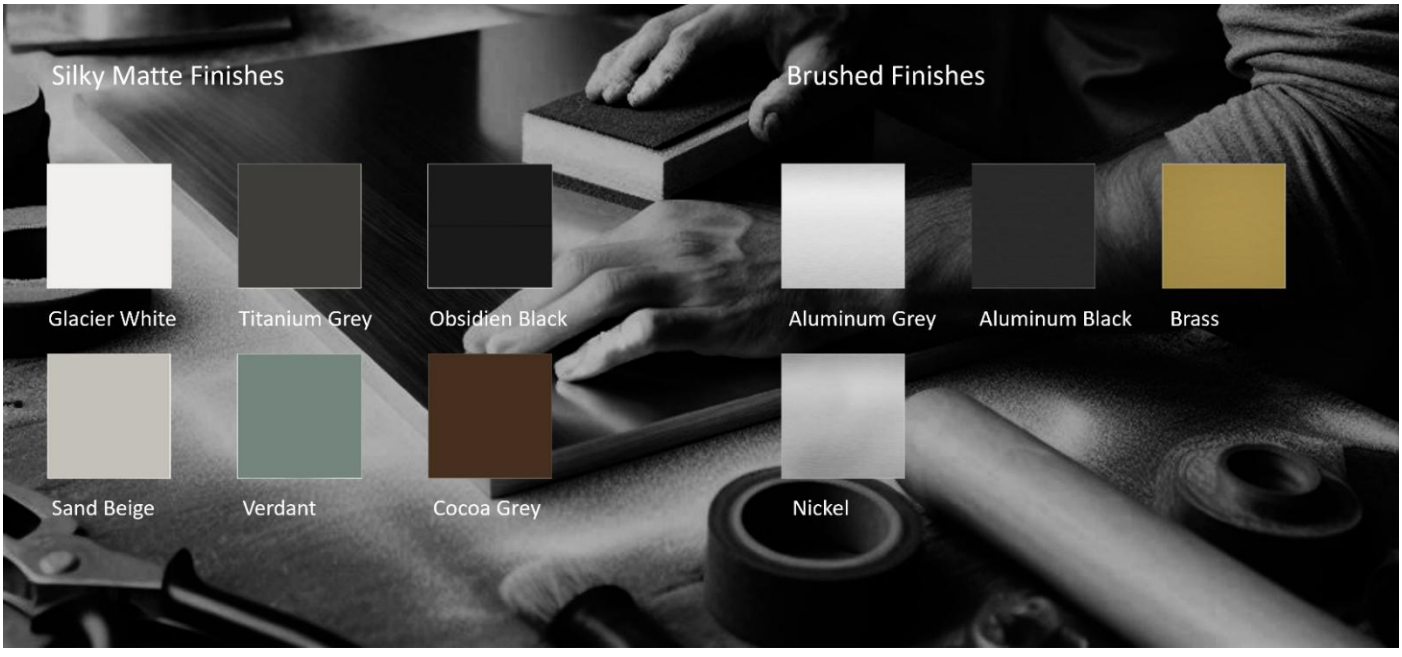
Material and Colour Options

Brushed Finish

Pure form of nickel, brass and aluminium are brushed with perfect craftsmanship to provide satin effect in each touch to the device.

Silky-Matte Finish

Aluminium is painted with unique colours and coated with special techniques to provide silky feeling in each touch to the product.



Ordering Tips:
Use online planner to create an Eclipse Thermostat. https://portal.core.com.tr/

1.1. Main Features

SUPER KNOB

All functions including temperature change is controlled via single Knob. Just rotate Knob to change room temperature or press and rotate to select which function to change.

CONFIGURABLE FUNCTIONS

Eclipse Thermostat has several functions like temperature change, operation mode, operating mode, fan control and AC vane control. Functions are configured via ETS and only functions that configured are displayed in the screen.

DUAL THERMOSTAT

Eclipse Thermostat has dual thermostat feature which makes possible to control 2 individual controls of RTC or/and Air Conditioner.

CUSTOMIZABLE ICONS

There are two backlight icon buttons which can be configured to control any function in the room such as switching or dimming; or can be configured to control thermostat functions.

LARGE DISPLAY

Eclipse Thermostat provides a spacious display that makes it easy for users to read and interpret the temperature and settings.

AIR QUALITY MEASUREMENT

Eclipse Thermostat measures indoor air quality inside the room with its built-in sensor. Air-quality of the room can be checked on thermostat display. Alarm functions can be triggered according to the air-quality level via KNX.

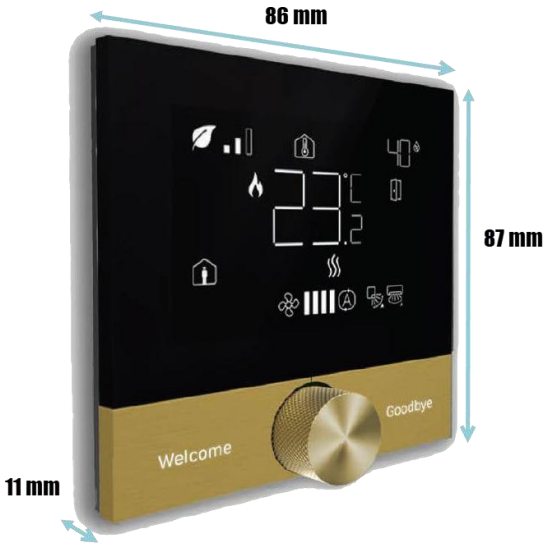
ADAPTIVE BACKLIGHTS

Light sensor measures the ambient light in the room, allowing for automatic adjustment of the backlight brightness. With this advanced feature, the device can be customized to provide the perfect level of brightness for any environment.

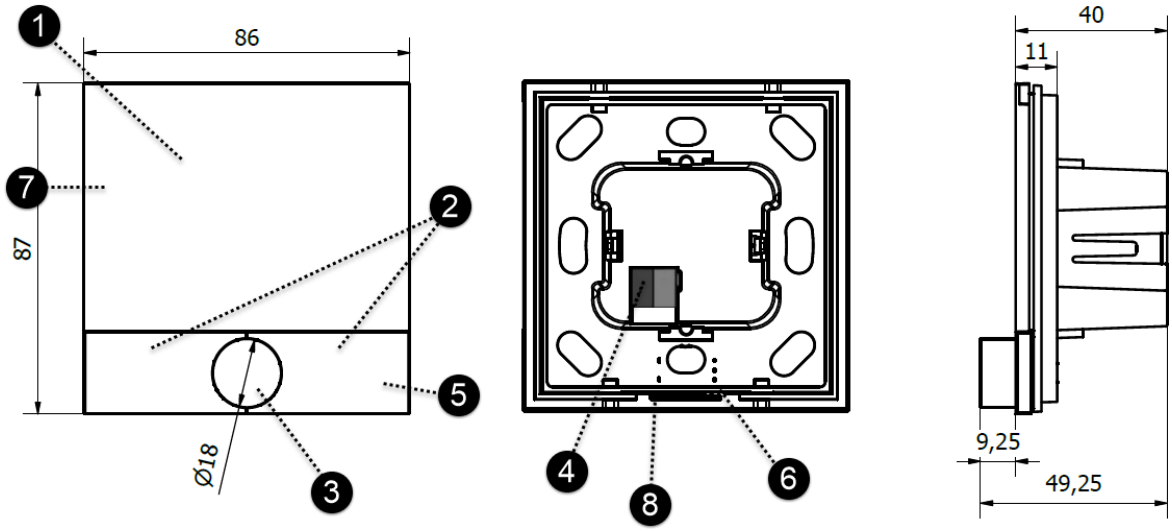
PROXIMITY SENSOR

Proximity sensor senses the approach and backlights of icons are dimmed up to welcome customer in the dark ambient.

1.2. Dimensions

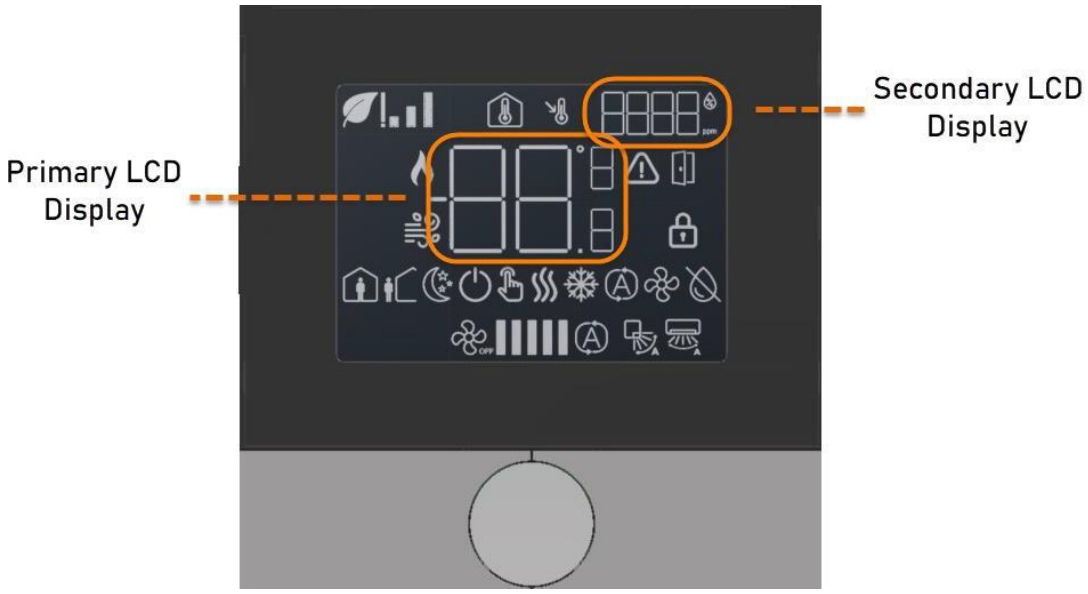


Dimensional drawing (all dimensions are in mm)



1. Display
2. Folds (Sold separately)
3. Super Knob (Sold separately)
4. KNX Connector
5. KNX Programming Button (under the key)
6. Indoor Air Quality Sensor
7. Proximity Sensor
8. Temperature and Humidity Sensor

1.3. Display Overview

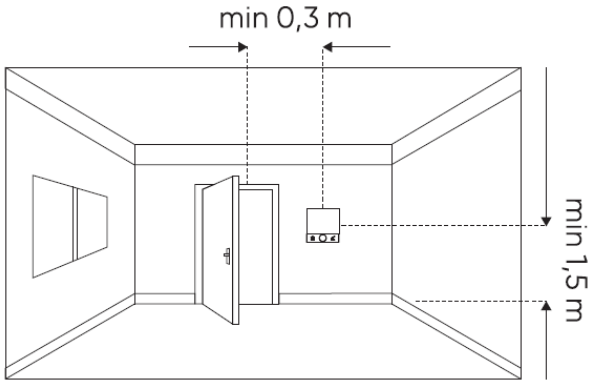


2. Technical Specification

Sensors:	Temperature – Accuracy Rate +/- 0.2°C Humidity – Accuracy Rate +/- 2% Indoor Air Quality Proximity & Light
Dimensions:	86mm X 86mm X 11mm
Fold Thickness:	4mm
Display:	3.5" VA Display
Casing Material:	Aluminium, Brass, Nickel, Copper and Aged Brass depending on the finish selection
Knob Material:	Aluminium, Gold, Brass, Stainless Steel depending on the finish selection
Power:	29 VDC
Consumption:	< 15 mA from KNX Bus-line
Connectivity:	KNX-TP
Programming Tool:	ETS
Installation:	German IEC/EN 60670 In wall Box

2.1. Installation

2.1.1 Installation Site



➢ The device should be positioned approximately 150 cm above the ground and 30 cm away from the door.

➢ The device should not be installed close to the heat source. The wall opposite the heat source will be appropriate for the installation.

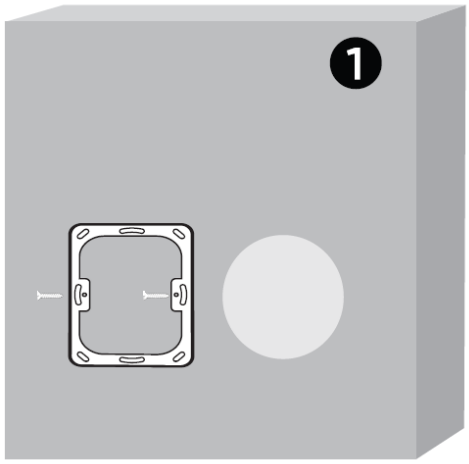
➢ Contact with fluids to the device is to be avoided.

2.1.2. Mounting, Electrical Connection

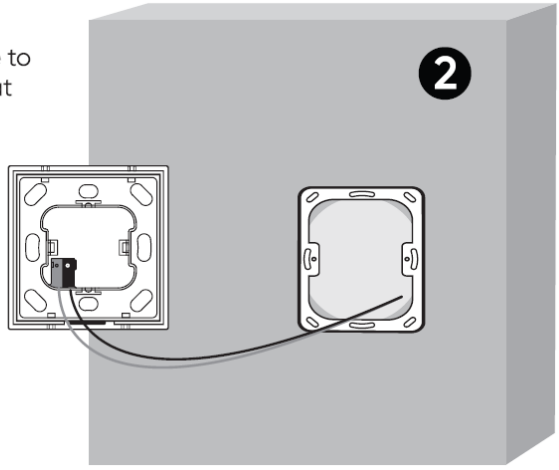
1. Mount the metal mounting support. (Included in the box.)

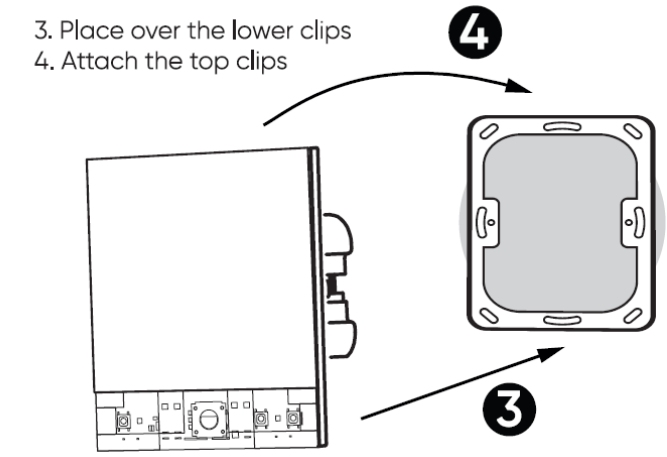
Use screws included in the box (M3x15 mm)

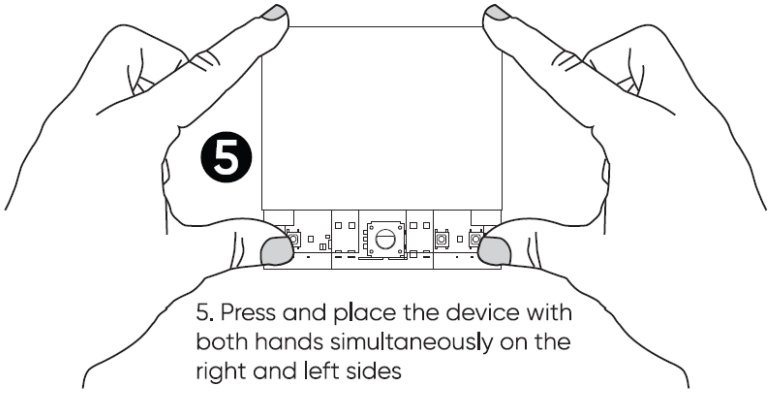
Do not overtighten the screw

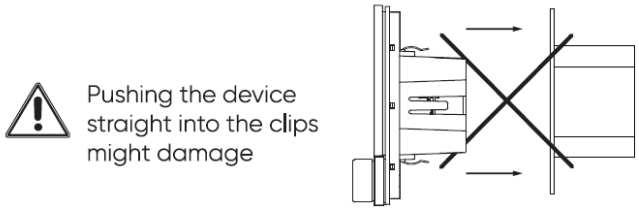


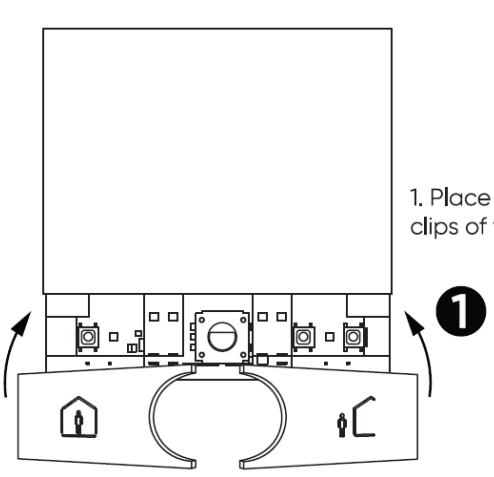
2. Connect KNX cable to the device. Check that polarity is correct.

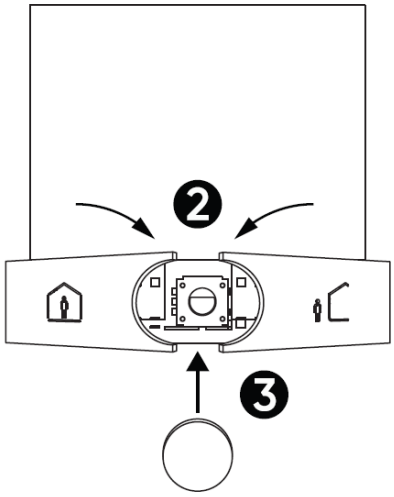












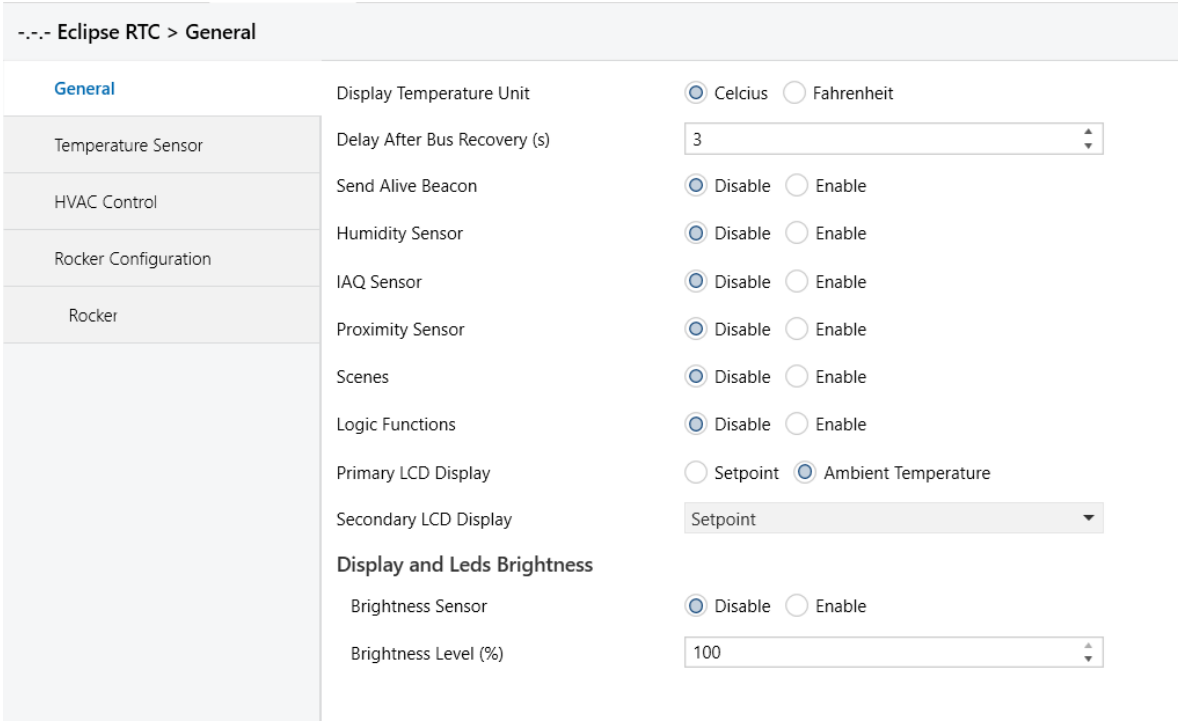
For installation video: https://youtu.be/31ijnYzS6LY

3. ETS Parameters

Eclipse Thermostat must be configured and set up using the standard KNX configuration tool ETS. The ETS database for this device can be downloaded from ETS online catalogue.

For tutorial videos: https://www.youtube.com/playlist?list=PLtwbriT0bxi_AiuOhgyqbsvCJeNRLjLoD

3.1. General



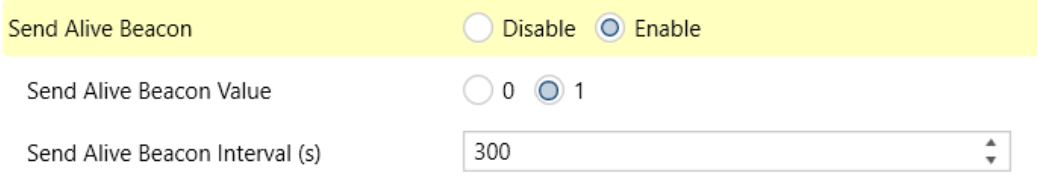
Display Temperature Unit: [**Celsius**, Fahrenheit]

Temperature unit can be selected for the device. Once selected, the device will use your preferred temperature unit for all temperature values displayed on Eclipse Thermostat.

Delay After Bus Voltage Recovery: [1…**10**…255 s]

The parameter defines the behaviour of the device after bus power return. The delay time determines the period between bus voltage recovery and the point after which telegrams can be sent.

Send Alive Beacon: [5…**300**…65535 s]



Parameter used to observe that the device and the application are running. It is disabled by default. When ~~activated, Object Number 1 "Alive Beacon" will send selected value with defined time interval cyclically.~~

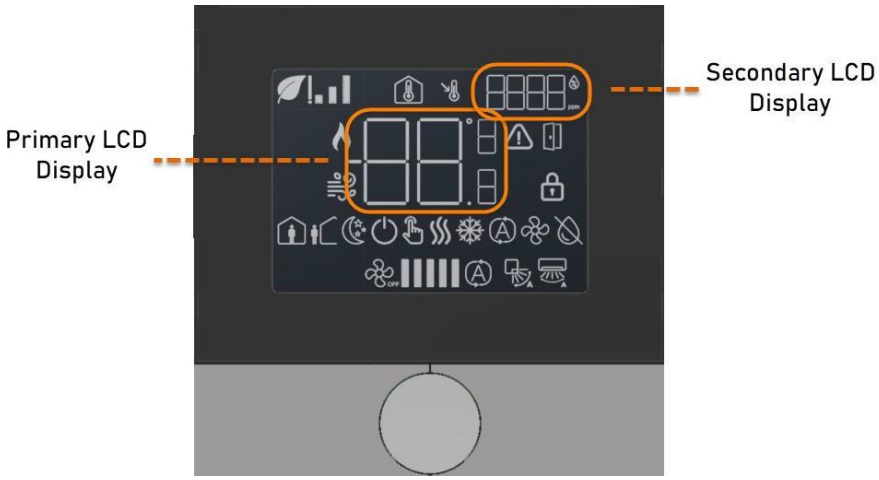


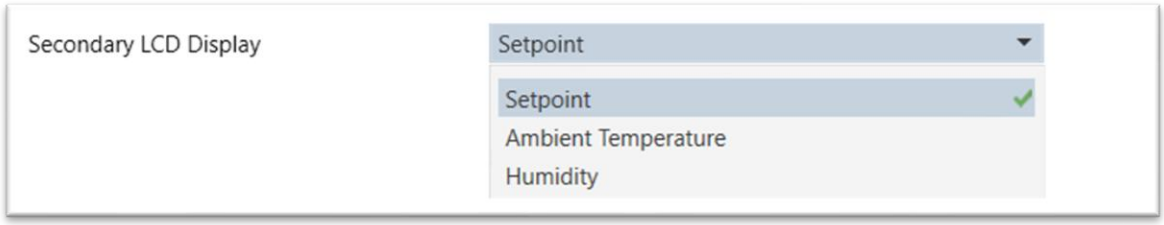
Figure 1 - LCD Display

Primary LCD Display: [Setpoint, **Ambient Temperature**]

Primary LCD display can be set to show "Setpoint temperature" value instead of "Ambient temperature".

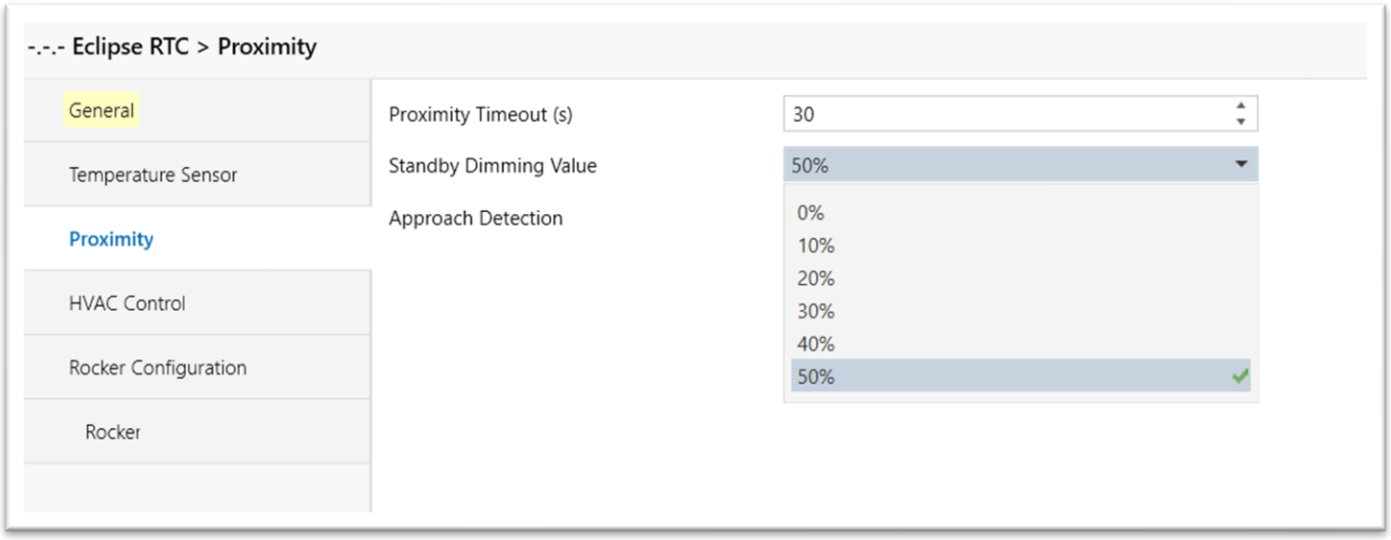
Secondary LCD Display: [**Setpoint**, Ambient Temperature, Humidity]

Secondary LCD display can be set to show following values.

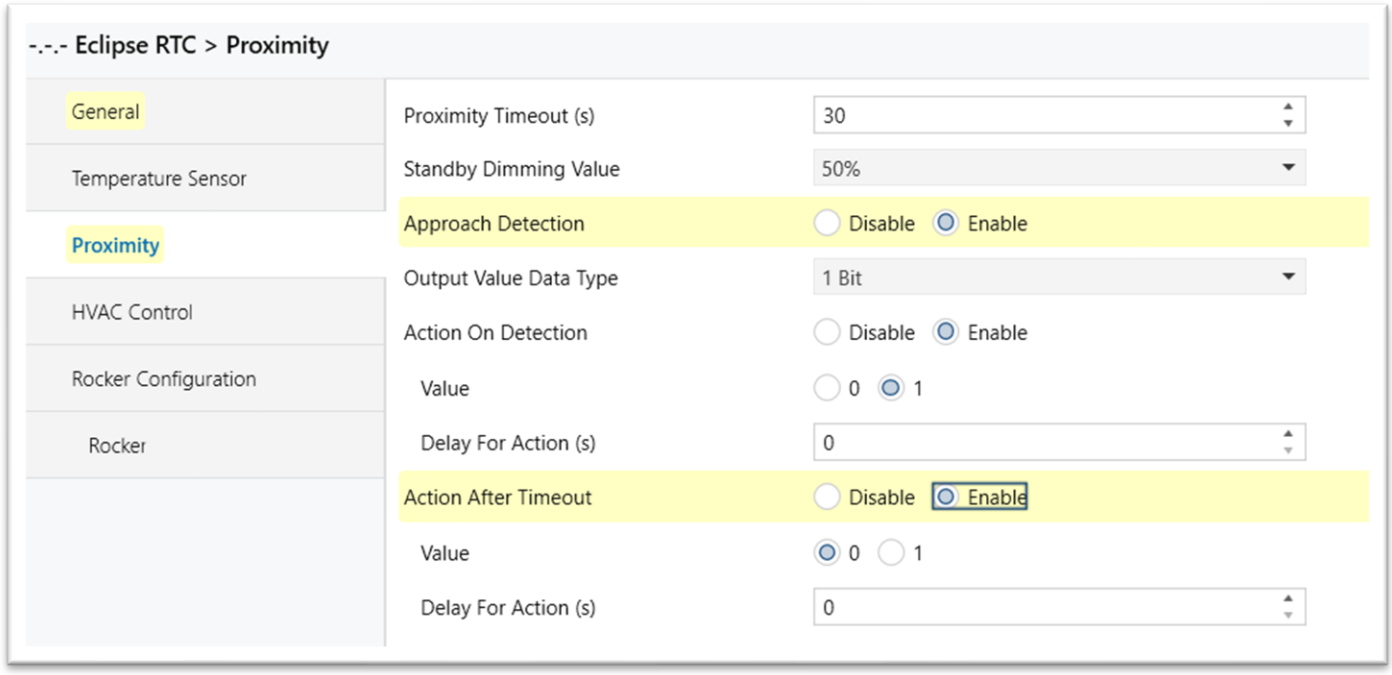


3.1.1 Proximity Sensor

Through the proximity sensor it is possible to keep the Eclipse Thermostat in a stand-by state, setting a level of brightness of the LEDs and the display and reactivate them only when the user approaches to the thermostat.

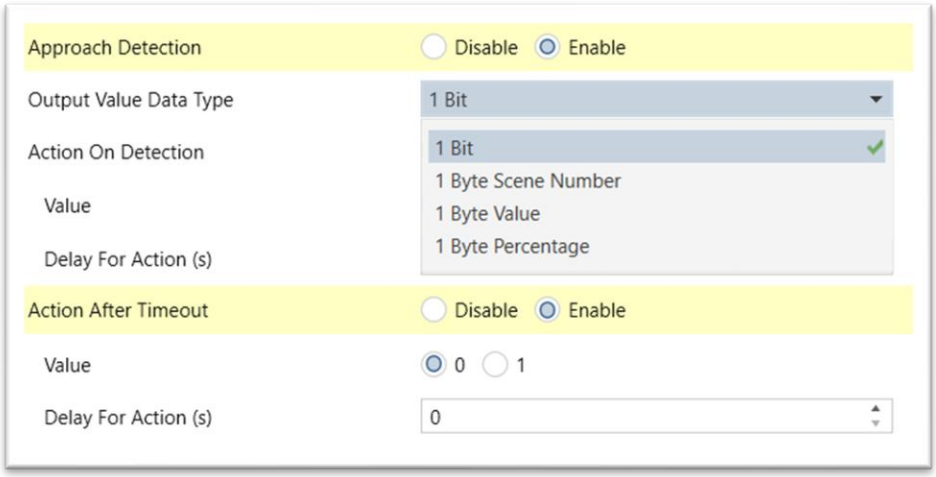


When "Proximity Timeout" is over, [1…**30**…120 s] brightness of LEDs and display will be dimmed to "Standby Dimming Value" until next proximity approach is detected. Stand by dimming value can be selected as follows. [%0, %10, %20, %30, %40 and %50]



Approach Detection: [**Disable**, Enable]

Object "Detection Output" can be activated by enabling "Approach Detection" parameter.



Output data type can be selected 1 Bit or 1 Byte.

Action On Detection:

When enabled, "Detection Output" object will transmit selected value to KNX bus when the user approaches the device. A delay can be set to transmit the value with "Delay For Action" parameter.

Action After Timeout:

When enabled, "Detection Output" object will transmit selected value to KNX bus after proximity timeout expired. A delay can be set to transmit the value with "Delay For Action" parameter.

2	Proximity	Detection Output (Switching)	1 bit	switch	C	-	-	T	-

Brightness calculation when Proximity sensor is activated.

Maximum brightness value= MBV [selected in "General" parameter tab "Leds Brightness" section.]

Standby dimming percentage= SDP [possible values: 0, 10, 20, 30, 40, 50]

Proximity sensor value= PSV [possible values: 0, 1] 0=not detected, 1=default value

Actual brightness formula:

$$\boldsymbol{Actual\ Brightness = MBV\ x\ \frac{SDP + (100 - SDP)\ x\ PSV}{100}}$$

Example 1: MBV=100, SDP=20

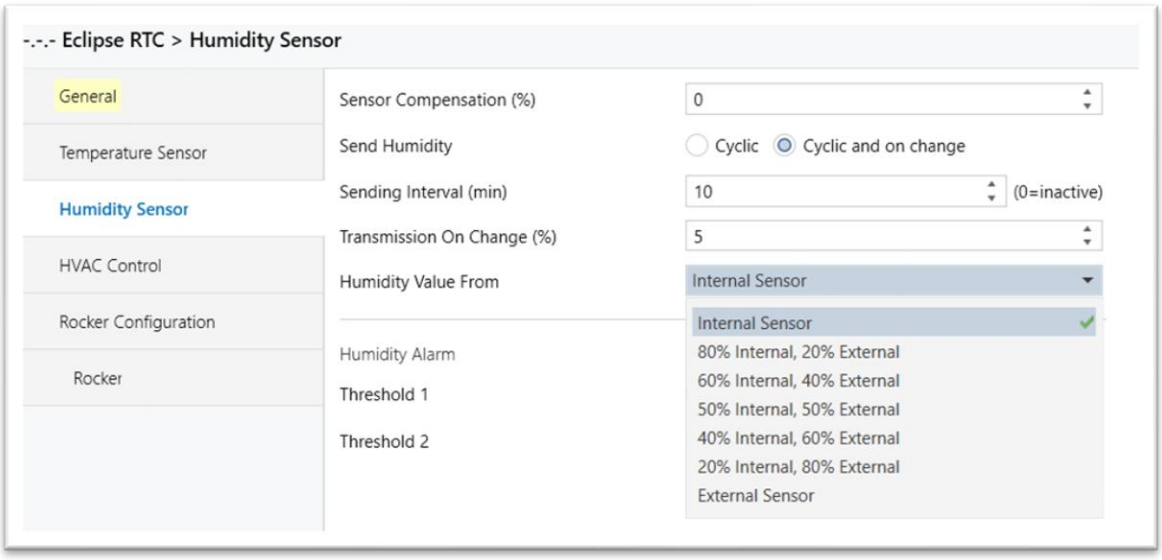
$$\boldsymbol{Actual\ Brightness = 100\ x\ \frac{20 + (100 - 20)\ x\ 0}{100} = 20\ \%}$$

Example 2: MBV=60, SDP=20

$$\boldsymbol{Actual\ Brightness = 60\ x\ \frac{20 + (100 - 20)\ x\ 0}{100} = 12\ \%}$$

3.1.2. Humidity Sensor

Humidity sensor tab contains following parameters.



Sensor Compensation (%):

Measured humidity value can be shifted up or down by using sensor compensation value. [-5…**0**…+5]

Example: Assume that "3" is written to the sensor compensation box. Measured humidity percentage will be increased + 3%. If "-3" is written to the sensor compensation box. Measured humidity percentage will be decreased - 3%.

Send Humidity:

Object Number 3 "Humidity Value – Internal Value (%)" can be sent cyclically or by change of measured humidity.

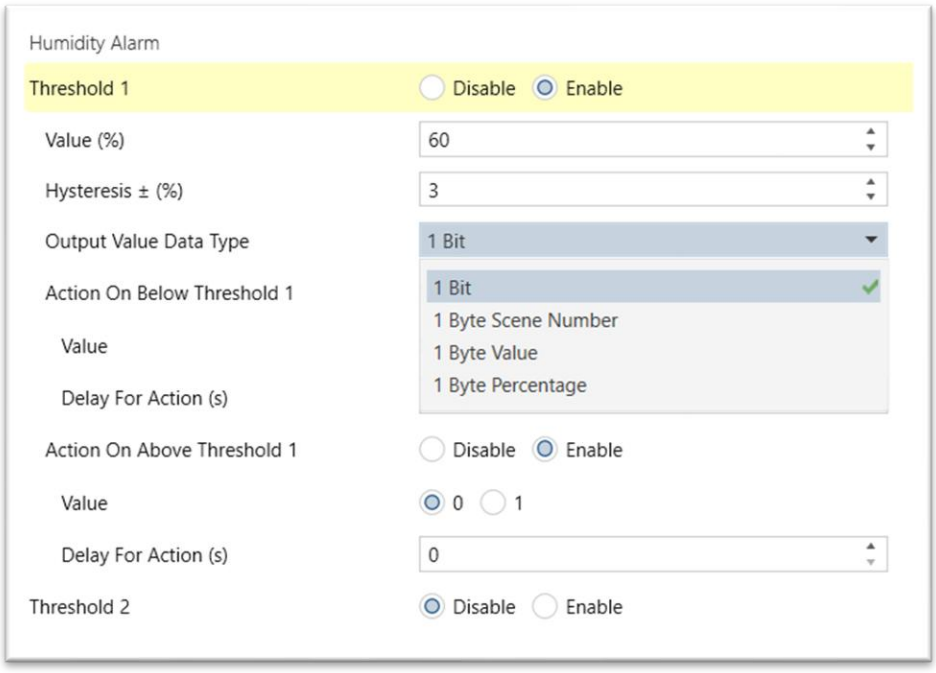
Sending Interval (min) [0…**10**…255] Transmission

on Change (%) [1…**5**…100]

Humidity Value From:

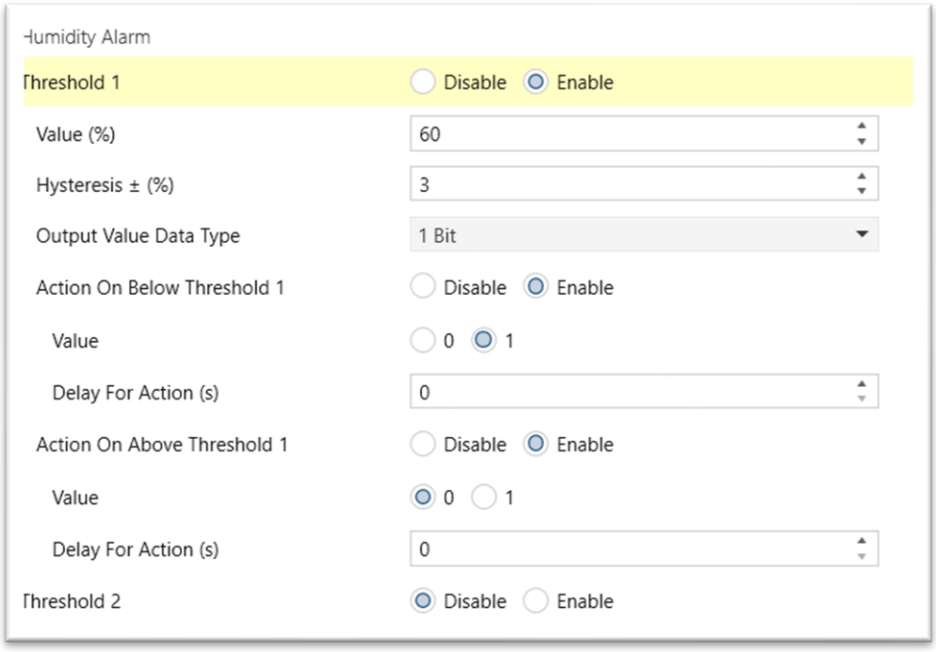
Humidity value can be received by an external humidity sensor directly or partially according to selected percentage.

Humidity Alarm:



2 Thresholds can be defined.

When a threshold is enabled, "Humidity - Threshold x Output" object will appear. Value and hysteresis can be defined. Output data type can be selected as 1 Bit or 1 Byte.



Action On Below Threshold:

When enabled, "Threshold x Output" object will transmit selected value to KNX bus when measured humidity value is less than entered "value(%) - hysteresis(%)" A delay can be set to transmit the value with "Delay For Action" parameter.

Example: Threshold value is %60 and Hysteresis is %3. When measured humidity value is less than %57, "Humidity - Threshold x Output" object will transmit selected value to KNX bus.

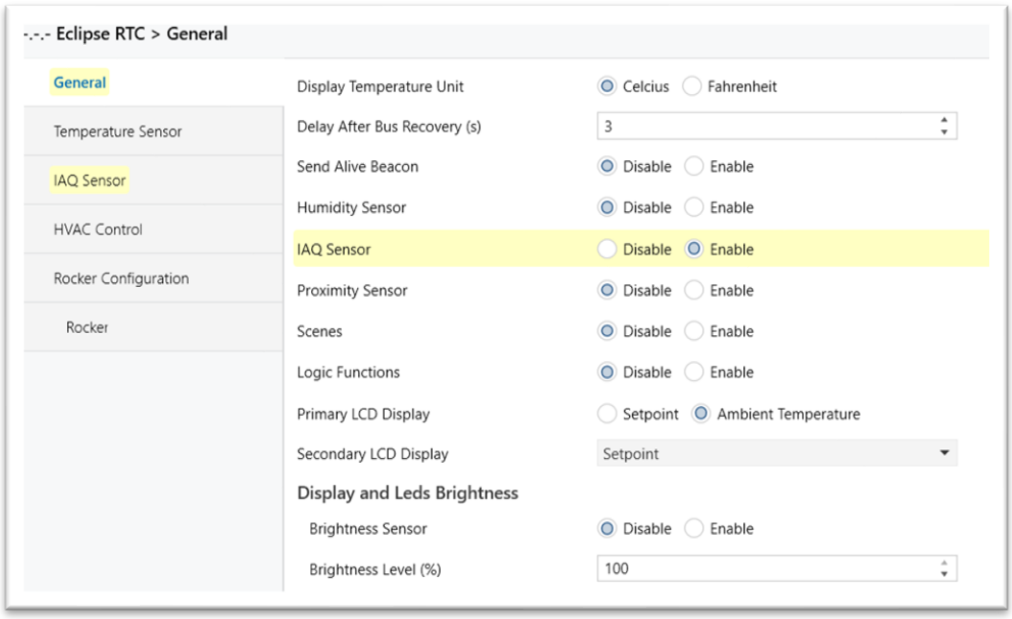
Action On Above Threshold:

When enabled, "Threshold x Output" object will transmit selected value to KNX bus when measured humidity value is greater than entered "value(%) + hysteresis(%)" A delay can be set to transmit the value with "Delay For Action" parameter.

Example: Threshold value is %60 and Hysteresis is %3. When measured humidity value is greater than %63, "Humidity - Threshold x Output" object will transmit selected value to KNX bus.

6	Humidity	Threshold 1 Output (Scene No)	1 byte	scene number	C	-	-	T	-
7	Humidity	Threshold 2 Output (Switching)	1 bit	switch	C	-	-	T	-

3.1.3. IAQ (Indoor Air Quality) Sensor



When enabled, "Indoor Air Quality – IAQ Level" object will appear.

8	Indoor Air Quality	IAQ Level (0-Off, 1-Very Good, 2-Good, 3-Medium, 4-Poor, 5-Bad)	1 byte	C	R	-	T	-

IAQ Levels:

Level 1 – Very Good (Telegram "1")

Level 2 – Good (Telegram "2")

Level 3 – Medium (Telegram "3")

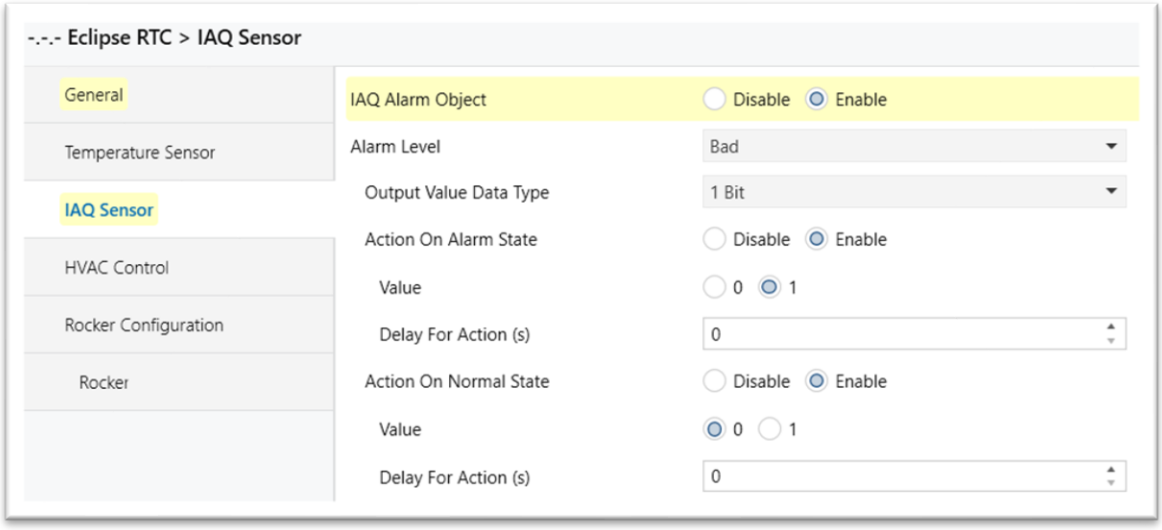
Level 4 – Poor (Telegram "4")

Level 5 – Bad (Telegram "5")

The object transmits "0" telegram only when IAQ sensor stops working

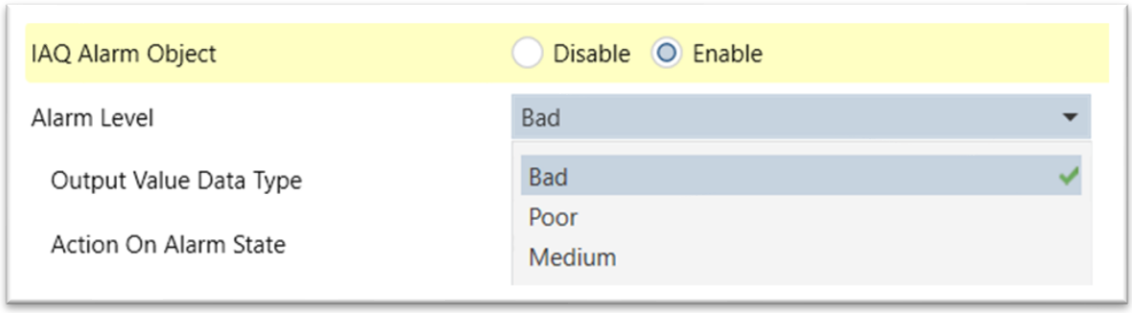
IAQ sensor tab contains following parameters.

IAQ Alarm Object:

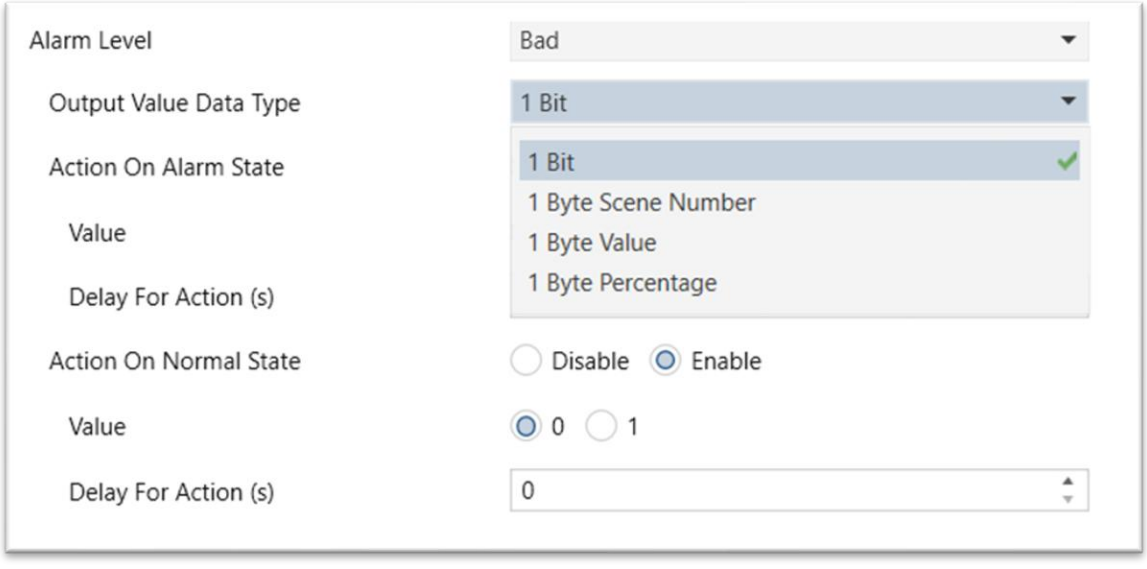


When enabled, "Indoor Air Quality – IAQ Alarm Output" object will appear.

Alarm Level:



Alarm level can be defined as Bad, Poor or Medium.



Output data type can be selected as 1 Bit or 1 Byte.

Action On Alarm State:

When enabled, "IAQ Alarm Output" object will transmit selected value to KNX bus when measured IAQ Level reaches selected alarm level. A delay can be set to transmit the value with "Delay For Action" parameter.

Action On Normal State:

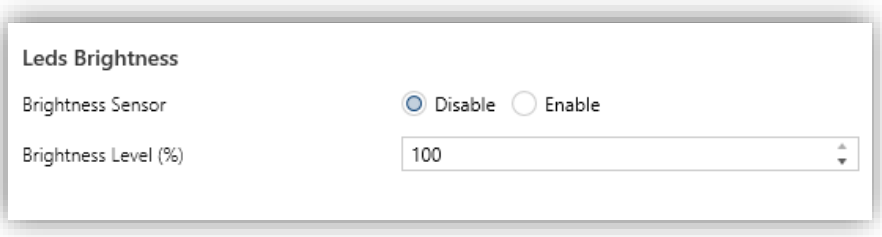
When enabled, "IAQ Alarm Output" object will transmit selected value to KNX bus when measured IAQ Level is less than selected alarm level. A delay can be set to transmit the value with "Delay For Action" parameter.

9	Indoor Air Quality	IAQ Alarm Output (Switching)	1 bit	switch	C	-	-	T	-

3.1.4. Display and Leds Brightness

Brightness Sensor [Disable]

Brightness level can be defined between %0 - %100 for LEDs when brightness sensor is disabled.



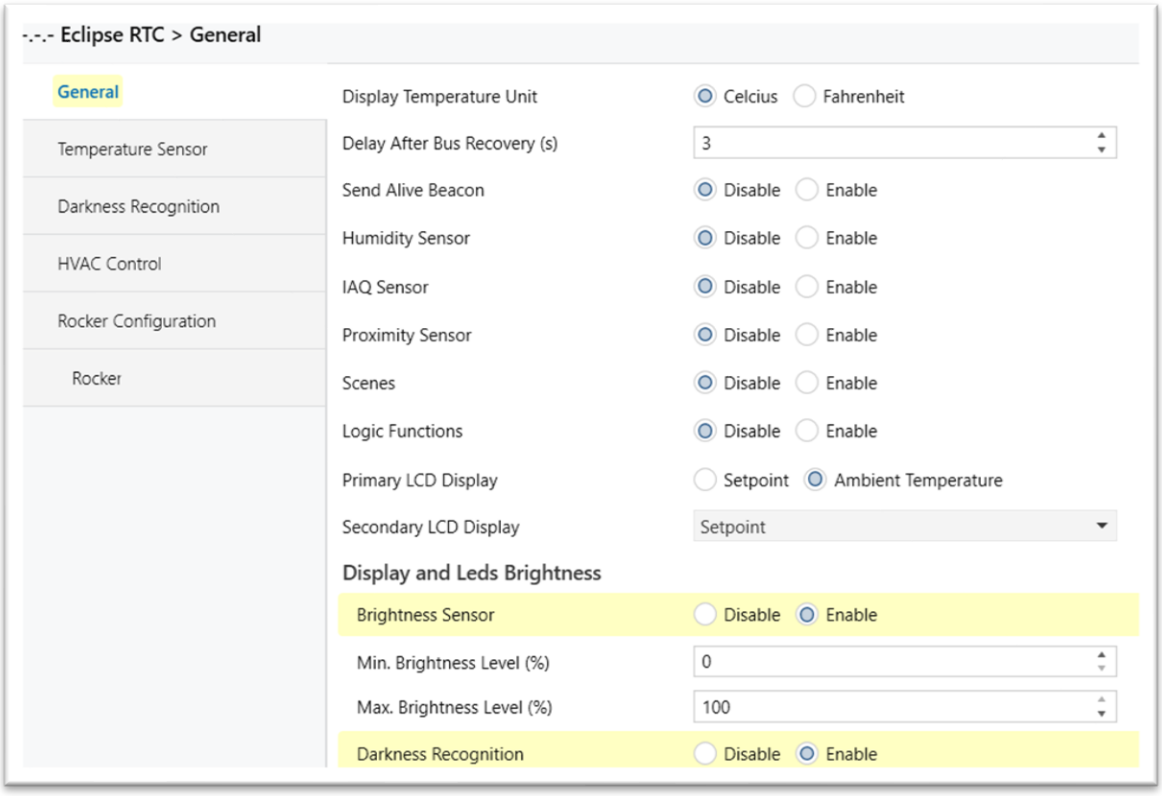
Brightness Sensor [Enable]

Eclipse Thermostat adjusts brightness of LEDs and display according to ambient light level which is measured by built-in light sensor.

"Brightness sensor" can be enabled under "General" parameter tab. Minimum and maximum brightness levels can be defined here. LEDs brightness will be adjusted between these two percentage levels.

Min Brightness Value can be defined between %0 - %50. Max

Brightness Value can be defined between %50 - %100.



Brightness calculation when Brightness sensor is enabled.

Maximum Brightness Value= **Max** possible values: [50-100] Brightness

value for darkness (min value) = **Min** possible values: [0-50] default=0

Ambient sensor value= **AS** [0-100 lux] 0=10 lux, 100=X lux

Actual brightness formula:

$$\boldsymbol{Actual\ Brightness} = \boldsymbol{Min} + \frac{(\boldsymbol{Max} - \boldsymbol{Min})\ \boldsymbol{x}\ \boldsymbol{AS}}{\boldsymbol{100}}$$

Example 1: Max=80, Min=30, AS=30

$$\boldsymbol{Actual\ Brightness} = \boldsymbol{30} + \frac{(\boldsymbol{80} - \boldsymbol{30})\ \boldsymbol{x}\ \boldsymbol{30}}{\boldsymbol{100}} = \boldsymbol{45}\ \%$$

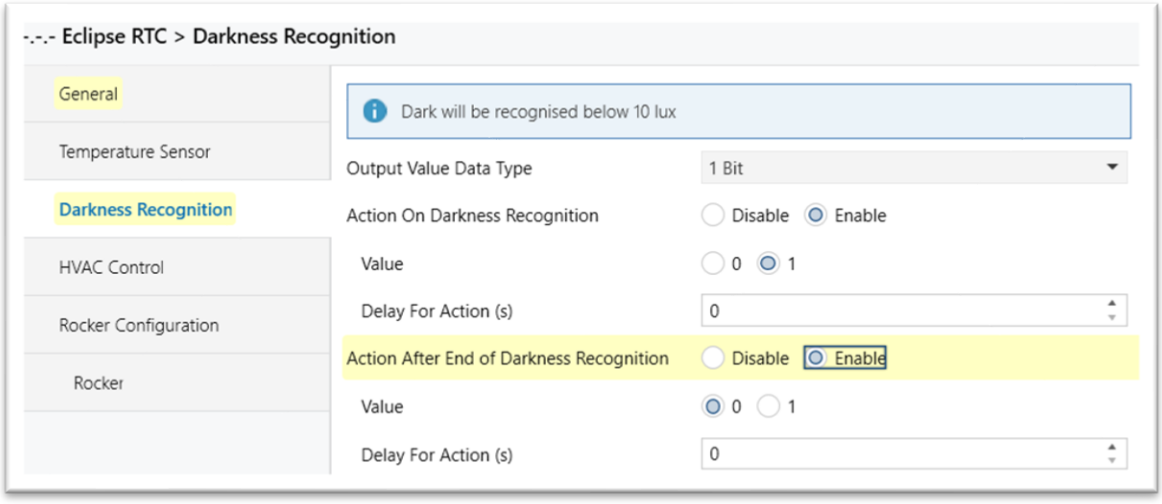
Example 2: Max=80, Min=30, AS=70

$$\boldsymbol{Actual\ Brightness} = \boldsymbol{30} + \frac{(\boldsymbol{80} - \boldsymbol{30})\ \boldsymbol{x}\ \boldsymbol{70}}{\boldsymbol{100}} = \boldsymbol{65}\%$$

MBV [50-100]	Y [0-50]	AS [0-100]	Actual Brightness
80	30	0	30%
80	30	10	35%
80	30	20	40%
80	30	30	45%
80	30	40	50%
80	30	50	55%
80	30	60	60%
80	30	70	65%
80	30	80	70%
80	30	90	75%
80	30	100	80%

Table 1 – Change of Actual Brightness according to ambient light level

Darkness Recognition



Object "Darkness Output" can be activated by enabling "Darkness Recognition" parameter. If measured lux value is less than 10 lux, darkness will be recognised and transmitted via this object to KNX bus.

Output data type can be selected 1 Bit or 1 Byte.

Action On Darkness Recognition:

When enabled, "Darkness Output" object will transmit selected value to KNX bus when measured lux value is less than 10 lux. A delay can be set to transmit the value with "Delay For Action" parameter.

Action After End of Darkness Recognition:

When enabled, "Darkness Output" object will transmit selected value to KNX bus when measured lux value is greater than 10 lux. A delay can be set to transmit the value with "Delay For Action" parameter.

3	Darkness Recognition	Darkness Output (Switching)	1 bit	switch	C - - T -

Note: If "Brightness Sensor" is enabled at the same time with "Proximity Sensor", brightness value of LEDs will change accordingly to the formula below.

$$\textbf{Actual Brightness} = (\textbf{Min} + \frac{(\textbf{Max} - \textbf{Min})\ \textbf{x}\ \textbf{AS}}{\textbf{100}})\ \textbf{x}\ \frac{\textbf{SDP} + (\textbf{100} - \textbf{SDP})\ \textbf{x}\ \textbf{PSV}}{\textbf{100}}$$

3.2. Temperature Sensor

Sensor Compensation (x0.1K):

Measured temperature value can be shifted up or down by using sensor calibration value. [-100…**0**…+100]

Example: Assume that "10" is written to the sensor compensation box. Calculation: 10x 0.1 = 1 Celsius, measured temperature *will be increased "+ 1 °C". If "-10" is written measured* temperature *will be decreased "-1 °C".*

Send Temperature:

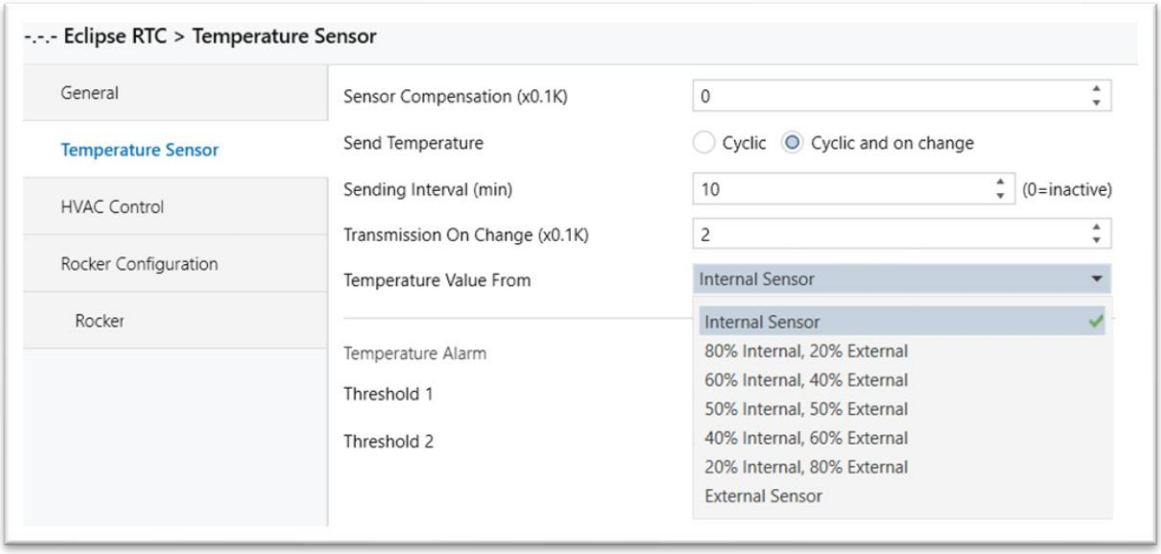
Object Number 8 "Actual Temperature – Internal Value" can be sent cyclically or by change of measured temperature.

Sending Interval (min) [0…**10**…255]

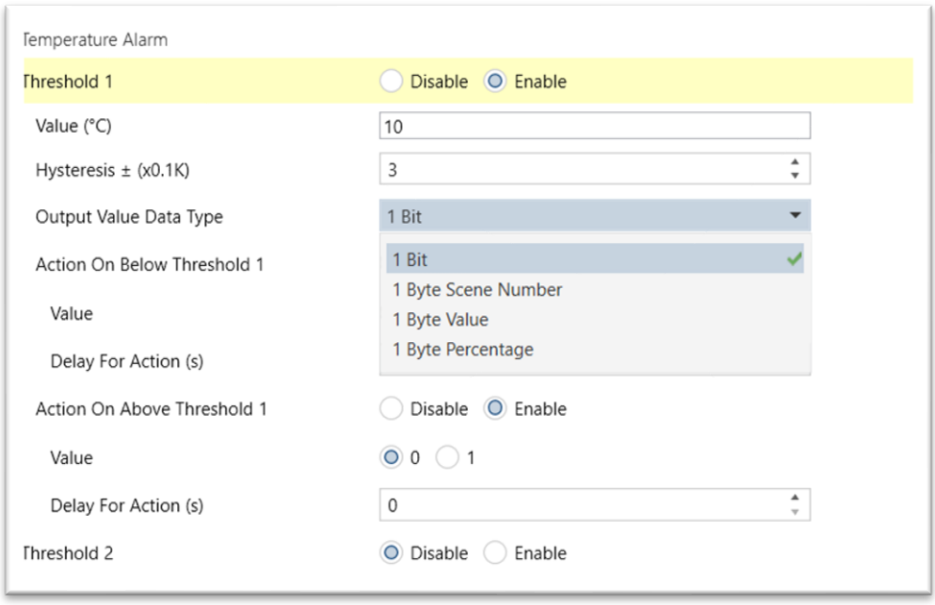
Transmission on Change (x0.1K) [1…**3**…100]

Temperature Value from:

Temperature value can be received from an external temperature sensor directly or partially according to selected percentage.

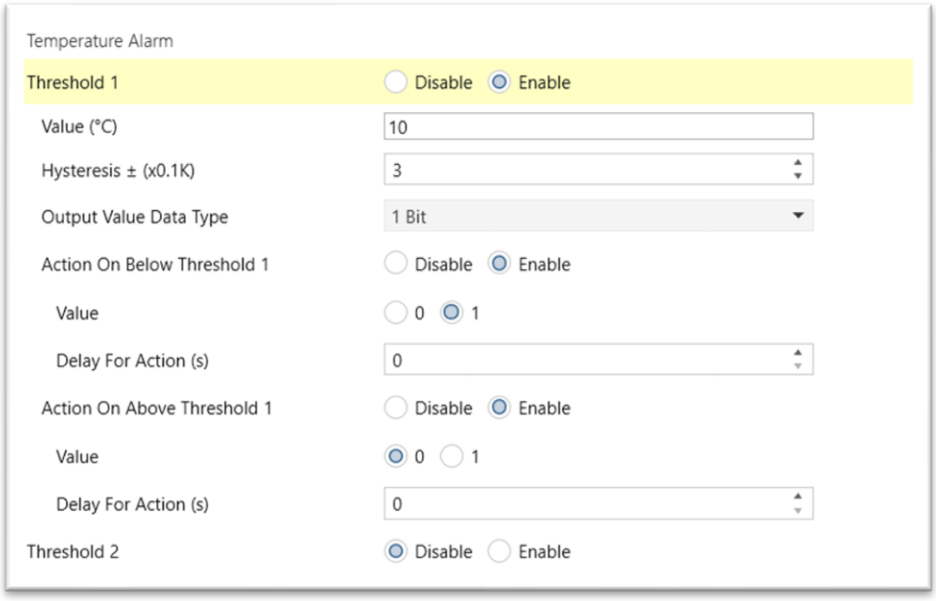


Temperature Alarm:



2 Thresholds can be defined.

When a threshold is enabled, "Temperature - Threshold x Output" object will appear. Value and hysteresis can be defined. Output data type can be selected as 1 Bit or 1 Byte.



Action On Below Threshold:

When enabled, "Threshold x Output" object will transmit selected value to KNX bus when measured temperature value is less than entered "value(°C) – hysteresis (0.1K)". A delay can be set to transmit the value with "Delay For Action" parameter.

Example: Threshold value is 10°C and Hysteresis is 0,3°C. When measured value is less than 9,7°C, "Temperature - Threshold x Output" object will transmit selected value to KNX bus.

Action On Above Threshold:

When enabled, "Threshold x Output" object will transmit selected value to KNX bus when measured temperature value is greater than entered "(°C) + hysteresis (0.1K)". A delay can be set to transmit the value with "Delay For Action" parameter.

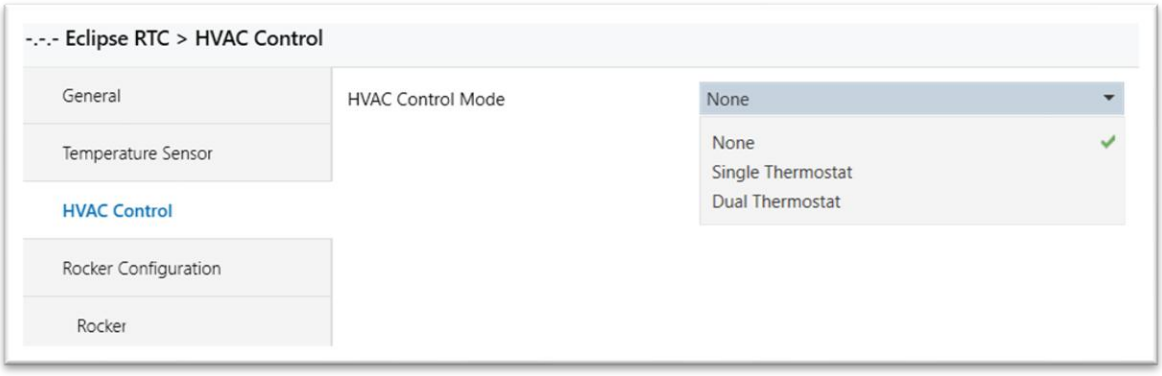
Example: Threshold value is 10°C and Hysteresis is 0,3°C. When measured temperature value is greater than 10,3°C, "Temperature - Threshold x Output" object will transmit selected value to KNX bus.

12	Temperature	Threshold 1 Output (Switching)	1 bit	switch	C	-	-	T	-
13	Temperature	Threshold 2 Output (Switching)	1 bit	switch	C	-	-	T	-

3.3. HVAC Control

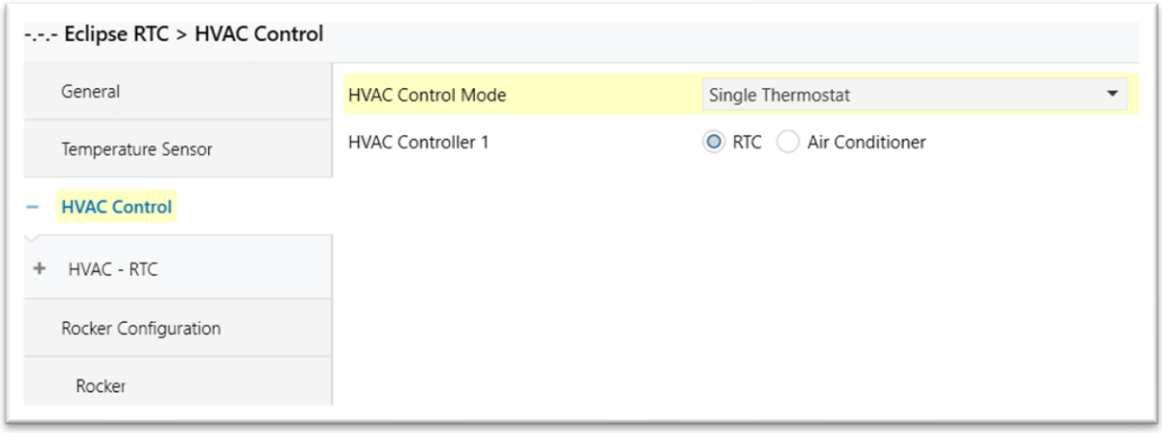
3.3.1 HVAC Control Modes

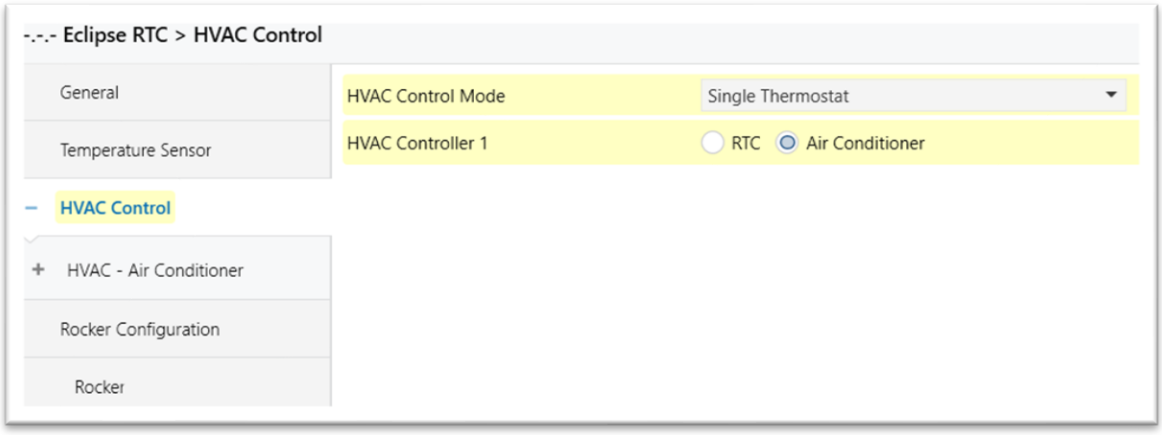
HVAC Control Modes: None, Single Thermostat, Dual Thermostat



3.4. Single Thermostat

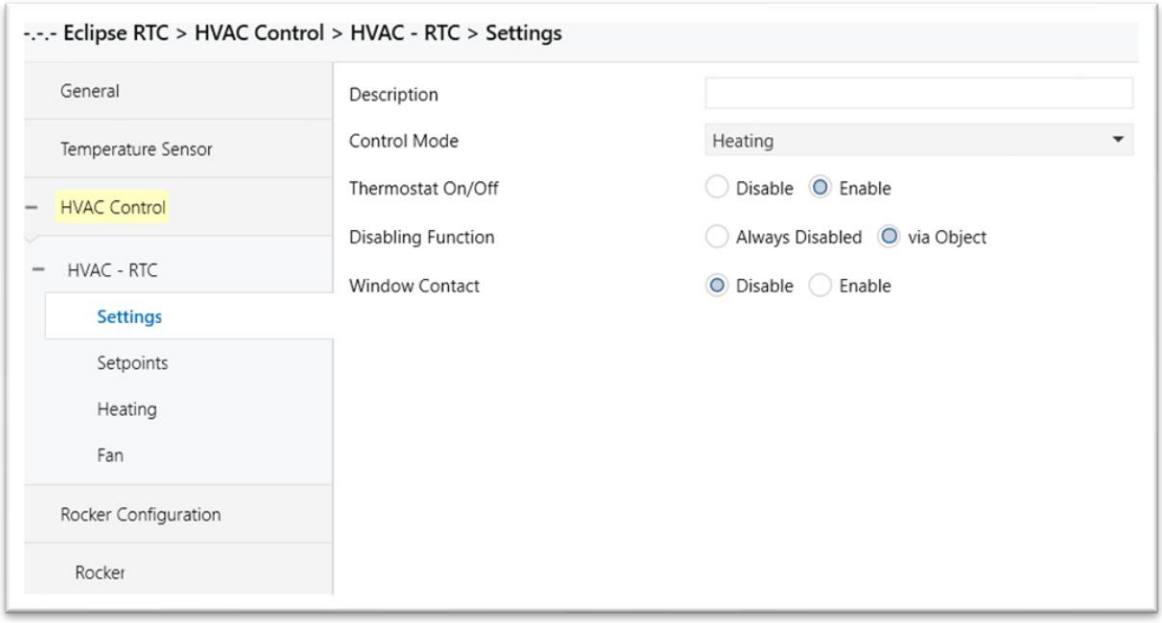
HVAC controller can be selected as RTC (Room Temperature Controller) or Air Conditioner



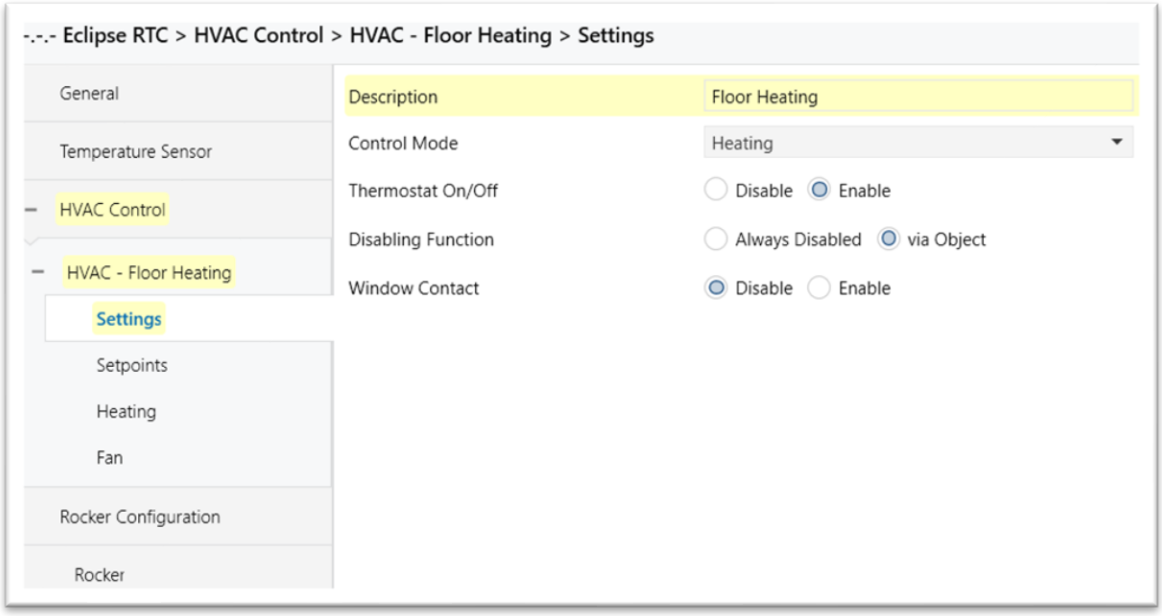


3.4.1. RTC

3.4.1.1. Settings



Description: The description defines the HVAC name and related objects dynamically.



15	HVAC 1 - Floor Heating	Heating/Cooling Status (1-Heat, 0-Cool)	1 bit	cooling/heating	C	R	-	T	-
16	HVAC 1 - Floor Heating	Heating 2 Point Control Value	1 bit	switch	C	R	-	T	-
19	HVAC 1 - Floor Heating	Heating Indication	1 bit	state	C	R	-	T	-
27	HVAC 1 - Floor Heating	Operating Mode	1 byte	HVAC mode	C	-	W	-	U
28	HVAC 1 - Floor Heating	Operating Mode Status	1 byte	HVAC mode	C	R	-	T	-
29	HVAC 1 - Floor Heating	Operating Mode (prev/next)	1 bit	boolean	C	-	W	-	U
38	HVAC 1 - Floor Heating	Setpoint Control	2 bytes	temperature (°C)	C	-	W	-	U
39	HVAC 1 - Floor Heating	Setpoint Status	2 bytes	temperature (°C)	C	R	-	T	-
40	HVAC 1 - Floor Heating	Setpoint (-/+)	1 bit	step	C	-	W	-	U
62	HVAC 1 - Floor Heating	Thermostat On/Off	1 bit	switch	C	-	W	-	U
63	HVAC 1 - Floor Heating	Thermostat On/Off Status	1 bit	switch	C	R	-	T	-
65	HVAC 1 - Floor Heating	Disabling Function (1-Disable, 0-Enable)	1 bit	boolean	C	-	W	-	-
66	HVAC 1 - Floor Heating	Disabling Function Status (1-Disable, 0-Enable)	1 bit	boolean	C	R	-	T	-

Control Modes: Heating, Cooling, Heating and Cooling]

Thermostat On/Off: [Disable, **Enable**]

It is possible to disable thermostat on/off feature. If enabled, the state of thermostat can be changed and when it is in off state, it stops thermostat logic.

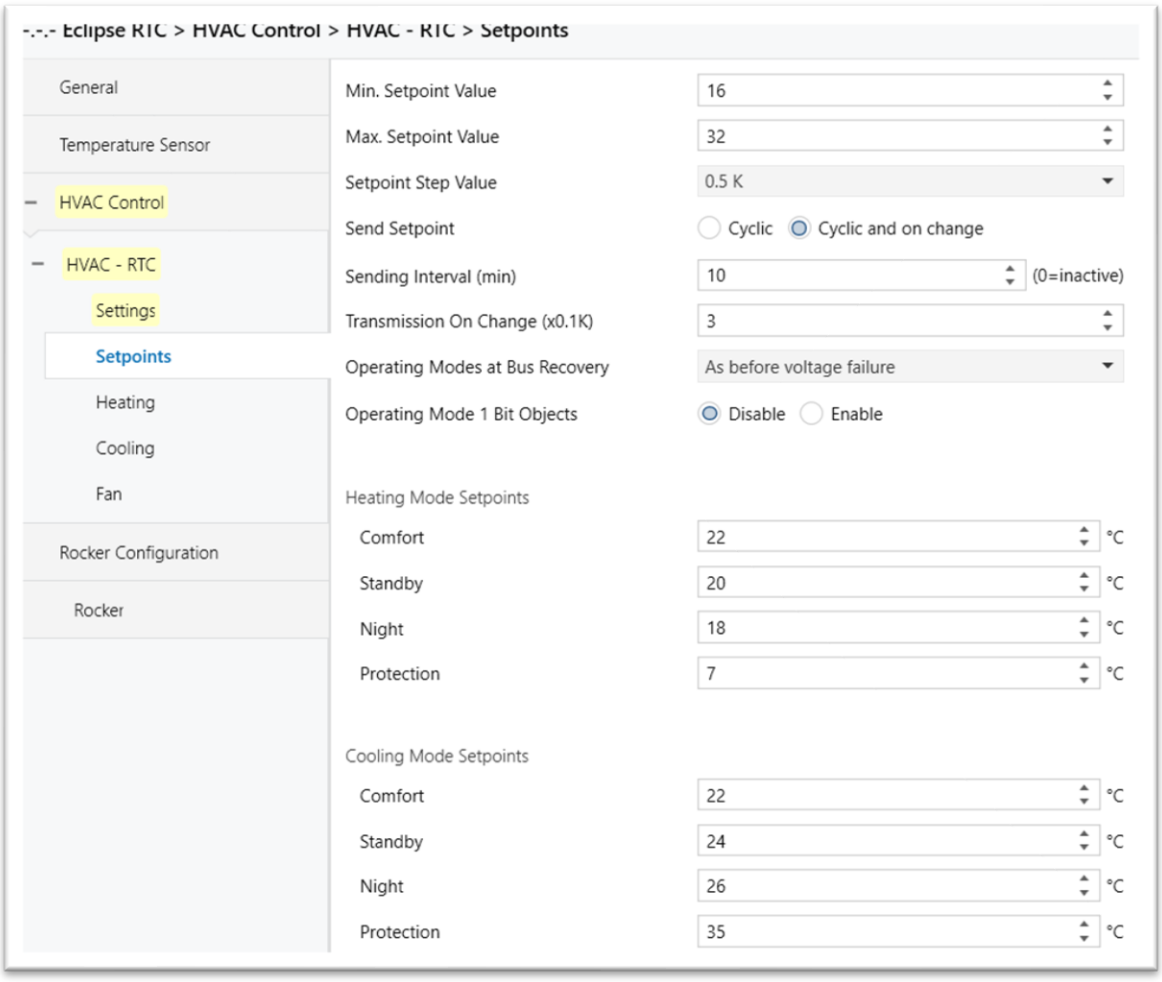
Disabling Function: [Always disabled, **via Object**]

It is possible to disable the thermostat. When disabled, thermostat logic continues to work but it is only allowed to control thermostat via KNX bus.

Window Contact: [**Disable**, Enable]

Object "Window Contact (1-Open, 0--Close) can be used to take thermostat control in stand-by position according to the window status. If window is open thermostat will go into protection mode and off state, and it will not be possible to control the thermostat until window is closed.

3.4.1.2. Setpoints



Min. Setpoint Value: [5…**16**…40]

Defines the minimum temperature setpoint value for the thermostat function. Any temperature value lower than Min. Setpoint Value cannot be written or selected on setpoint temperature objects.

Max. Setpoint Value: [5…**32**…40]

Defines the maximum temperature setpoint value for the thermostat function. Any temperature value higher than Max. Setpoint Value cannot be written or selected on temperature objects.

Setpoint Step Value: [0.1…**0.5**…1]

Increase/Decrease value of current setpoint.

Send Setpoint (°C): [Cyclic…Cyclic on change]

Current setpoint can be sent cyclically or by change of measured temperature via status Setpoint object.

Sending interval (min): [0…**10**…255] 0=Inactive

Defines the time period of sending setpoint value via "Status Setpoint" object.

Transmission on change (x0.1 K): [1…**3**…100]

Defines the minimum temperature change to send setpoint value via "Status Setpoint" object.

Operating Mode at Bus Recovery:

The parameter defines the behavior of the thermostat after bus power return. Operating mode can be changed to following options after a power return:

As before voltage failure
Comfort
Standby
Night
Protection

Each operating mode has a different temperature setpoint.

Operating Mode 1 Bit Objects:

Parameter determines the data type of operating mode objects. Data type of operating mode objects can be used as "1 bit" with separate objects for each operating mode if this parameter is enabled. Status Objects will send current status of operating mode after change.

30	HVAC 1 - RTC	Comfort Mode	1 bit	state	C	-	W	T	U
31	HVAC 1 - RTC	Comfort Mode Status	1 bit	state	C	R	-	T	-
32	HVAC 1 - RTC	Standby Mode	1 bit	state	C	-	W	T	U
33	HVAC 1 - RTC	Standby Mode Status	1 bit	state	C	R	-	T	-
34	HVAC 1 - RTC	Night Mode	1 bit	state	C	-	W	T	U
35	HVAC 1 - RTC	Night Mode Status	1 bit	state	C	R	-	T	-
36	HVAC 1 - RTC	Protection Mode	1 bit	state	C	-	W	T	U
37	HVAC 1 - RTC	Protection Mode Status	1 bit	state	C	R	-	T	-

As default,

1 Byte Object [DPT_HVACMode];

Object "Page 1 General Thermostat (RTC) – Operating Mode" can be used to change between different modes. Object "Status Operating Mode" will send current status of operating mode after change.

$01 – Comfort [20.102 DPT_HVAC]
$02 – Standby [20.102 DPT_HVAC]
$03 – Economy [20.102 DPT_HVAC]
$04 – Protection [20.102 DPT_HVAC]

27	HVAC 1 - RTC	Operating Mode	1 byte	HVAC mode	C	-	W	-	U
28	HVAC 1 - RTC	Operating Mode Status	1 byte	HVAC mode	C	R	-	T	-

Heating Mode Setpoints:

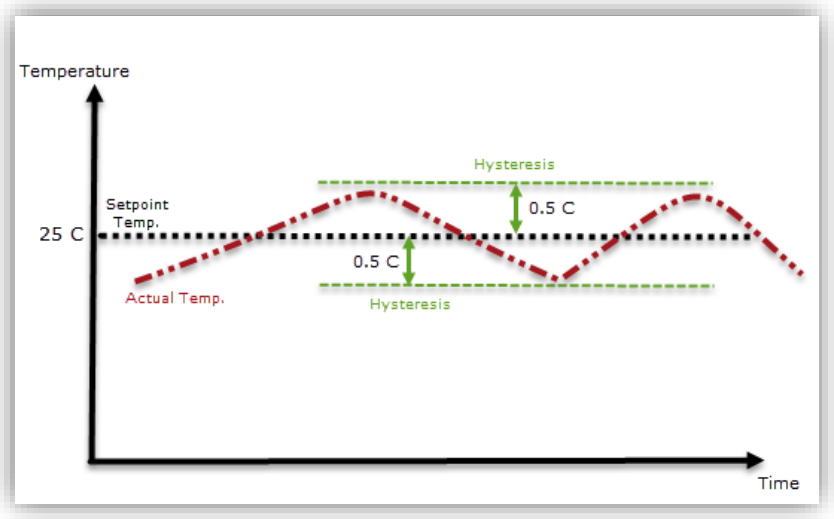
General Thermostat (RTC) has "4" operating modes; "Comfort Mode, Standby Mode, Night Mode and Protection Mode". Each operating mode has their own predefined setpoint temperature.

Changeover of operating modes can be achieved through "Operating Mode" communication objects.

3.4.1.3. Heating - Control Type: [2-Point Control ON/OFF]

Control Type: [2-Point Control (On/Off), Switching PI Control (PWM), Continuous PI Control]

Operates as a simple switch around the setpoint temperature using hysteresis values. "Hysteresis" prevents the output value from oscillation and give larger margin to turning heat or cool on and off. If system is more an active system, hysteresis values should be given larger and more inactive values.

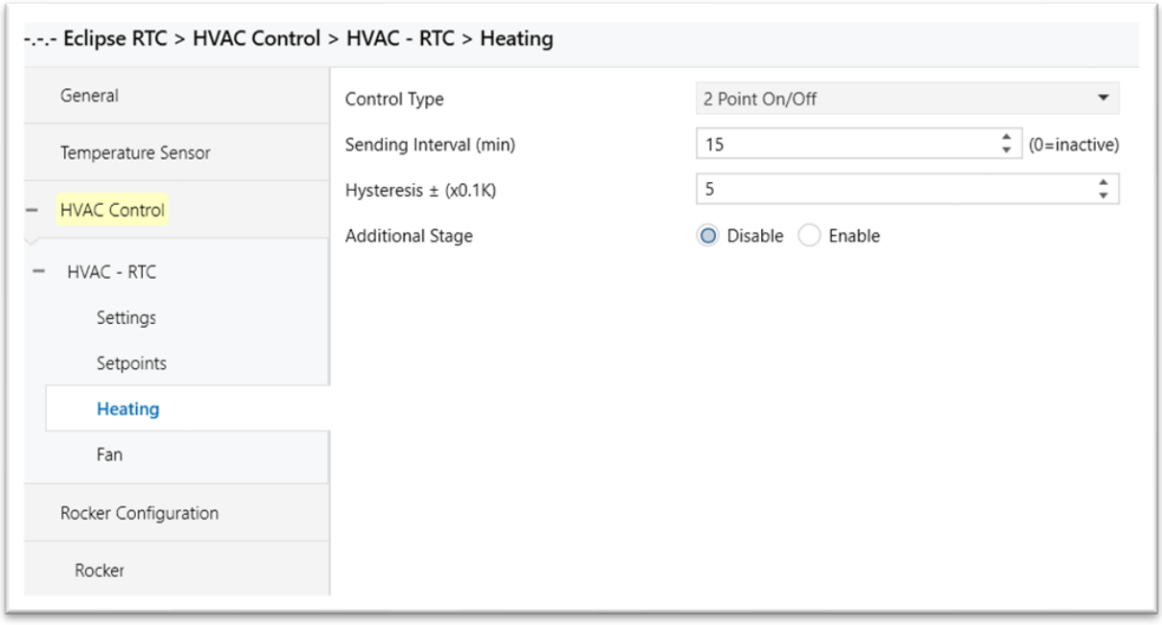


Sending Interval (min): [0…**15**…255] 0=inactive

Determines cyclic sending period of Object "Heating 2 Point Control Value".

Hysteresis +/- (x 0.1 °C): [1…**5**…255]

Determines Hysteresis value to control "Heating 2 Point Control Value" output more accurate. "Hysteresis" prevents the output value from oscillation and give larger margin to turning heat or cool ON and OFF. If system is more an active system, hysteresis values should be given larger and more inactive values.

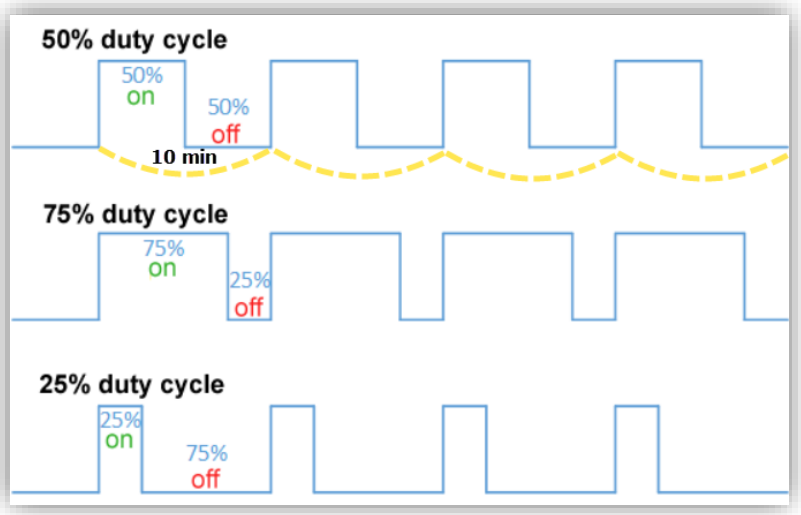


3.4.1.4. Heating - Control Type: [Switching PI Control PWM]

PI algorithm is used to calculate control signal. After calculation, control signal is converted into a pulse-interval signal. This means PWM cycle is divided into "1 bit ON/OFF" output commands based on control value. PWM period and type of heating should be selected according to the used room and type of heating.

PWM Period Time (min): [1…**10**…255]

Defines PWM period time. If control value is calculated %50. Then control value will be ON for 5 minutes and OFF for second 5 minutes. Please check following graphic.



Heating Type: Multiple heating types with preset parameters are available to the user.

Floor Heating (5K/240)

How Water Heating (5K/150)

Electrical Heating (4K/100)

Fan coil (4K/90)

User Defined

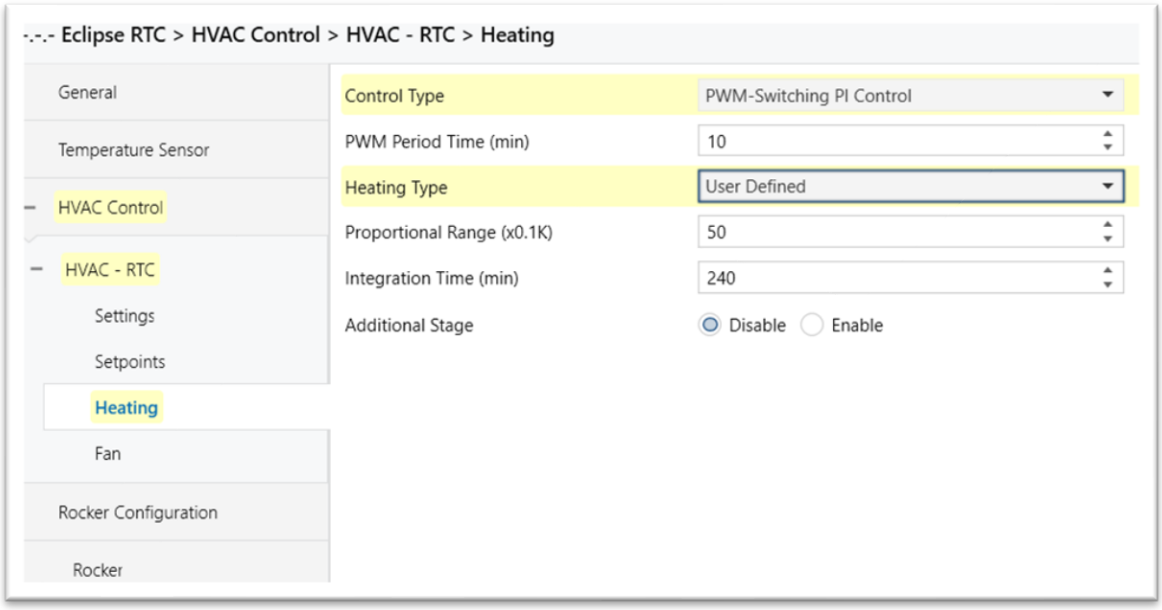
If the required heating type is not available, individual parameters can be specified in the "User Defined" configuration.

Proportional Range (x0.1 °C): [10…**50**…100]

Defines the proportional range of control. Parameter changes the control speed of the controller.

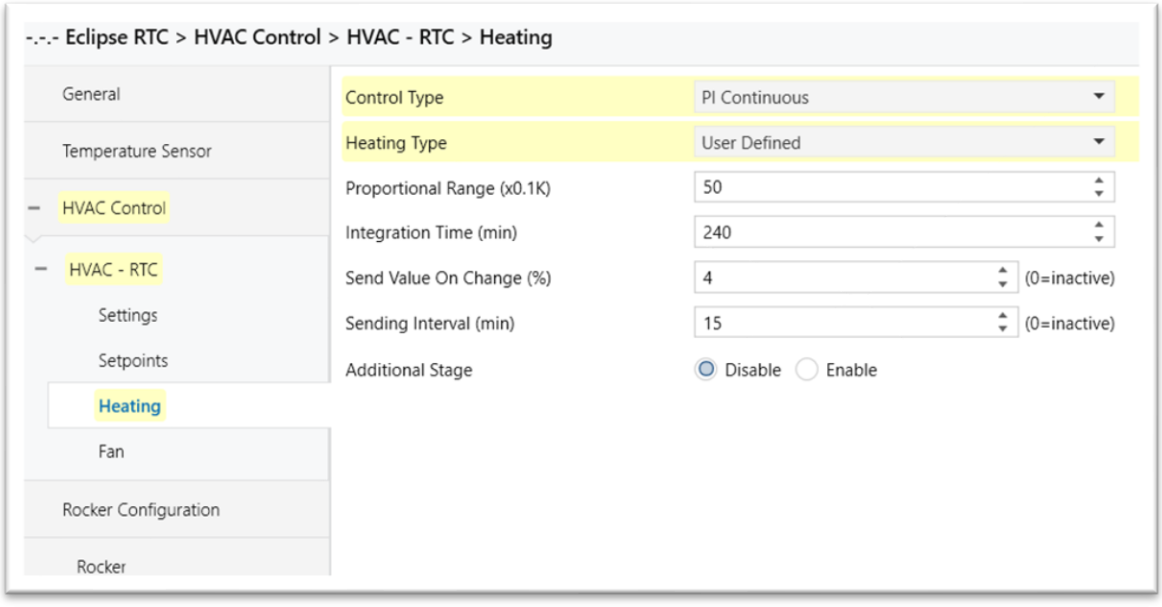
Integration Time (min): [1…**240**…255]

Defines the reset time of controller. Integration Time has the effect of moving the room temperature slowly toward and ultimately reaching the setpoint value. Depending on the type of system used, parameter needs to have different values. In general, the more inactive the overall system, the greater time is needed.



3.4.1.5. Heating - Control Type: [PI Continuous]

PI algorithm is used to calculate control signal and adjusts its output value between 0% and 100% to match the difference between the actual temperature and the setpoint temperature and enables an accurate regulation of the room temperature to the setpoint value. PI values should be selected compatible with the room and the type of heating system that needs to be controlled. Default PI values are defined for most common heating types. User defined values can be used for different rooms and different heating types for better performance. Using default values as a reference point and adjusting these values according to system might increase controller performance.



Heating Type: Multiple heating types with preset parameters are available to the user.

Floor Heating (5K/240)

How Water Heating (5K/150)

Electrical Heating (4K/100)

Fan coil (4K/90)

User Defined

If the required heating type is not available, individual parameters can be specified in the "User Defined" configuration.

Proportional Range (x0.1 °C): [10…**50**…100]

Defines the proportional range of control. Parameter changes the control speed of the controller.

Integration Time (min): [1…**240**…255]

Defines the reset time of controller. Integration Time has the effect of moving the room temperature slowly toward, and ultimately reaching the setpoint value. Depending on the type of system used, parameter needs to have different values. In general, the more inactive the overall system, the greater time is needed.

Send Value on Change (%): [0…**4**…100] 0=inactive

Heating control value will be sent on change of percentage via Object "Heating PI Control Value".

Sending Interval (min): [0…**15**…255]

Determines cyclic sending period of Object "Heating PI Control Value".

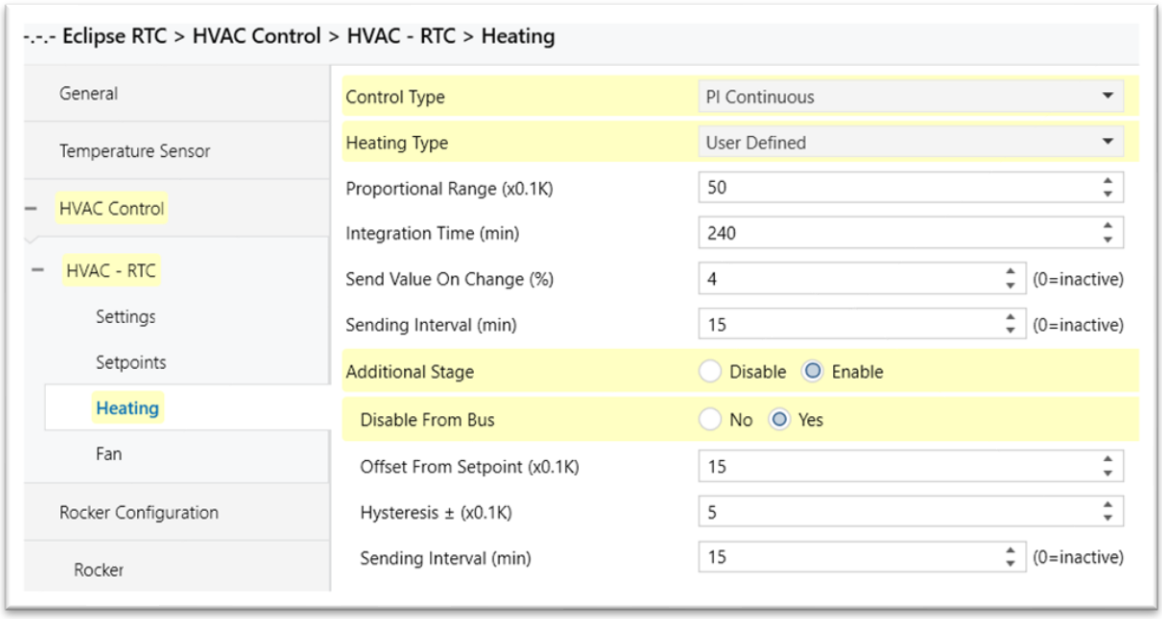
3.4.1.6. Heating - Additional Stage

Additional Stage: [**Disable**…Enable]

Additional Heating Control object can be enabled if an extra Heating Control Value is needed on top of main Heat Control Value.

Object "Heating Additional Stage Value" is created when parameter is enabled.

Disable from Bus: Object "Heating Additional Stage (0-Disable)" can be used to disable additional heating control any time by writing True/False.



Offset from Setpoint (x 0.1 °C): [1…**15**…255]

Defines a separate setpoint value based on main Setpoint temperature for Object "Heating Additional Stage Value". In this way, Additional Heating Source will be activated/deactivated depending on new temperature setpoint.

Example: Assume that a room has two types of different heating sources. (Main heating source, additional heating source)

Setpoint temperature is 24 degree for the "Heating Control Value" (main heating source.)

If "Offset from Setpoint" parameter is; -20 x 0.1 C° =-2 °C.

In this scenario, the setpoint for heating is set to 24 °C. When the temperature falls below 22 °C, additional heating should be switched on so that the room heats up again rapidly.

Hysteresis +/- (x 0.1 °C): [1…**5**…255]

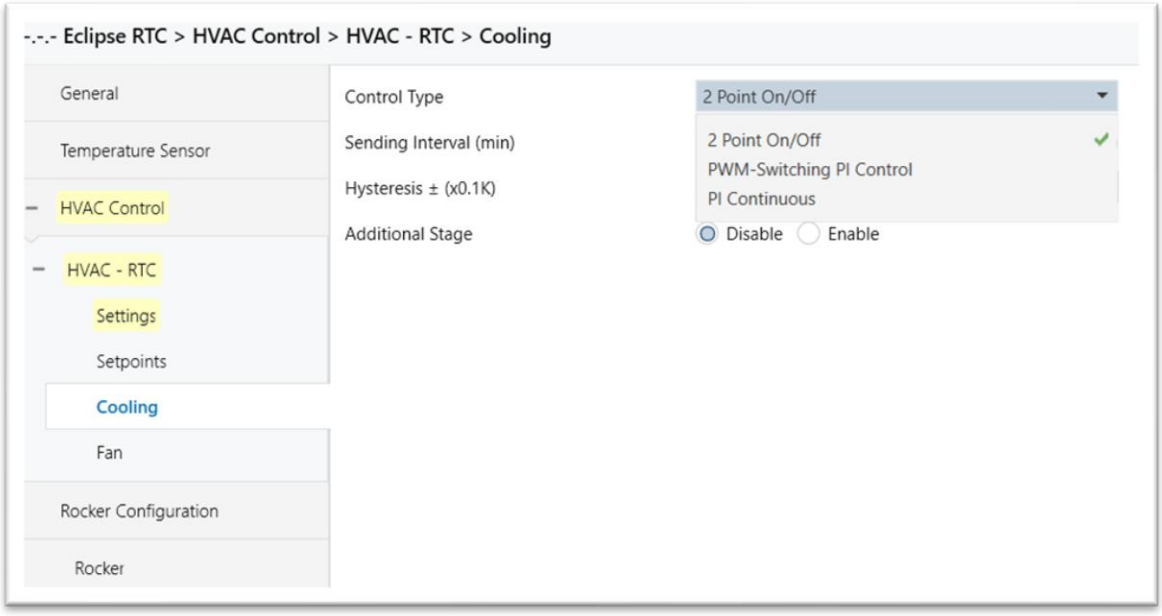
Determines Hysteresis value to control Heating Additional Stage Value more accurate. "Hysteresis" prevents the output value from oscillation and give larger margin to turning heat or cool ON and OFF. If system is more an active system, hysteresis values should be given larger and more inactive values.

Sending Interval (min): [0…**15**…255]

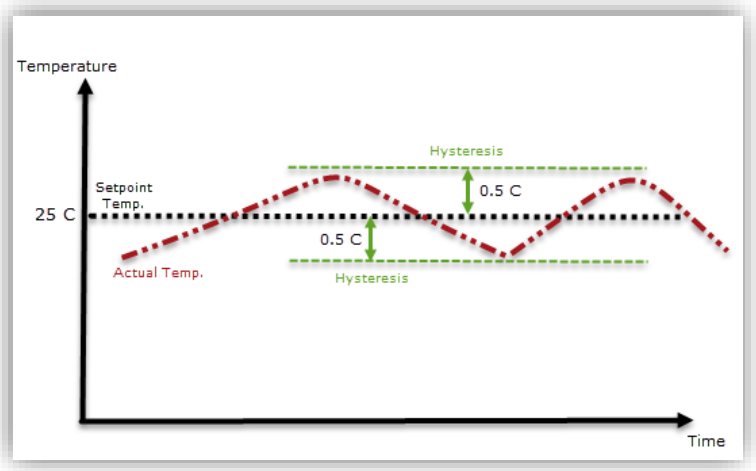
Determines cyclic sending period of Object "Heating Additional Stage Value".

3.4.1.7. Cooling - Control Type: [2-Point Control ON/OFF]

Control Type: [2-Point Control (On/Off), Switching PI Control (PWM), Continuous PI Control]



Operates as a simple switch around the setpoint temperature using hysteresis values. "Hysteresis" prevents the output value from oscillation and give larger margin to turning heat or cool on and off. If system is more an active system, hysteresis values should be given larger and more inactive values.

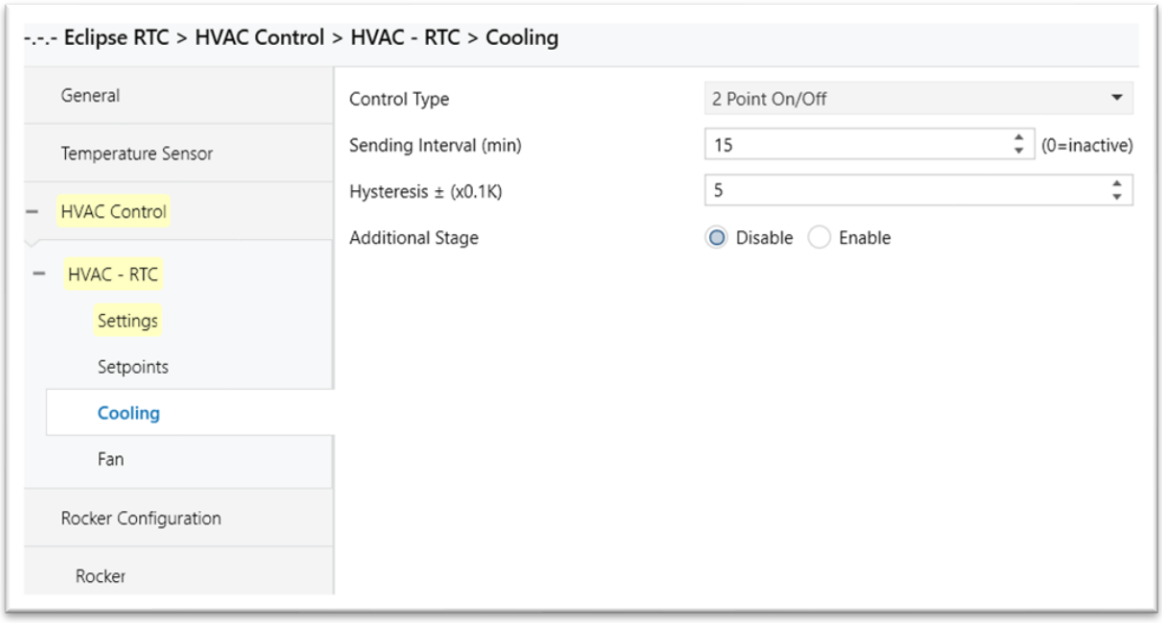


Sending Interval (min): [0…**15**…255] 0=inactive

Determines cyclic sending period of Object "General Thermostat - Cooling 2 Point Control Value".

Hysteresis +/- (x 0.1 °C): [1…**5**…255]

Determines Hysteresis value to control "Heating 2 Point Control Value" output more accurate. "Hysteresis" prevents the output value from oscillation and give larger margin to turning heat or cool ON and OFF. If system is more an active system, hysteresis values should be given larger and more inactive values.

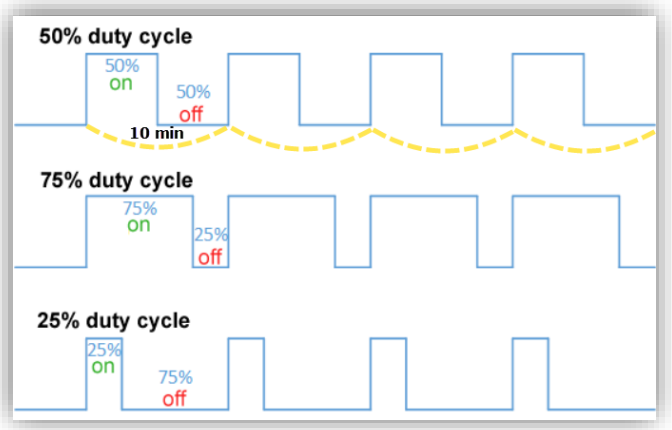


3.4.1.8. Cooling - Control Type: [Switching PI Control PWM]

PI algorithm is used to calculate control signal. After calculation, control signal is converted into a pulse-interval signal. This means PWM cycle is divided into "1 bit ON/OFF" output commands based on control value. PWM period and type of cooling should be selected according to the used room and type of cooling source.

PWM Period Time (min): [1…**10**…255]

Defines PWM period time. If control value is calculated %50. Then control value will be ON for 5 minutes and OFF for second 5 minutes. Please check following graphic.



Type of Cooling: Multiple cooling types with preset parameters are available to the user.

Cooling Ceiling (5K/240)

Fan coil (4K/90)

User Defined

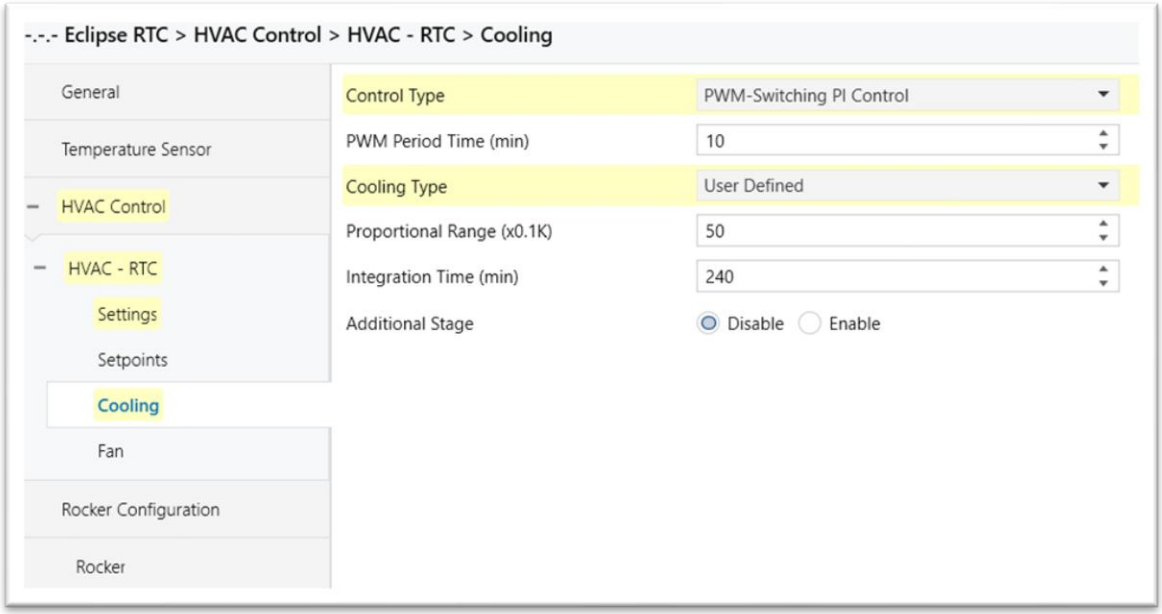
If required cooling type is not available, individual parameters can be specified in the "User Defined" configuration.

Proportional Range (x0.1 °C): [10…**50**…100]

Defines the proportional range of control. Parameter changes the control speed of the controller.

Integration Time (min): [1…**240**…255]

Defines the reset time of controller. Integration Time has the effect of moving the room temperature slowly toward and ultimately reaching the setpoint value. Depending on the type of system used, parameter needs to have different values. In general, the more inactive the overall system, the greater time is needed.



3.4.1.9. Cooling - Control Type: [PI Continuous]

PI algorithm is used to calculate control signal and adjusts its output value between 0% and 100% to match the difference between the actual temperature and the setpoint temperature and enables an accurate regulation of the room temperature to the setpoint value. PI values should be selected compatible with the room and the type of heating system that needs to be controlled. Default PI values are defined for most common cooling types. User defined values can be used for different rooms and different cooling types for better performance. Using default values as a reference point and adjusting these values according to system might increase controller performance.

Cooling Type: Multiple cooling types with preset parameters are available to the user.

Cooling Ceiling (5K/240)

Fan coil (4K/90)

User Defined

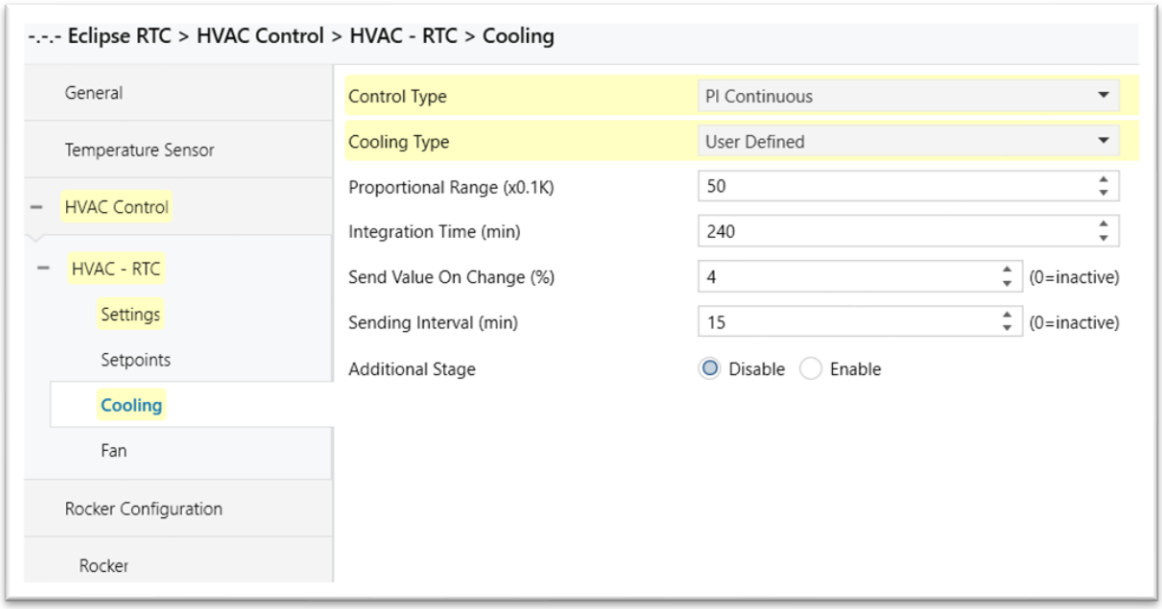
If the required cooling type is not available, individual parameters can be specified in the "User Defined" configuration.

Send Value On Change (%): [0…**4**…100] 0=inactive

Cooling control value will be sent on change of percentage via Object "Cooling PI Control Value".

Sending Interval (min): [0…**15**…255]

Determines cyclic sending period of Object "Cooling PI Control Value".



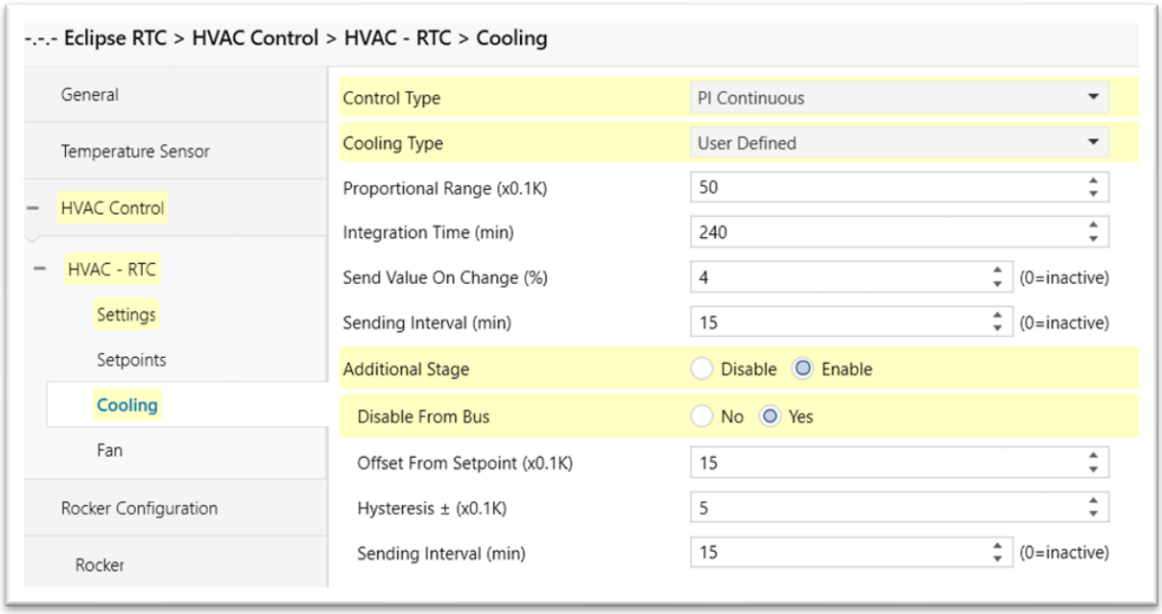
3.4.1.10. Cooling - Additional Stage

Additional Stage: [**Disable**…Enable]

Additional Cooling Control object can be enabled if an extra Cooling Control Value is needed on top of main Cooling Control Value.

Object "Cooling Additional Stage Value" is created when parameter is enabled.

Disable from Bus: Object "Cooling Additional Stage (0-Disable)" can be used to disable additional heating control any time by writing True/False.



Offset from Setpoint (x 0.1 °C): [1…**15**…255]

Defines a separate setpoint value based on main Setpoint temperature for Object "Cooling Additional Stage Value". In this way, Additional Cooling Source will be activated/deactivated depending on new temperature setpoint.

Example: Assume that a room has two type of different heating sources. (Main cooling source, additional cooling source)

Setpoint temperature is 24 degree for the "Cooling Control Value" (main cooling source.)

If "Offset from Setpoint" parameter is; -20 x 0.1 C° =-2 °C.

In this scenario, the setpoint for cooling is set to 24 °C. When the temperature rises above 26 °C, additional cooling should be switched on so that the room cools off again rapidly.

Hysteresis +/- (x 0.1 °C): [1…**5**…255]

Determines Hysteresis value to control Cooling Additional Stage Value more accurate. "Hysteresis" prevents the output value from oscillation and give larger margin to turning heat or cool ON and OFF. If system is more an active system, hysteresis values should be given larger and more inactive values.

Sending Interval (min): [0…**15**…255]

Determines cyclic sending period of Object "Cooling Additional Stage Value".

3.4.1.11. Heating & Cooling

Control mode of thermostat can be selected for Heating, Cooling, and Heating & Cooling.

If Heating & Cooling control mode is selected parameter tabs of "Heating" and "Cooling" will place with same parameters. However, parameter tabs of "Thermostat Settings" and "Setpoint Temperature" will have some additional parameters.

Please check below.

-Thermostat Settings

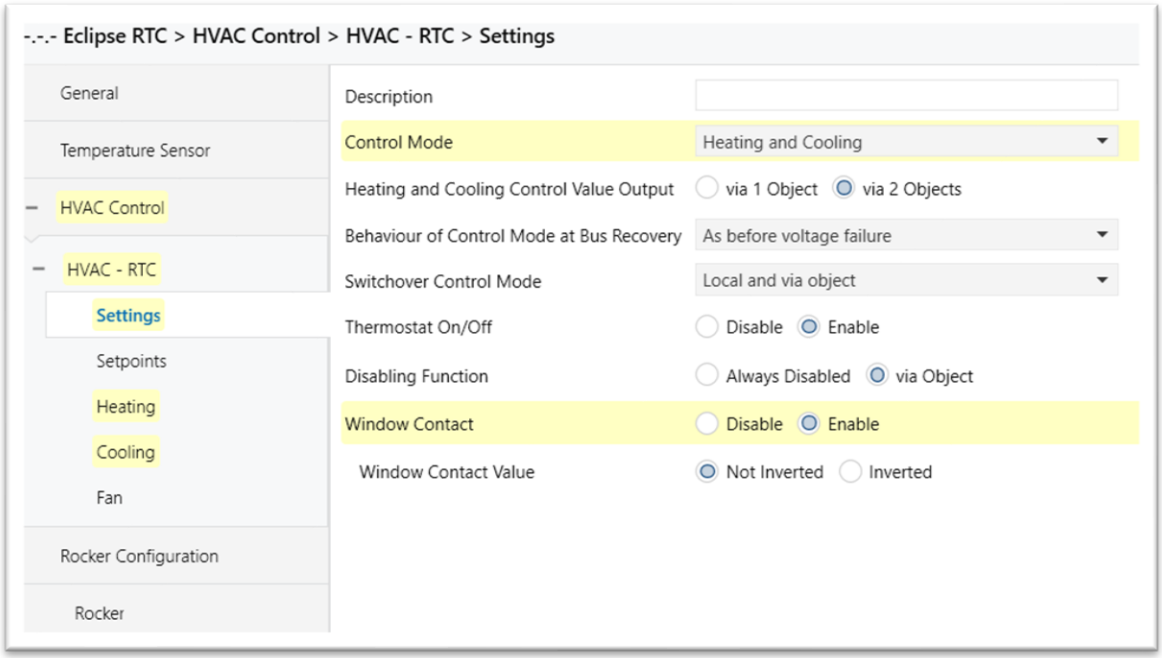
Heating & Cooling Control Value Output: Output value for Heating and Cooling can be sent via same object or 2 separate objects.

If "via 1 Object" option is selected Object "Heating/Cooling Control Value" will be activated.

18	HVAC 1 - RTC	Heating/Cooling PI Control Value	1 byte	percentage (0..100%)	C	R	-	T	-

If "via 2 Objects" option is selected Object "General Thermostat (RTC) – Heating Control Value" and Object "General Thermostat (RTC) – Cooling Control Value" will be activated.

16	HVAC 1 - RTC	Heating PI Control Value	1 byte	percentage (0..100%)	C	R	-	T	-
17	HVAC 1 - RTC	Cooling PI Control Value	1 byte	percentage (0..100%)	C	R	-	T	-



Behavior of Control Mode at Bus Recovery:

The parameter defines the behavior of the control mode after bus power return. Control mode can be changed to following options after a power return:

As before voltage failure
Heating
Cooling

Switchover Control Mode: [Only via Object, Local and via Object, Automatic]

Parameter makes it possible to switch between the heating and cooling mode of the general thermostat.

Only via Object:

Switchover can be applied only "via Object" manually using Object "General Thermostat (RTC)– Heat/Cool Switchover".

$01= Heating [1.100 DPT_cooling/heating]

$00= Cooling [1.100 DPT_cooling/heating]

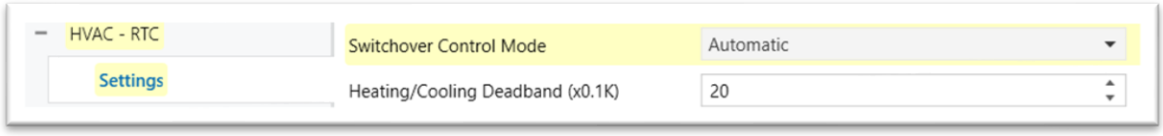
14	HVAC 1 - RTC	Heating/Cooling Switchover (1-Heat, 0-Cool)	1 bit	cooling/heating	C	-	W	-	U
15	HVAC 1 - RTC	Heating/Cooling Status (1-Heat, 0-Cool)	1 bit	cooling/heating	C	R	-	T	-

Local and via Object:

Switchover can be applied locally on Control Element Page and also "via Object" manually using Object "Heating/Cooling Switchover".

Automatic: The thermostat switches automatically between heating and cooling and to the associated setpoint according to defined "Deadband". Object "Thermostat – Heat/Cool Status" will transmit the status after switchover.

"Automatic switchover" function performs only if current operation mode is "Comfort Mode". Otherwise thermostat is not going to switchover heating and cooling!



Heating Cooling Deadband (x 0.1 °C): [0…**20**…255]

Deadband defines the range between setpoint temperature and measured temperature. If deadband is exceeded, switchover will be applied.

-Heating/Cooling Object Description

Heating / Cooling Indication

Object "General Thermostat (RTC) – Heating Indication" defines a state for recent heating command. It indicates that heating source is recently having an active command to heat. In same way, Object "General Thermostat (RTC) – Cooling Indication" defines a state for recent cooling command. It indicates that cooling source is recently having an active command to cool.

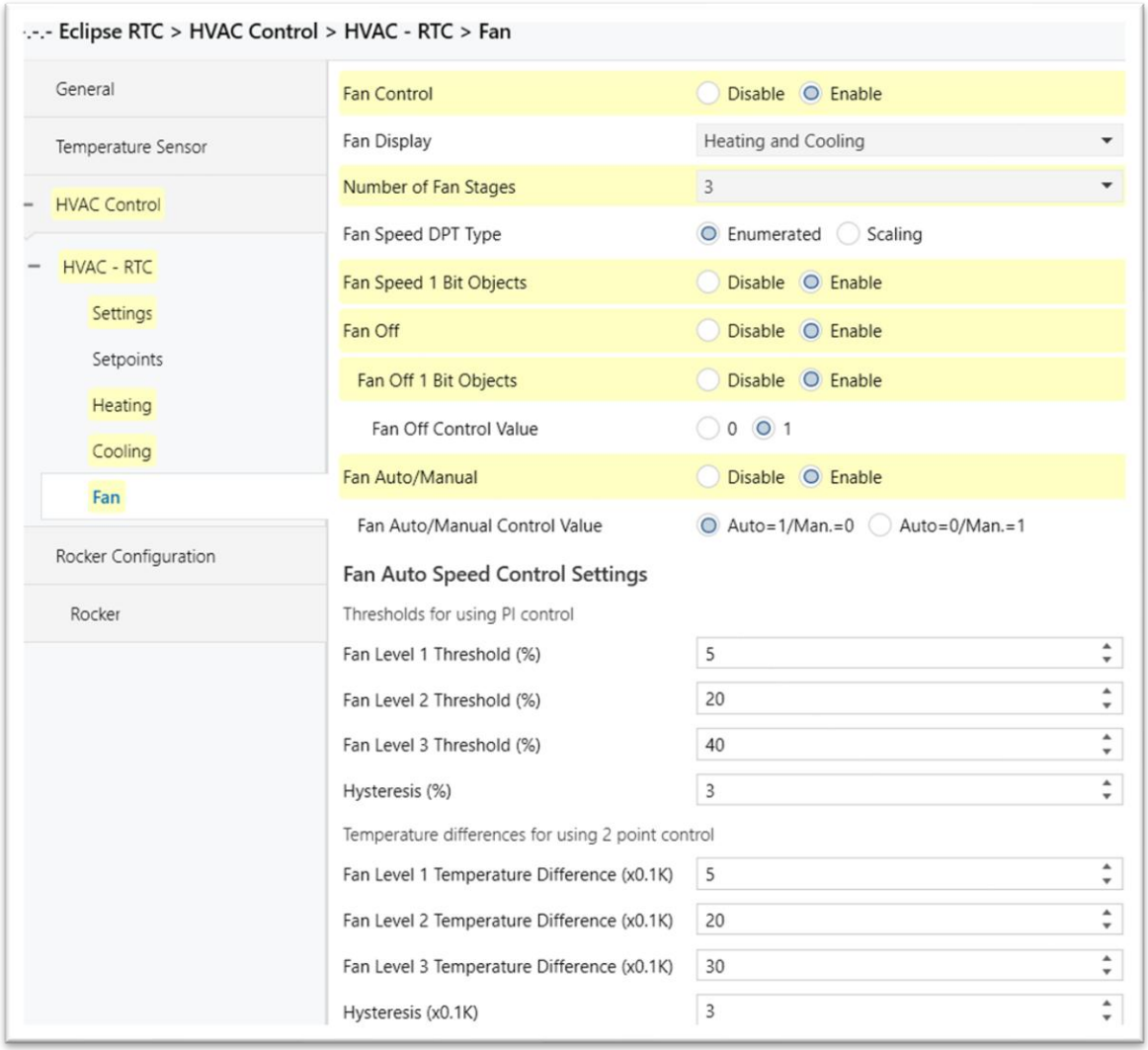
19	HVAC 1 - RTC	Heating Indication	1 bit	state	C	R	-	T	-
20	HVAC 1 - RTC	Cooling Indication	1 bit	state	C	R	-	T	-

Example: Heating mode is active. Setpoint Temperature 22 °C, Actual Temperature 21 °C.

Heating control value is sending ON command to heating source and "heating indication" is instantly informing about heating command.

10:59:52.375	1.5.8	0/7/3	GroupValue_Write	Setpoint Indication	0C 4C | 22 °C
10:59:52.398	1.5.8	0/7/6	GroupValue_Write	Actual Temperature	0C 6A | 22.6 °C
11:00:26.114	1.5.8	0/7/4	GroupValue_Write	Heating Control Value	$00 | Off
11:00:52.635	1.5.8	0/7/3	GroupValue_Write	Setpoint Indication	0C 4C | 22 °C
11:00:52.658	1.5.8	0/7/6	GroupValue_Write	Actual Temperature	0C 6A | 22.6 °C
11:01:05.541	15.15.241	0/7/18	GroupValue_Write	External Value	0C 1A | 21 °C
11:01:07.700	1.5.8	0/7/6	GroupValue_Write	Actual Temperature	0C 1A | 21 °C
11:01:08.299	1.5.8	0/7/4	GroupValue_Write	Heating Control Value	$01 | On
11:01:08.320	1.5.8	0/7/23	GroupValue_Write	Heating Indication	$01 | Active

3.4.1.12. Fan



Fan Display: [Heating, Cooling, Heating and Cooling]

Fan can be visible only for selected control modes.

Number of Fan Stages: [1…**3**…5]

Number of Fan levels can be changed according to control unit. Object will be available according to selection.

Fan Stage Object Type: [1 bit, **1 Byte**]

Type of Fan stage object can be changed as 1 bit or 1 Byte. 1 Byte object can be used as "Enumerated" or "Scaling".

Fan Speed Enumerated (1, 2, 3, 4)

Fan Speed Scaling (25, 50, 75, 100) %

41	HVAC 1 - RTC	Fan Speed Manual (1,2,3,4)	1 byte	fan stage (0..255)	C	-	W	-	U
42	HVAC 1 - RTC	Fan Speed Manual Status (1,2,3,4)	1 byte	fan stage (0..255)	C	R	-	T	-
45	HVAC 1 - RTC	Fan Speed Status (1,2,3,4)	1 byte	fan stage (0..255)	C	R	-	T	-
43	HVAC 1 - RTC	Fan Speed Manual (25,50,75,100)%	1 byte	percentage (0..100%)	C	-	W	-	U
44	HVAC 1 - RTC	Fan Speed Manual Status (25,50,75,100)%	1 byte	percentage (0..100%)	C	R	-	T	-
46	HVAC 1 - RTC	Fan Speed Status (25,50,75,100)%	1 byte	percentage (0..100%)	C	R	-	T	-

Fan Speed Manual Object:

It is used to change the fan speed manually. When telegram is received, fan speed mode switches to manual mode.

Fan Speed Manual Status Object:

It transmits the actual fan speed in fan manual mode. This object does not transmit any telegram in fan automatic mode.

Fan Speed Status Object:

It transmits the actual fan speed in both manual mode and automatic mode.

1 bit objects:

47	HVAC 1 - RTC	Fan 1	1 bit	state	C	-	W	-	U
48	HVAC 1 - RTC	Fan 1 Status	1 bit	state	C	R	-	T	-
49	HVAC 1 - RTC	Fan 2	1 bit	state	C	-	W	-	U
50	HVAC 1 - RTC	Fan 2 Status	1 bit	state	C	R	-	T	-
51	HVAC 1 - RTC	Fan 3	1 bit	state	C	-	W	-	U
52	HVAC 1 - RTC	Fan 3 Status	1 bit	state	C	R	-	T	-
53	HVAC 1 - RTC	Fan 4	1 bit	state	C	-	W	-	U
54	HVAC 1 - RTC	Fan 4 Status	1 bit	state	C	R	-	T	-

Fan Off:

When enabled, fan stage 0 will be activated for 1 byte fan speed control objects. When fan speed is 0, the fan will be turned off.

41	HVAC 1 - RTC	Fan Speed Manual (0,1,2,3,4)	1 byte	fan stage (0..255)	C	-	W	-	U
42	HVAC 1 - RTC	Fan Speed Manual Status (0,1,2,3,4)	1 byte	fan stage (0..255)	C	R	-	T	-
45	HVAC 1 - RTC	Fan Speed Status (0,1,2,3,4)	1 byte	fan stage (0..255)	C	R	-	T	-
43	HVAC 1 - RTC	Fan Speed Manual (0,25,50,75,100)%	1 byte	percentage (0..100%)	C	-	W	-	U
44	HVAC 1 - RTC	Fan Speed Manual Status (0,25,50,75,100)%	1 byte	percentage (0..100%)	C	R	-	T	-
46	HVAC 1 - RTC	Fan Speed Status (0,25,50,75,100)%	1 byte	percentage (0..100%)	C	R	-	T	-

Fan Off 1 Bit Object:

When enabled, Fan Off and Fan Off Status objects will appear. Value can be selected for activating fan off.

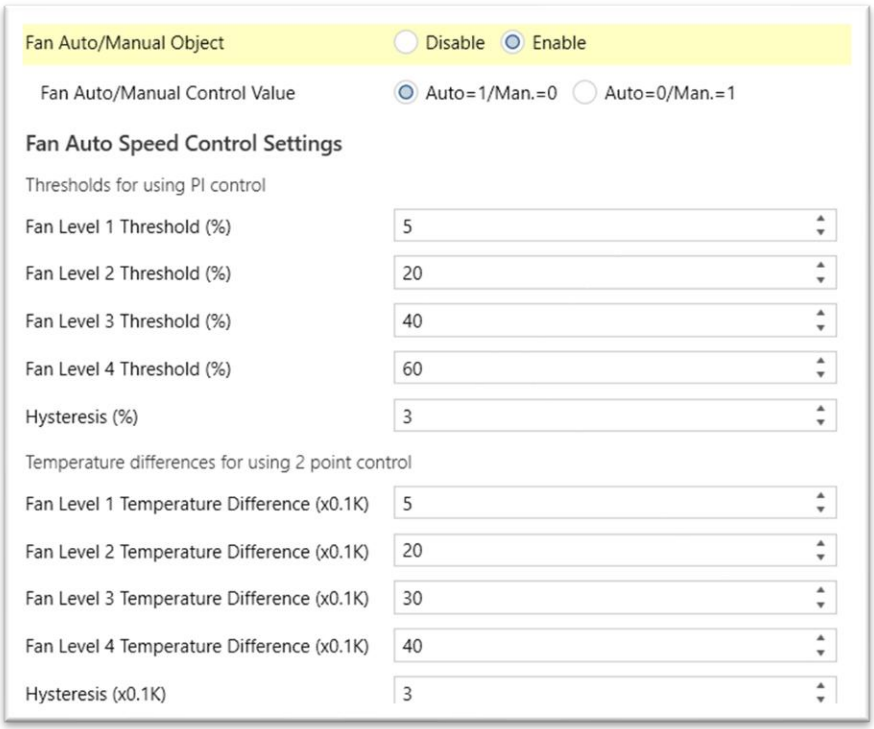
59	HVAC 1 - RTC	Fan Off (1-Off)	1 bit	state	C	-	W	-	U
60	HVAC 1 - RTC	Fan Off Status (1-Off)	1 bit	state	C	R	-	T	-

Fan Auto/Manual Object:

This parameter enables fan auto function. Value can be selected for activating fan auto mode.

57	HVAC 1 - RTC	Fan Auto/Manual (1-Auto)	1 bit	enable	C	-	W	-	U
58	HVAC 1 - RTC	Fan Auto/Manual Status (1-Auto)	1 bit	enable	C	R	-	T	-

When fan auto mode is activated, fan speed is evaluated according to heating/cooling control types. For PI Continuous and PWM-Switching PI Control types, the device changes the fan speed according to PI Control value and entered thresholds. For 2 point on/off control type, the device changes the fan speed according to entered temperature differences.



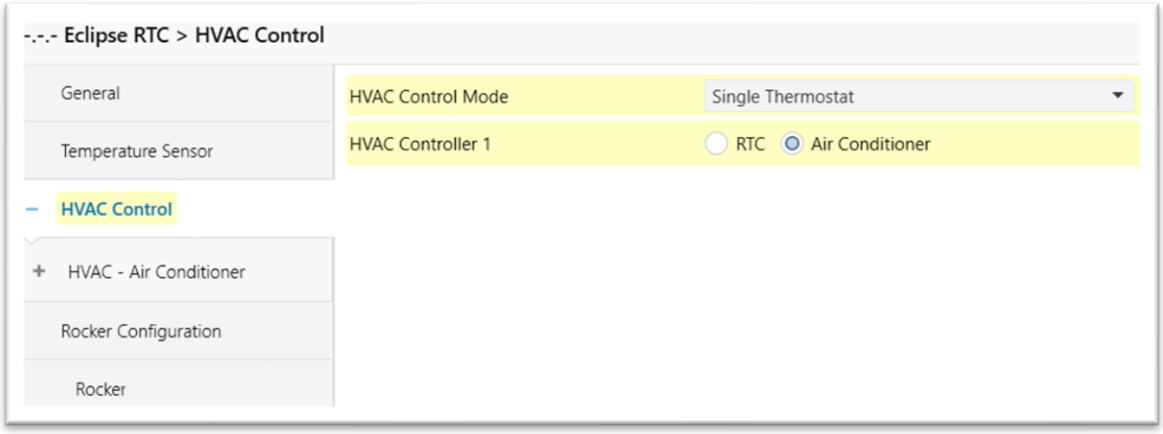
Fan Step (-/+) Object:

It is used to change the fan speed with 1 bit telegrams. Each "1" telegram received increases the fan speed and each "0" telegram received decreases the fan speed cyclically. The order is:

Fan Off > Fan 1 > Fan 2 > Fan 3 > Fan 4 > Fan 5 > Fan Auto > Fan Off > Fan 1 > .....

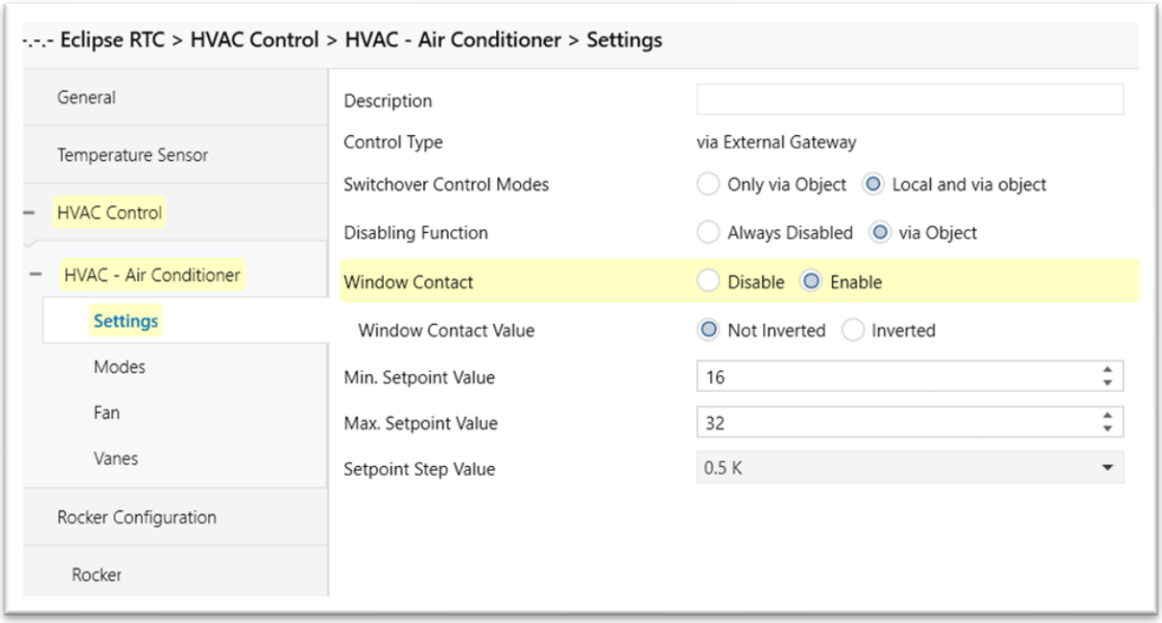
61	HVAC 1 - RTC	Fan Step (-/+)		1 bit	step	C	-	W	-	-

3.4.2. Air Conditioner

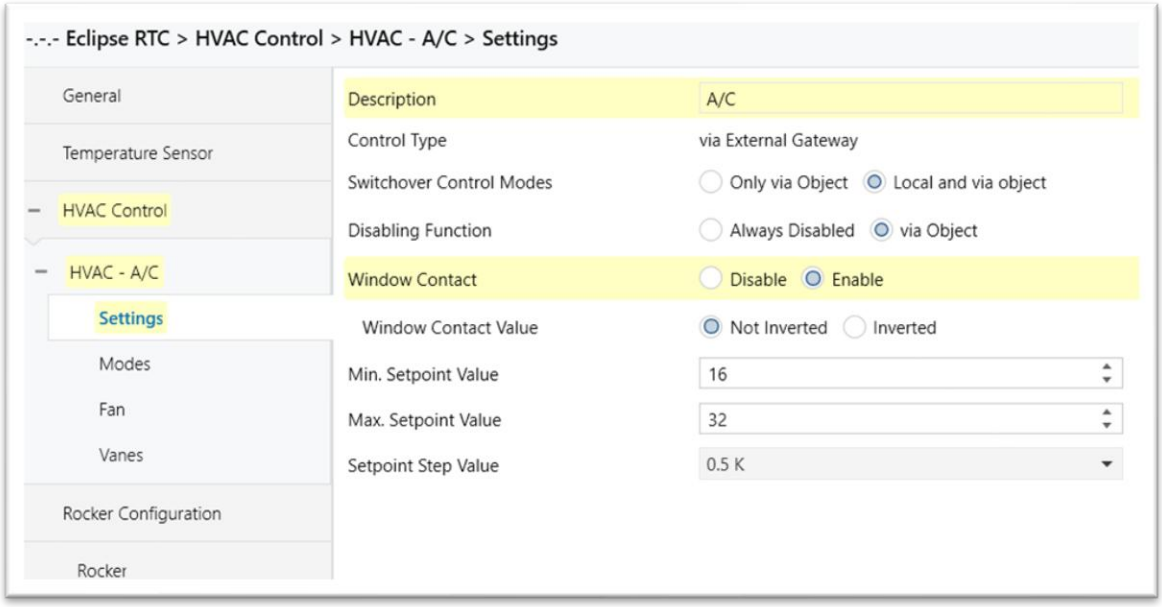


If Air Conditioner control mode is selected, parameters and objects will change especially for Air Conditioners. Please check below.

3.4.2.1. Settings



Description: The description defines the HVAC name and related objects dynamically.



67	HVAC 1 - A/C	Control On/Off	1 bit	switch	C	-	-	T	-
68	HVAC 1 - A/C	Control On/Off Status	1 bit	switch	C	-	W	T	U
69	HVAC 1 - A/C	Setpoint Control	2 bytes	temperature (°C)	C	-	-	T	-
70	HVAC 1 - A/C	Setpoint Status	2 bytes	temperature (°C)	C	-	W	T	U
71	HVAC 1 - A/C	Setpoint (-/+)	1 bit	step	C	-	W	T	U
74	HVAC 1 - A/C	Control Modes (0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-D...	1 byte	HVAC control mode	C	-	-	T	-
75	HVAC 1 - A/C	Control Modes Status (0-Auto, 1-Heat, 3-Cool, 9-Fa...	1 byte	HVAC control mode	C	-	W	T	U
86	HVAC 1 - A/C	Fan Speed Enumerated (1,2)	1 byte	fan stage (0..255)	C	-	-	T	-
87	HVAC 1 - A/C	Fan Speed Enumerated Status (1,2)	1 byte	fan stage (0..255)	C	-	W	T	U
110	HVAC 1 - A/C	Error 1 Bit (1-Error, 0-No Error)	1 bit	alarm	C	-	W	T	U
111	HVAC 1 - A/C	Window Contact (0-Open, 1-Close)	1 bit	open/close	C	-	W	T	U
112	HVAC 1 - A/C	Disabling Function (1-Disable, 0-Enable)	1 bit	boolean	C	-	W	-	-
113	HVAC 1 - A/C	Disabling Function Status (1-Disable, 0-Enable)	1 bit	boolean	C	R	-	T	-

Control Type: [**via External Gateway**]

An External VRV KNX gateway must be used in combination with Eclipse Thermostat.

Switchover Control Mode: [Only via Object, Local and via Object]

Parameter makes it possible to switch between control modes of the air conditioner.

Only via Object:

Switchover can be applied only "via Object" manually using related objects

Local and via Object:

Switchover can be applied locally on the device and also "via Object" manually using related objects.

Disabling Function: [Always disabled, **via Object**]

It is possible to disable the thermostat. When disabled, it is only allowed to control thermostat via KNX bus.

Window Contact: [Disable, Enable**]**

Object "Window Contact (1-Open, 0--Close) can be used to take thermostat control in stand-by position according to the window status. If window is open thermostat will transmit off command to air conditioner and go into off state, and it will not be possible to control the thermostat until window is closed.

Min. Setpoint Value: [5…**16**…40]

Defines the minimum temperature setpoint value for the thermostat function. Any temperature value lower than Min. Setpoint Value cannot be written or selected on setpoint temperature objects.

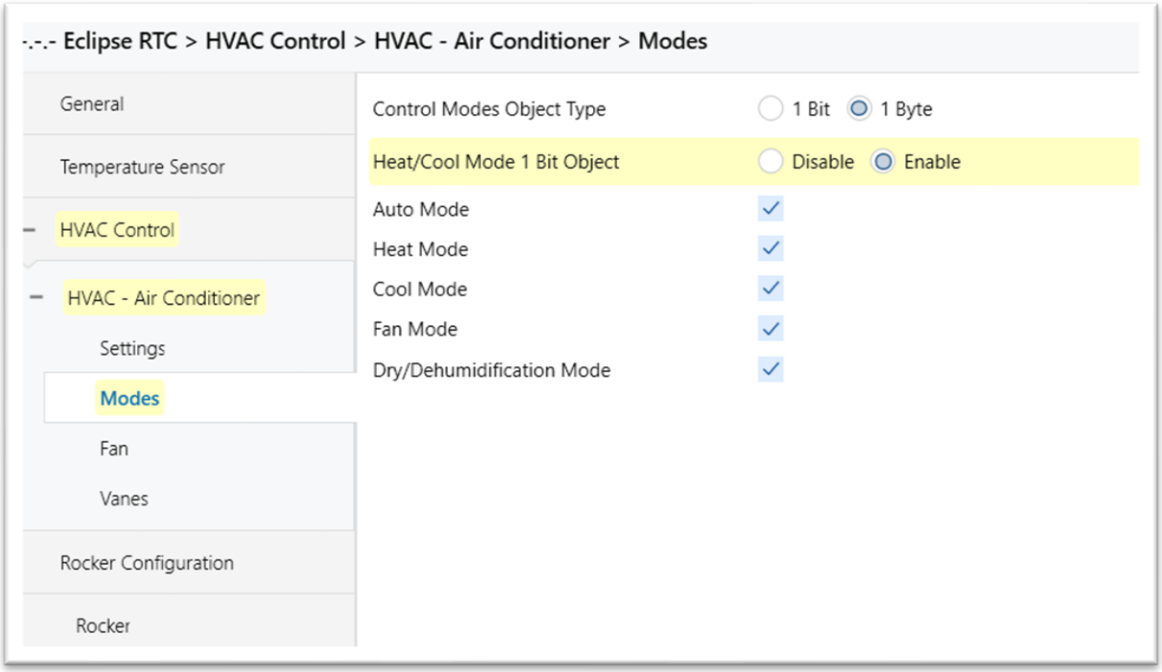
Max. Setpoint Value: [5…**32**…40]

Defines the maximum temperature setpoint value for the thermostat function. Any temperature value higher than Max. Setpoint Value cannot be written or selected on temperature objects.

Setpoint Step Value: [0.1…**0.5**…1]

Increase/Decrease value of current setpoint.

3.4.2.2. Modes



Control Mode Object Type: [1 bit, **1 Byte**]

Control mode can be selected using Object "Control Modes (0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry)".

74	HVAC 1 - Air Conditioner	Control Modes (0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry)	1 byte	HVAC control mode	C	-	-	T	-
75	HVAC 1 - Air Conditioner	Control Modes Status (0-Auto, 1-Heat, 3-Cool, 9-Fan, 14-Dry)	1 byte	HVAC control mode	C	-	W	T	U

Or

76	HVAC 1 - Air Conditioner	Auto Mode	1 bit	state	C	-	-	T	-
77	HVAC 1 - Air Conditioner	Auto Mode Status	1 bit	state	C	-	W	T	U
78	HVAC 1 - Air Conditioner	Heat Mode	1 bit	state	C	-	-	T	-
79	HVAC 1 - Air Conditioner	Heat Mode Status	1 bit	state	C	-	W	T	U
80	HVAC 1 - Air Conditioner	Cool Mode	1 bit	state	C	-	-	T	-
81	HVAC 1 - Air Conditioner	Cool Mode Status	1 bit	state	C	-	W	T	U
82	HVAC 1 - Air Conditioner	Fan Mode	1 bit	state	C	-	-	T	-
83	HVAC 1 - Air Conditioner	Fan Mode Status	1 bit	state	C	-	W	T	U
84	HVAC 1 - Air Conditioner	Dry Mode	1 bit	state	C	-	-	T	-
85	HVAC 1 - Air Conditioner	Dry Mode Status	1 bit	state	C	-	W	T	U

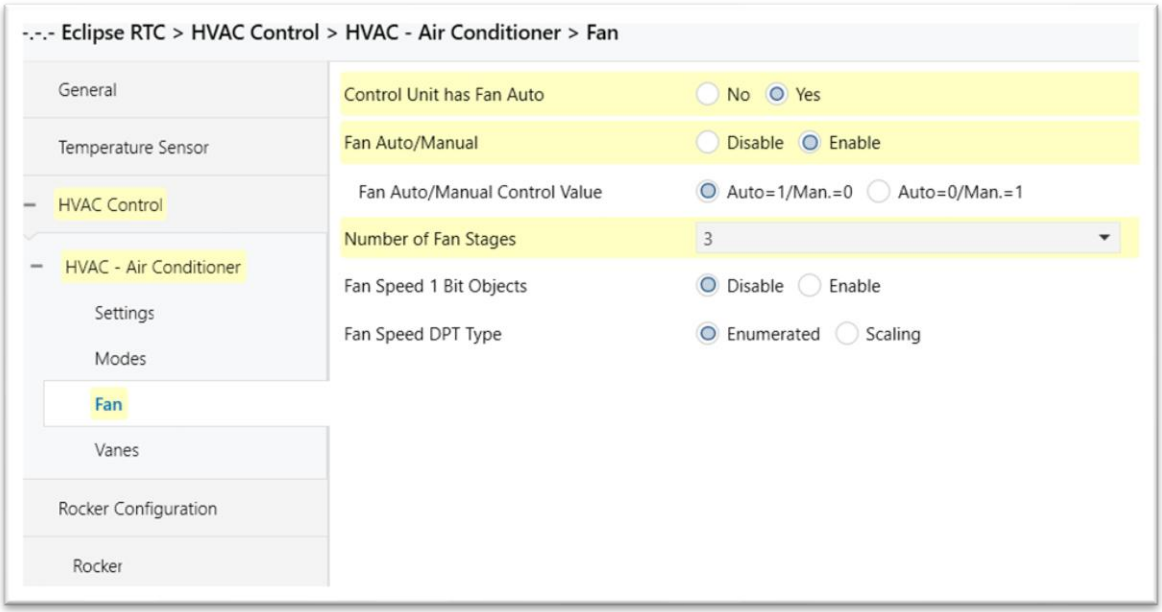
Modes to be shown on display can be selected.

Heat/Cool Mode 1 Bit Object: [**Disable**, Enable]

Parameter enables the switchover object to change between heating and cooling mode.

72	HVAC 1 - Air Conditioner	Control Mode Heat/Cool (1-Heat, 0-Cool)	1 bit	cooling/heating	C	-	-	T	-
73	HVAC 1 - Air Conditioner	Control Mode Heat/Cool Status (1-Heat, 0-Cool)	1 bit	cooling/heating	C	-	W	T	U

3.4.2.3. Fan



Control Unit has Fan Auto:

Parameter can be activated if actuator has a "Fan auto" function.

Fan Auto/Manual Object:

"Fan auto" command can be sent to the actuator via Object "Fan Auto/Manual (1-Auto)" will be visible.

100	HVAC 1 - Air Conditioner	Fan Auto/Manual (1-Auto)	1 bit	enable	C - - T -
101	HVAC 1 - Air Conditioner	Fan Auto/Manual Status (1-Auto)	1 bit	enable	C - W T U

Fan Auto/Manual Control Value:

Fan auto command can be used inverse. [True or False]

Number of Fan Stages: [1…**3**…5]

Number of Fan levels can be changed according to control unit. Object will be available according to selection.

86	HVAC 1 - Air Conditioner	Fan Speed Enumerated (0,1,2,3)	1 byte	fan stage (0..255)	C - - T -
87	HVAC 1 - Air Conditioner	Fan Speed Enumerated Status (0,1,2,3)	1 byte	fan stage (0..255)	C - W T U

Fan Stage Object Type: [1 bit, **1 Byte**]

Type of Fan stage object can be changed as 1 bit or 1 Byte. 1 Byte object can be used as "Enumerated" or "Scaling".

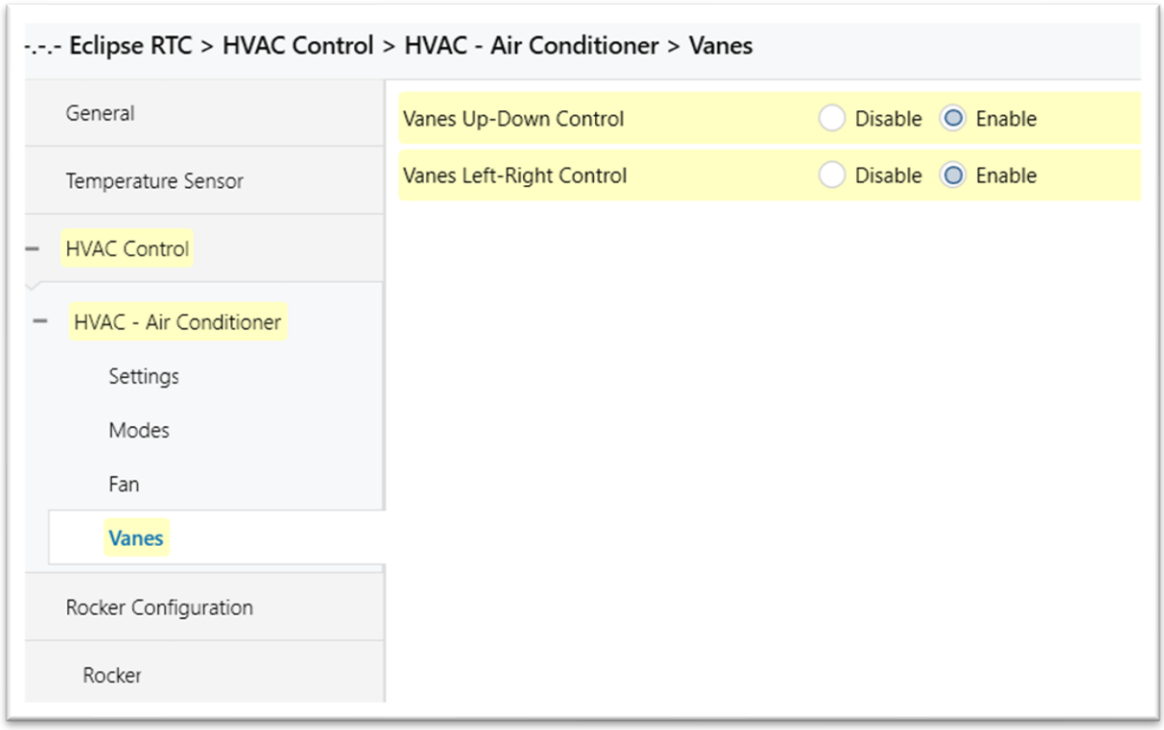
Fan Speed Enumerated (0, 1, 2, 3, 4)

Fan Speed Scaling (0, 25, 50, 75, 100) %

1 bit objects;

90	HVAC 1 - Air Conditioner	Fan 1	1 bit	state	C - - T -
91	HVAC 1 - Air Conditioner	Fan 1 Status	1 bit	state	C - W T U
92	HVAC 1 - Air Conditioner	Fan 2	1 bit	state	C - - T -
93	HVAC 1 - Air Conditioner	Fan 2 Status	1 bit	state	C - W T U
94	HVAC 1 - Air Conditioner	Fan 3	1 bit	state	C - - T -
95	HVAC 1 - Air Conditioner	Fan 3 Status	1 bit	state	C - W T U
96	HVAC 1 - Air Conditioner	Fan 4	1 bit	state	C - - T -
97	HVAC 1 - Air Conditioner	Fan 4 Status	1 bit	state	C - W T U

3.4.2.4. Vanes



Vanes Up-Down Control:

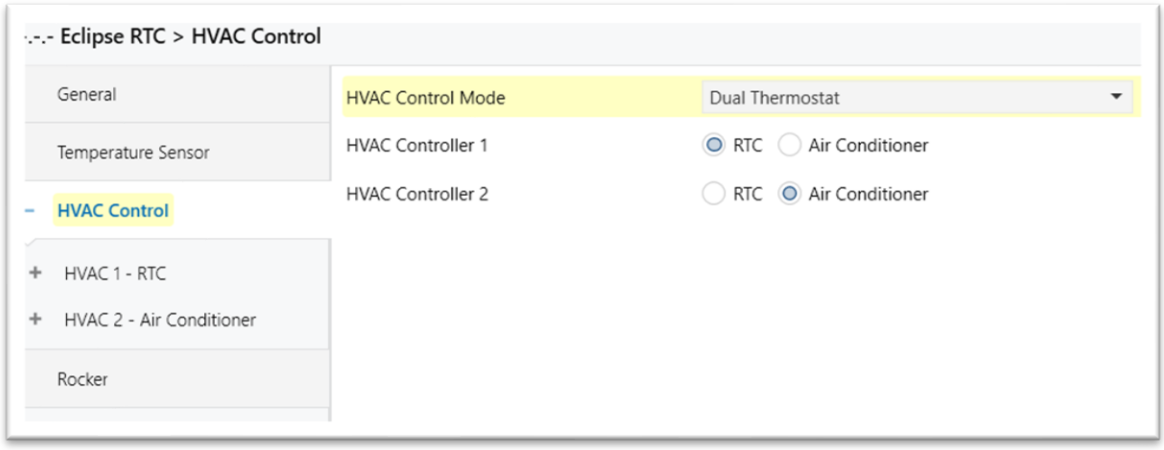
102	HVAC 1 - Air Conditioner	Vanes Up-Down (0-Swing Off, 1-Pos1, 2-Pos2, 3-Pos3, 4-Pos4, 5-Pos5, 6-Swing On)	1 byte		C	-	-	T	-
103	HVAC 1 - Air Conditioner	Vanes Up-Down Status (0-Swing Off, 1-Pos1, 2-Pos2, 3-Pos3, 4-Pos4, 5-Pos5, 6-Swing On)	1 byte		C	-	W	T	U
104	HVAC 1 - Air Conditioner	Swing Up/Down	1 bit	state	C	-	-	T	-
105	HVAC 1 - Air Conditioner	Swing Up/Down Status	1 bit	state	C	-	W	T	U

Vanes Left-Right Control:

106	HVAC 1 - Air Conditioner	Vanes Left-Right (0-Swing Off, 1-Pos1, 2-Pos2, 3-Pos3, 4-Pos4, 5-Pos5, 6-Swing On)	1 byte		C	-	-	T	-
107	HVAC 1 - Air Conditioner	Vanes Left-Right Status (0-Swing Off, 1-Pos1, 2-Pos2, 3-Pos3, 4-Pos4, 5-Pos5, 6-Swing On)	1 byte		C	-	W	T	U
108	HVAC 1 - Air Conditioner	Swing Left/Right	1 bit	state	C	-	-	T	-
109	HVAC 1 - Air Conditioner	Swing Left/Right Status	1 bit	state	C	-	W	T	U

3.5. Dual Thermostat

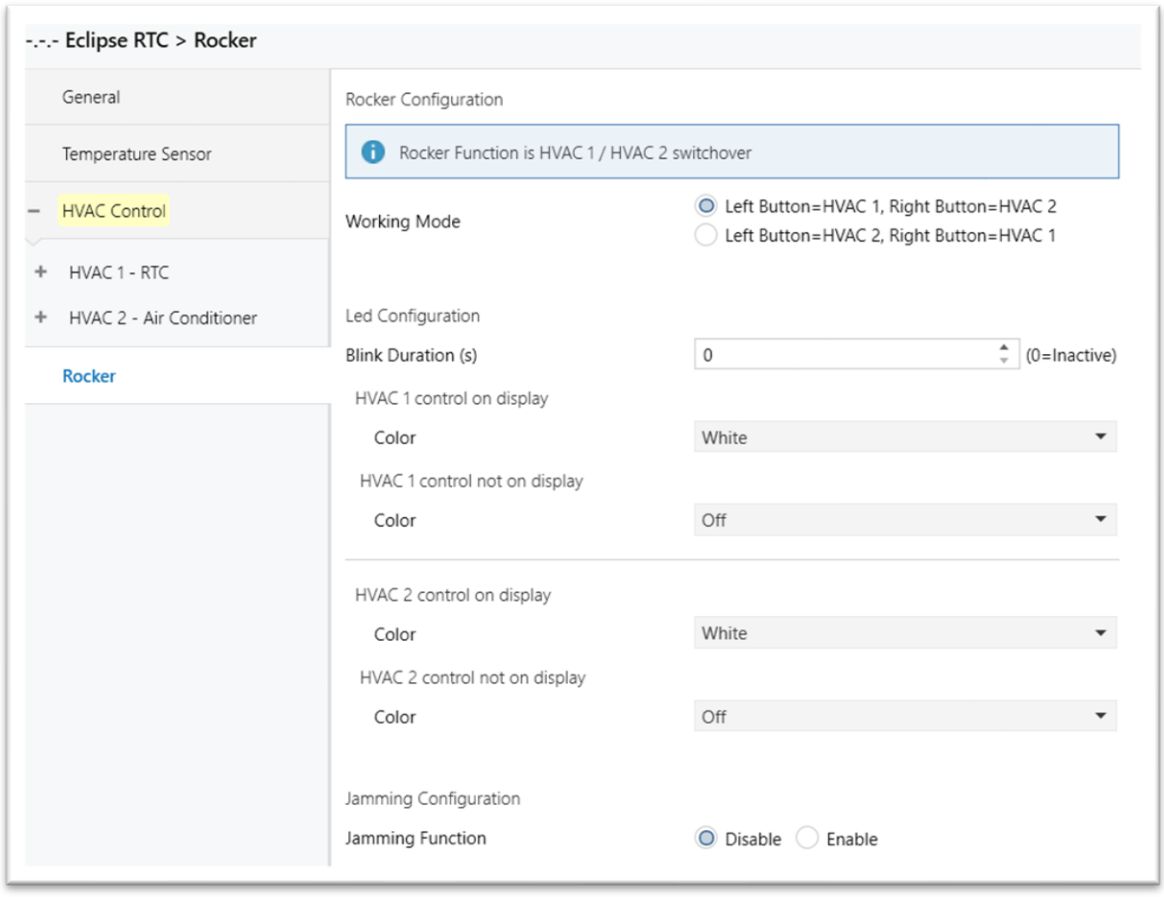
It is possible to use Eclipse Thermostat as dual thermostat. When used, it is possible to control 2 individual thermostat logics with one device.



HVAC Controller 1 and 2 can be selected same or different to control 2 different loads. See 3.4.1 RTC and 3.4.2 Air conditioner for detailed configuration of HVAC Controllers.

3.5.1. Rocker Configuration

When dual thermostat is selected, rocker can only be used for HVAC Controller switchover.



Working Mode: This parameter defines the buttons to select HVAC Controller.

Led configurations: This parameter sets the status LED of the buttons according to displayed HVAC Controller.

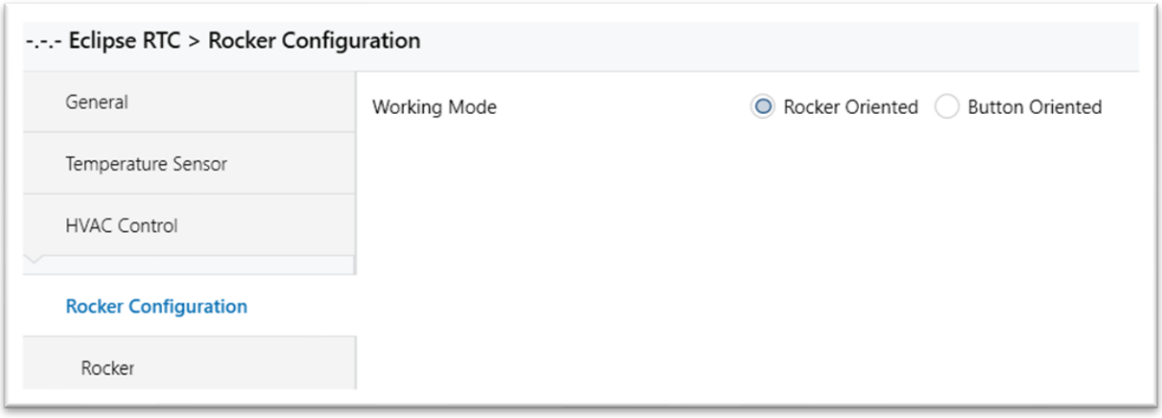
Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

Jamming Configurations: Jamming function is used to block to respective button or rocker via– "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.

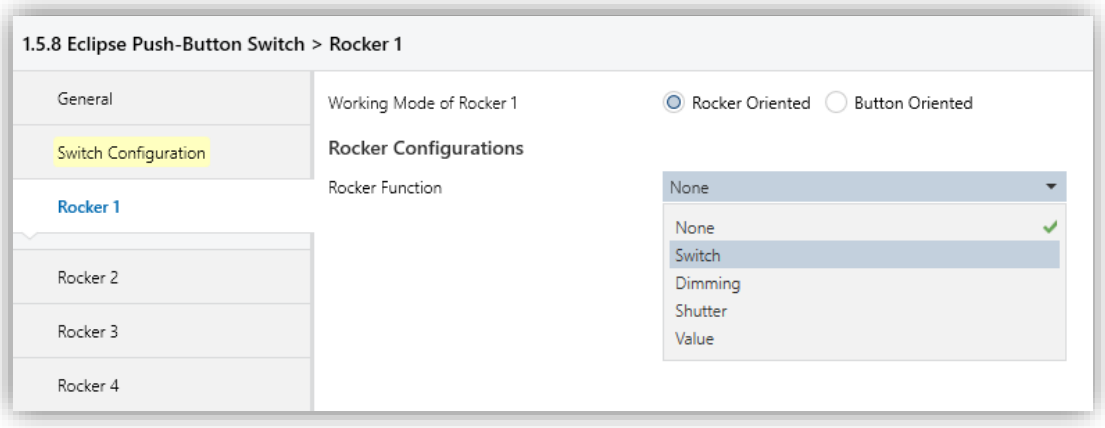
3.6. Rocker Configuration

Rocker and Button configurations mentioned below are only available when HVAC Control mode is not dual thermostat.

Two working modes are available for rocker. [Rocker oriented, Button Oriented]

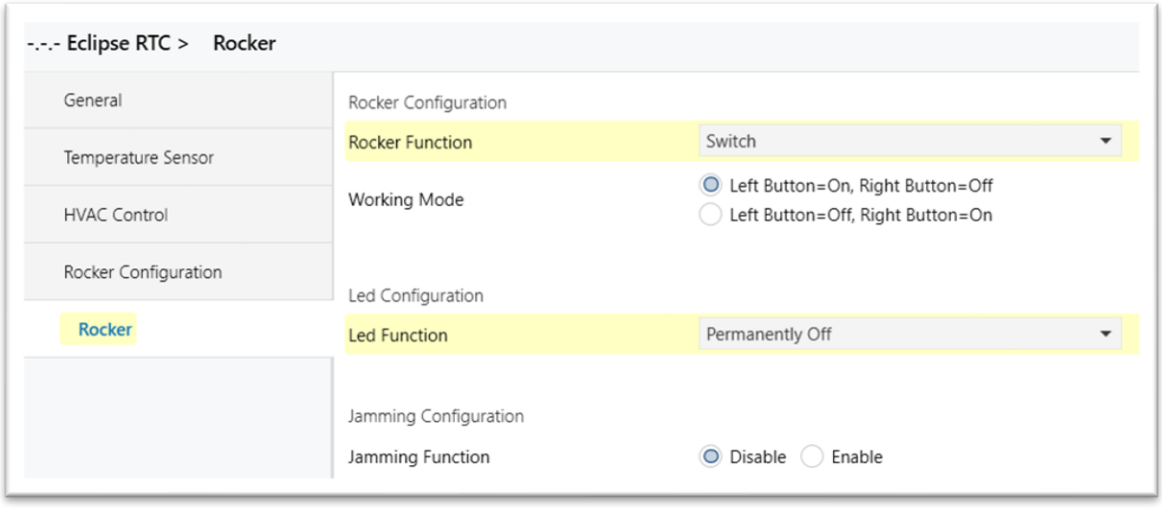


Rocker oriented functions: [Switch, Dimming, Shutter, Value]



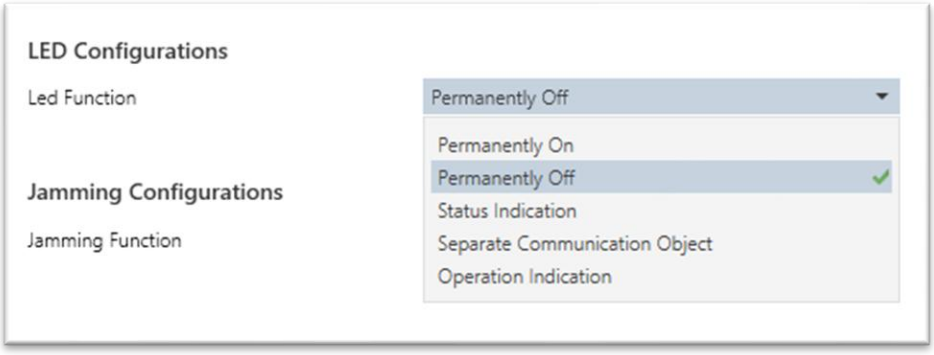
3.6.1. Rocker Oriented [Switch]

Working mode is selectable for left and right buttons. [Left Button = ON; Right Button=OFF]

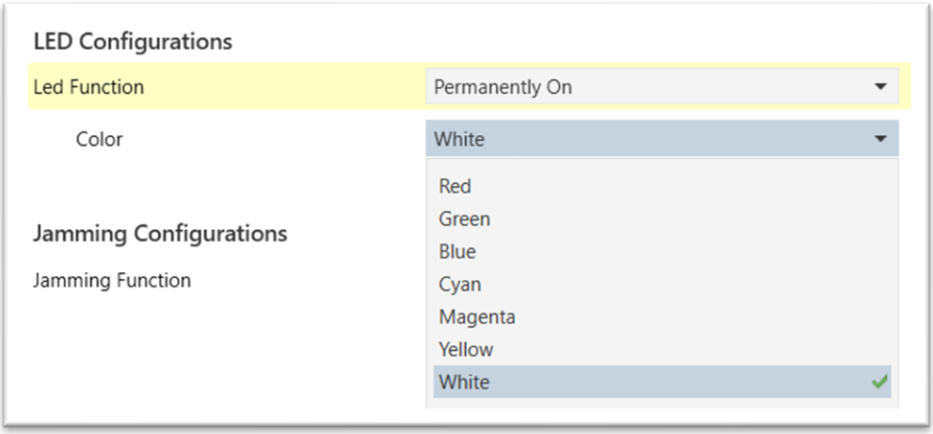


Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.



Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]

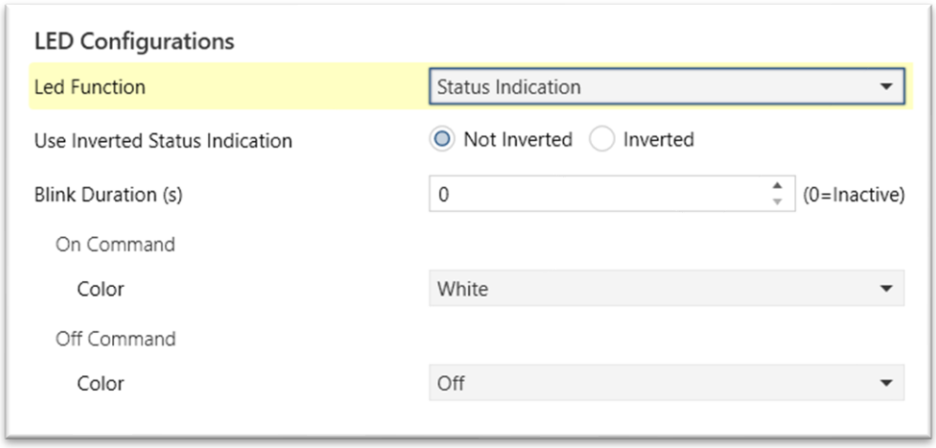


Led Function [Permanently OFF]: LED is always OFF.

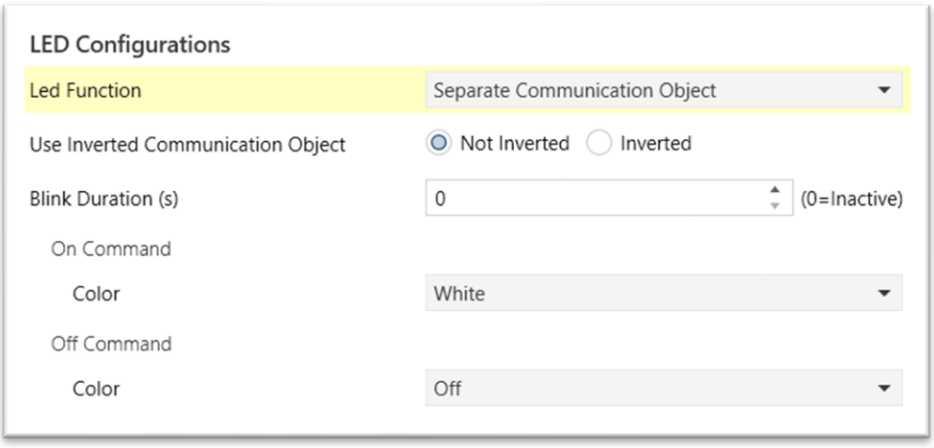
Led Function [Status indication]: LED color will change according to status information.

On command [white] – OFF Command [Off]

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

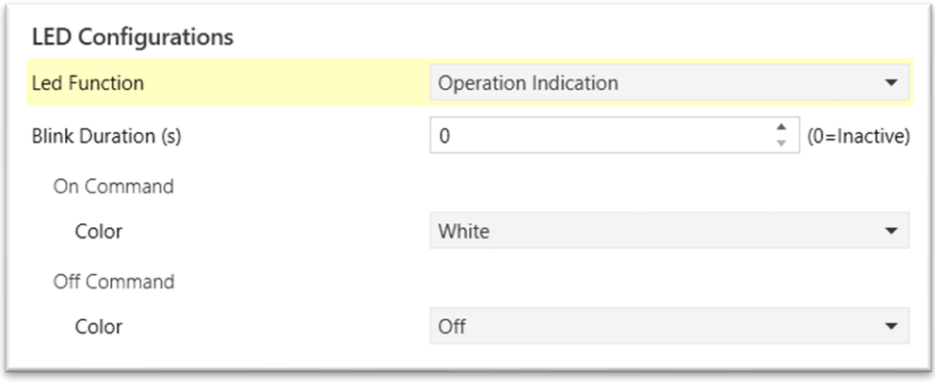


Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



Jamming Configurations

Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.

3.6.2. Rocker Oriented [Dimming]

Working mode is selectable for left and right buttons. [Left Button = ON/Brighter; Right Button=OFF/Darker]

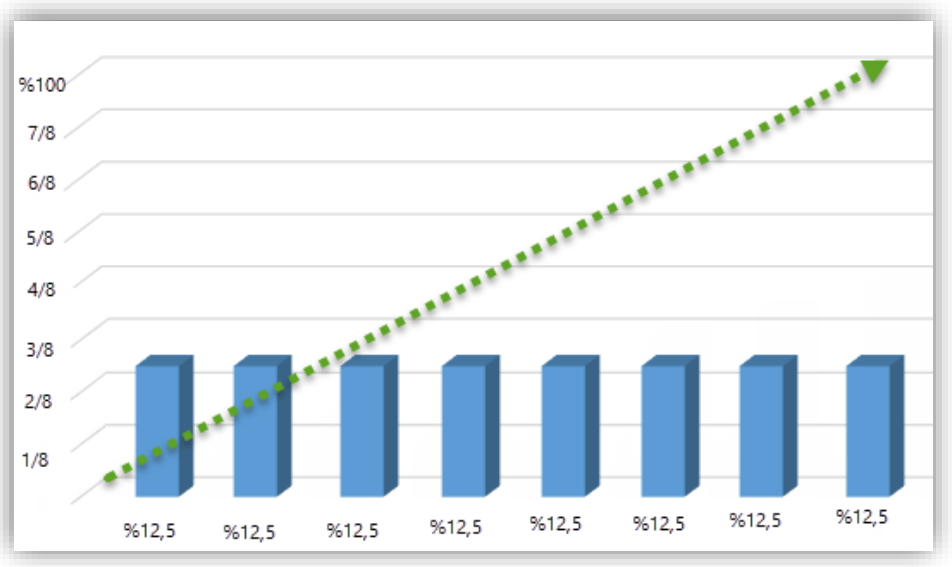
Long Press Duration (x100 ms): Long press duration can be changed. [0…**10**...65535]

As default; 100 ms x 10=1000 ms (1 second)

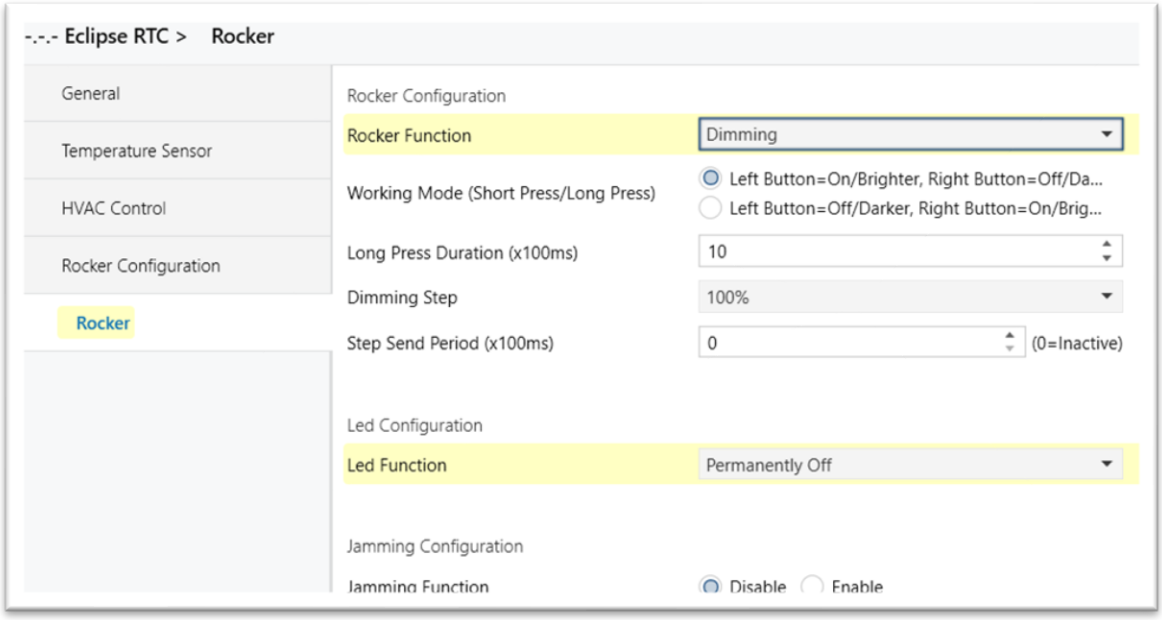
Switch will start to send dimming up/down commands after each press longer than "1 second".

Dimming Step: Dimming step percentage can be changed to specify the maximum dimming step width of a dimming telegram. With a dimming message, you can dim by a maximum of X %.

(%100 option represents "Start-stop" dimming function. Other percentage values correspond to "step dimming function".)

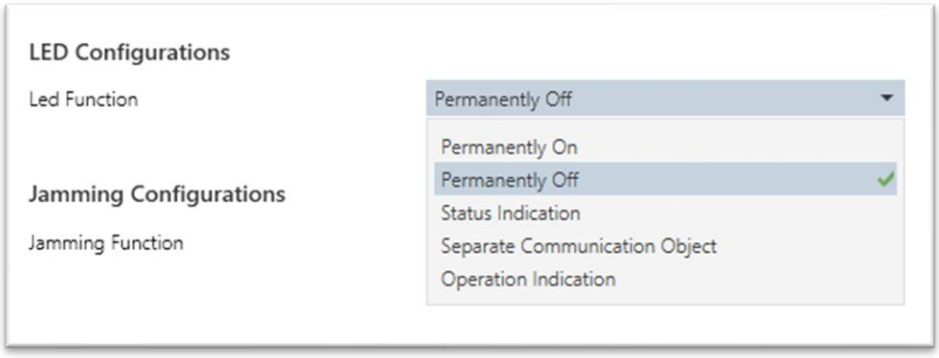


Step Send Period: Defines time interval between two dimming step commands.

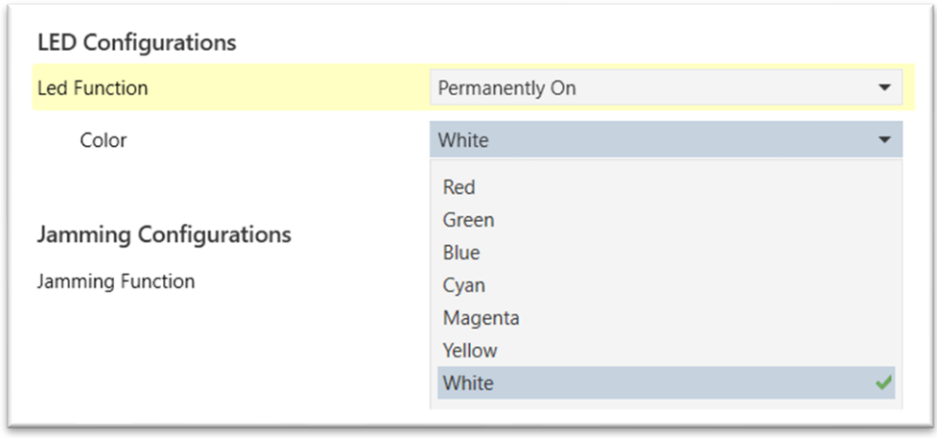


Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.



Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]

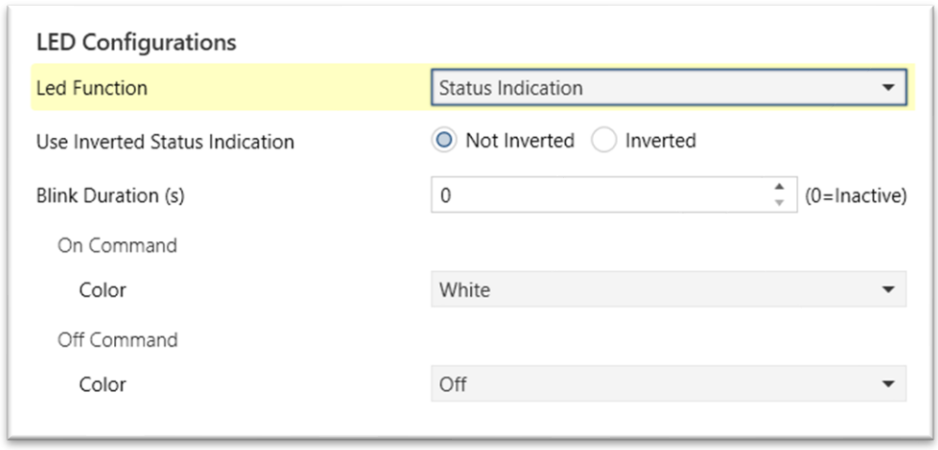


Led Function [Permanently OFF]: LED is always OFF.

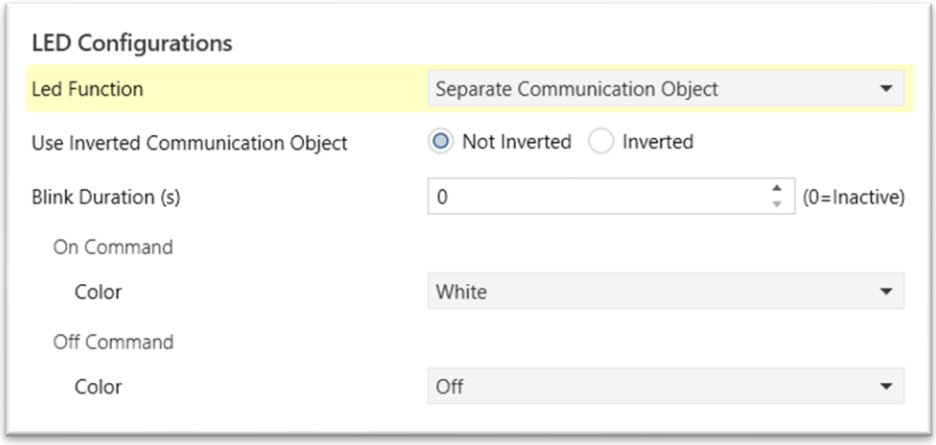
Led Function [Status indication]: LED color will change according to status information.

On command [white] – OFF Command [Off]

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

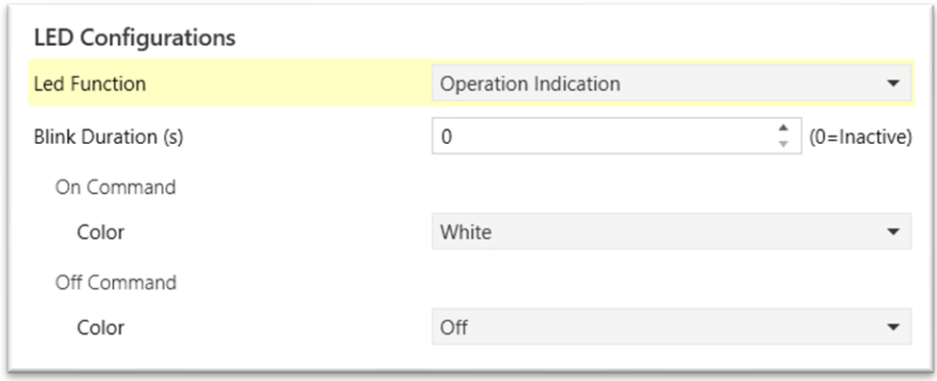


Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



Jamming Configurations

Jamming function is used to block to respective button or rocker via Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.

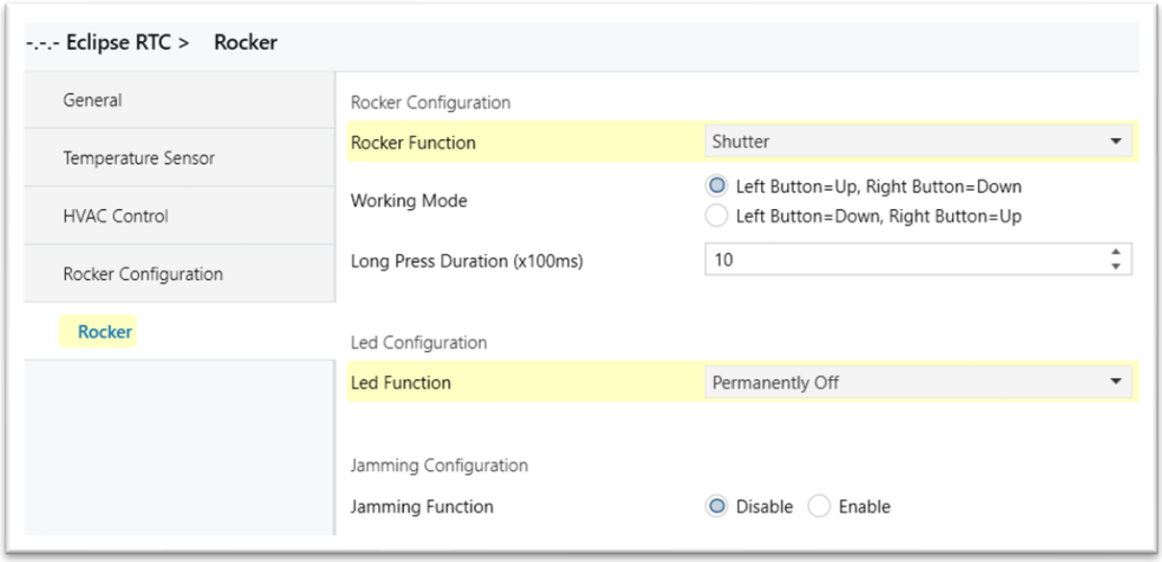
3.6.3. Rocker Oriented [Shutter]

Working mode is selectable for left and right buttons. [Left Button = UP; Right Button=DOWN]

Long Press Duration (x100 ms): Long press duration can be changed. [0…**10**...65535]

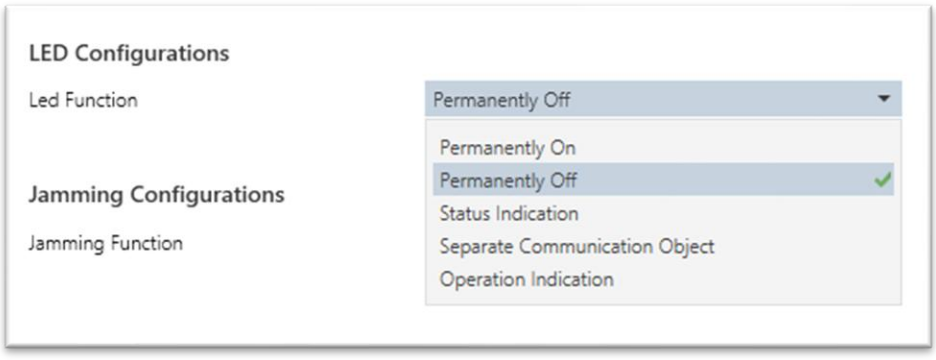
As default; 100 ms x 10=1000 ms (1 second)

Switch will start to send move up/down commands after each press longer than "1 second". Switch will send Step/Stop command on each short press,

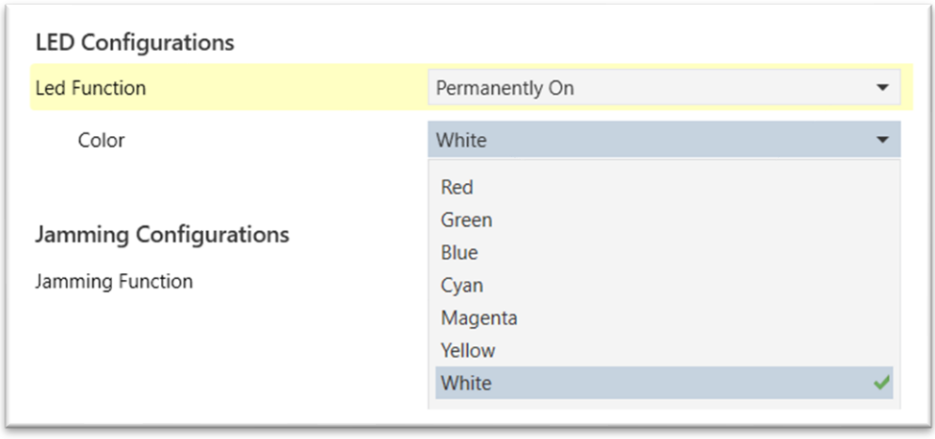


Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.



Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]

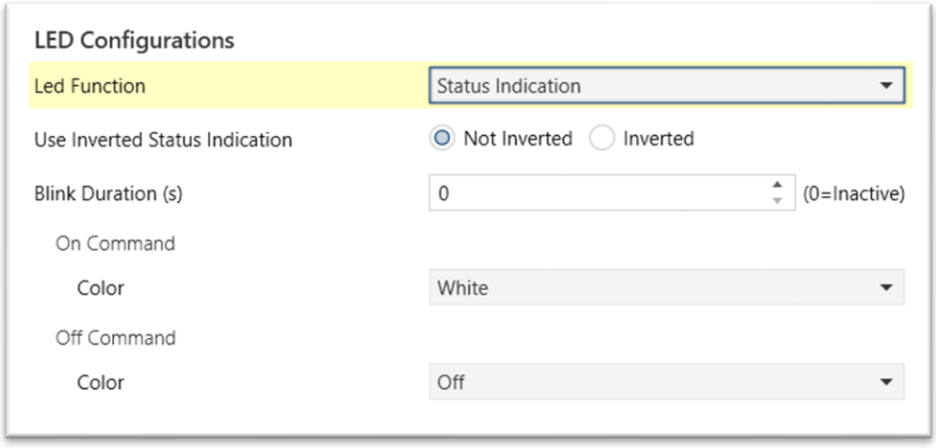


Led Function [Permanently OFF]: LED is always OFF.

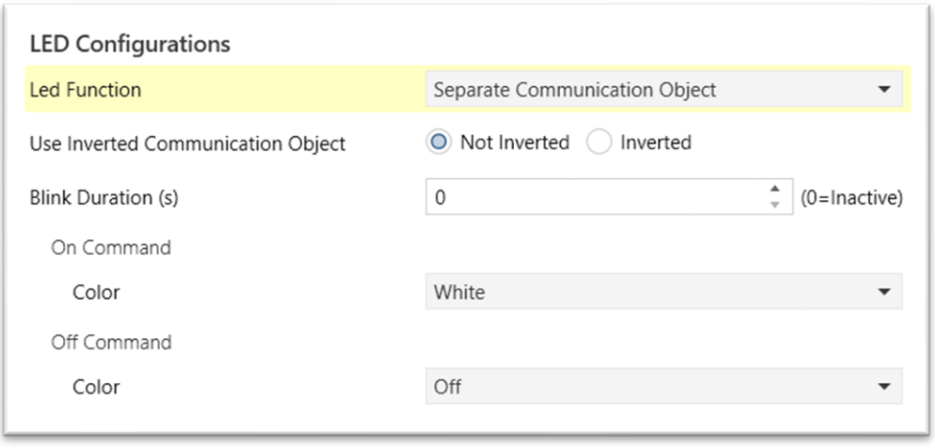
Led Function [Status indication]: LED color will change according to status information.

On command [white] – OFF Command [Off]

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

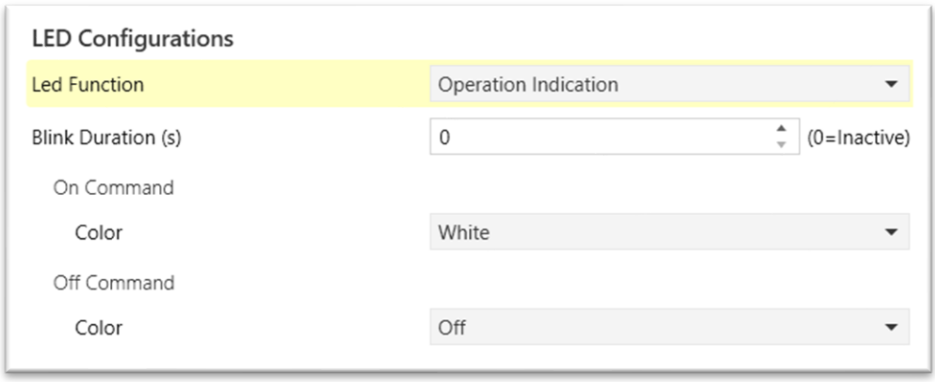


Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



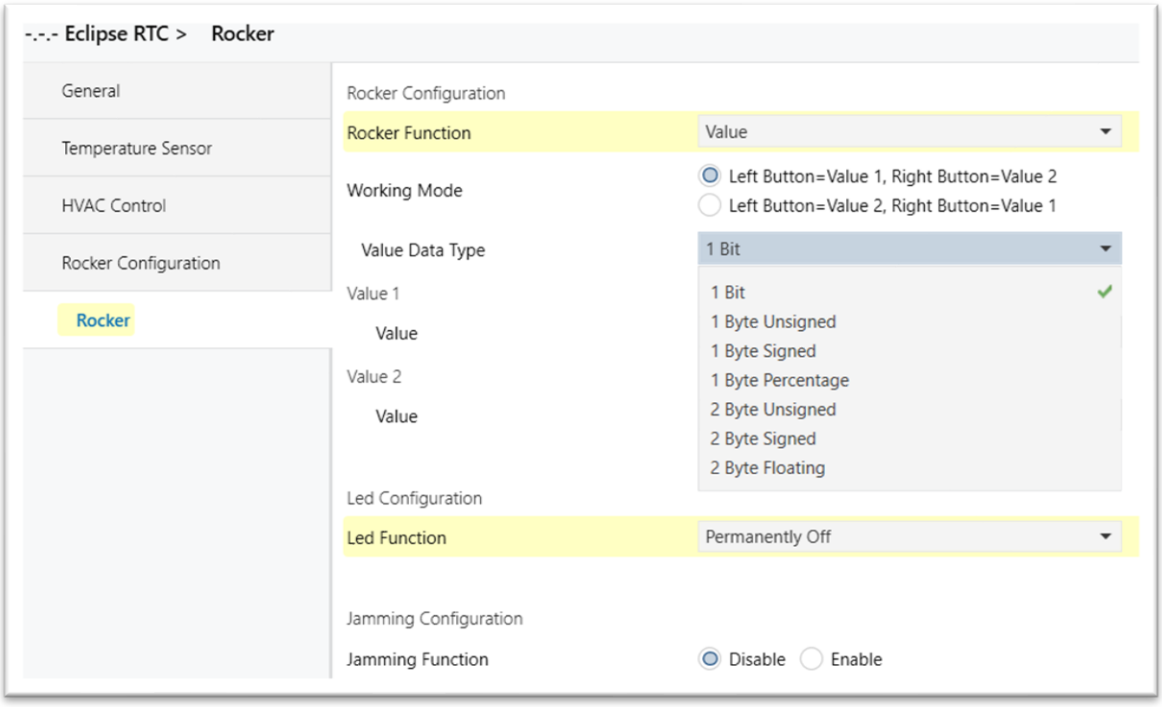
Jamming Configurations

Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.

3.6.4. Rocker Oriented [Value]

Working mode is selectable for left and right buttons. [Left Button = VALUE 1; Right Button= VALUE 2]

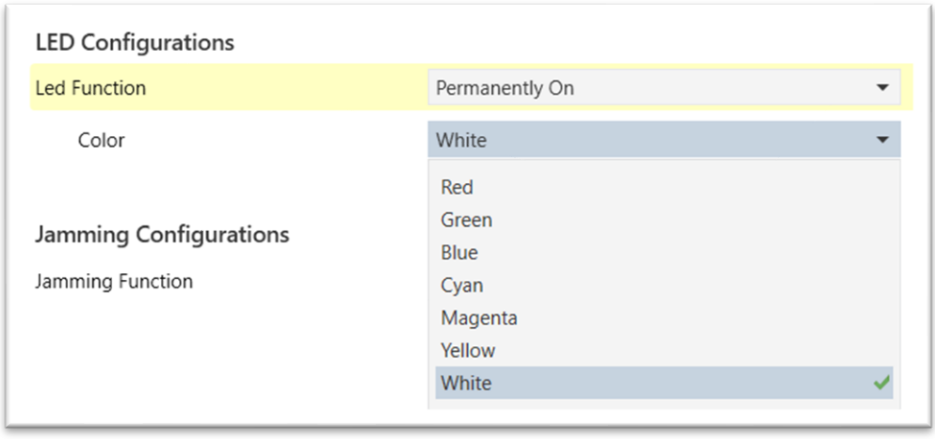
Selectable data types:
- 1 bit value
- 1 byte Unsigned Value
- 1 Byte Signed Value
- 1 Byte Percentage
- 2 Byte Unsigned Value
- 2 Byte Signed Value
- 2 Bytes Floating Value



Led configurations:

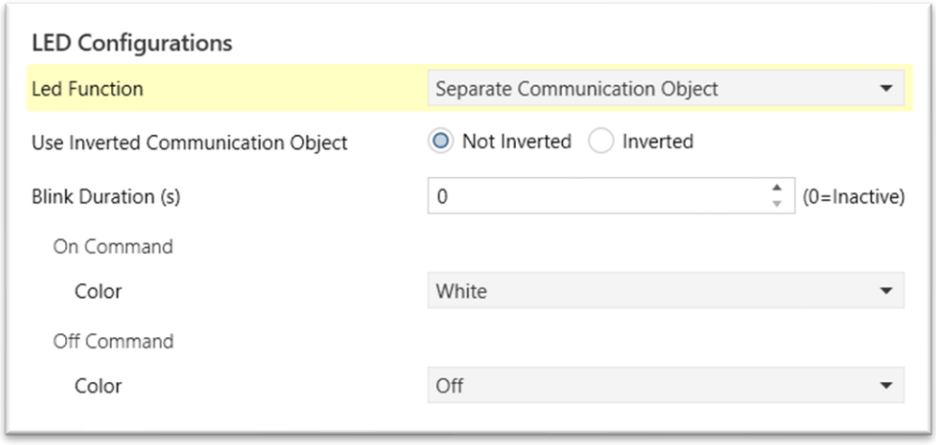
Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.

Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]



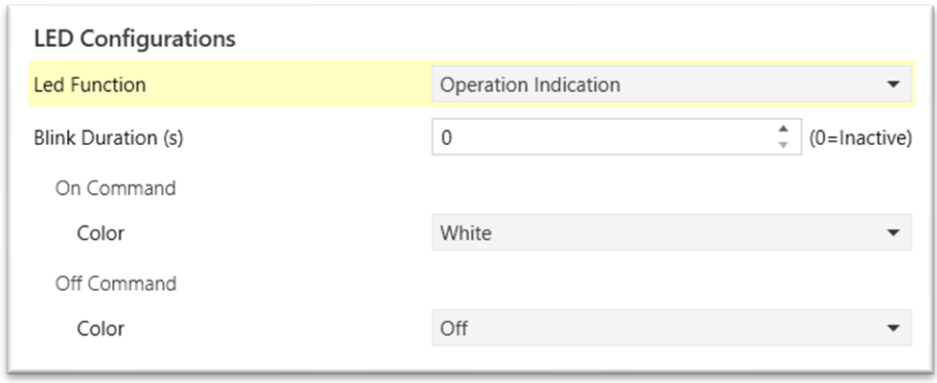
Led Function [Permanently OFF]: LED is always OFF.

Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



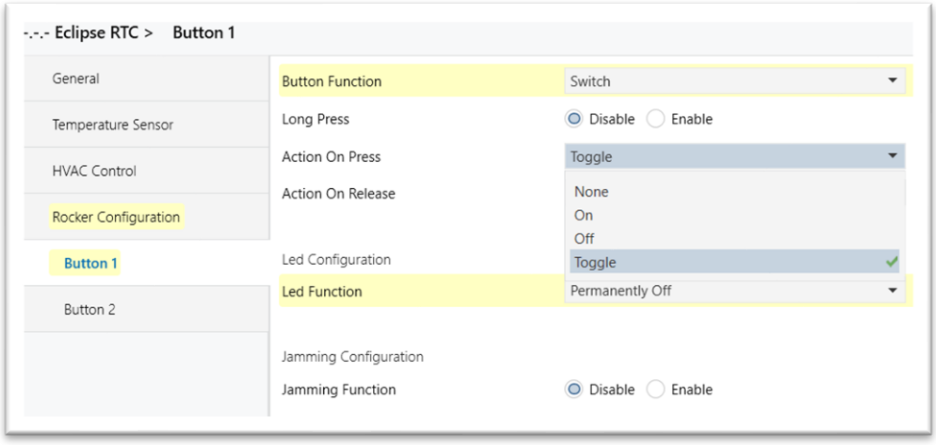
Jamming Configurations

Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.

3.6.5. Button Oriented [Switch]

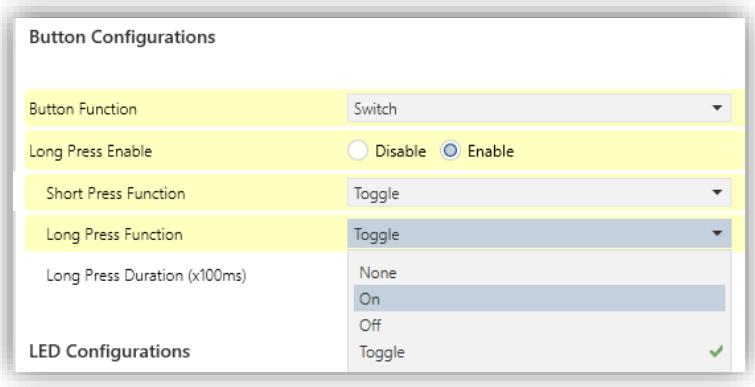
Action on press: [On, Off, Toggle] selected data will be sent to KNX bus for each press of button.

Action on release: [On, Off, Toggle] selected data will be sent to KNX bus for each release of button.



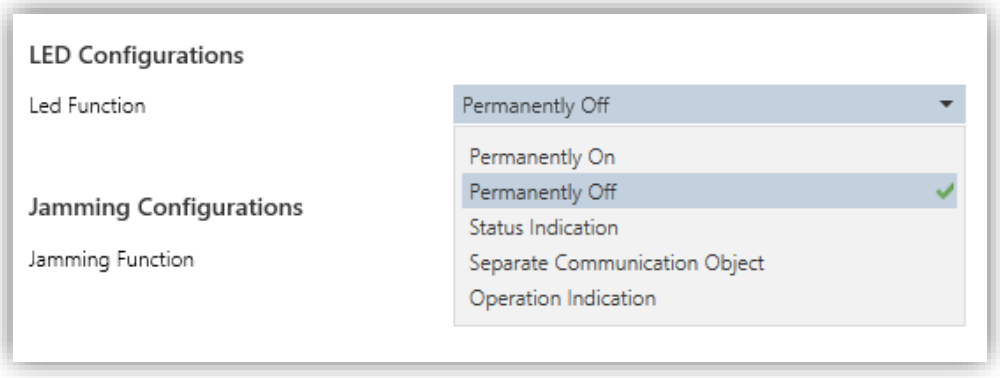
Long press function can be activated. Disabled as default.

ON, Off, Toggle commands can be sent separately using short and long press functions.

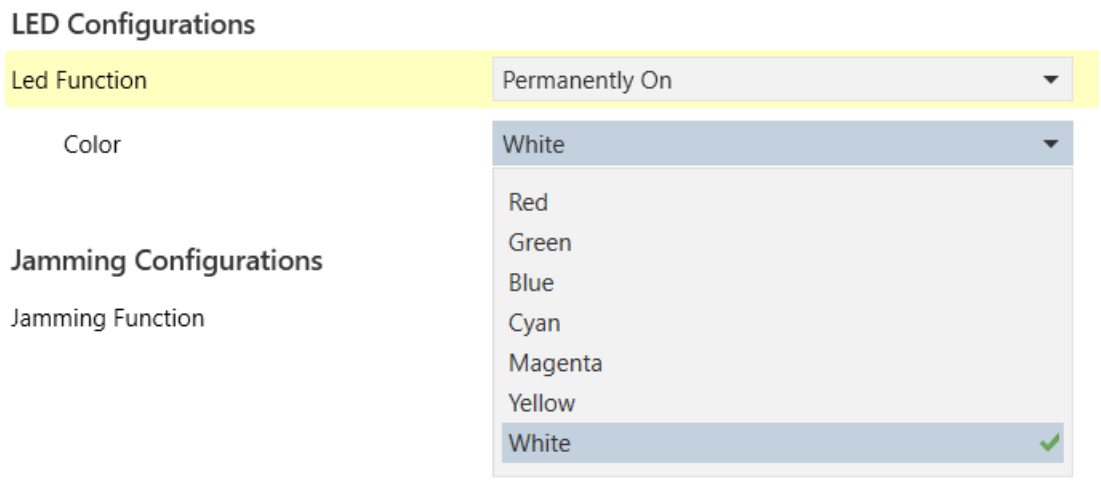


Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.



Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]

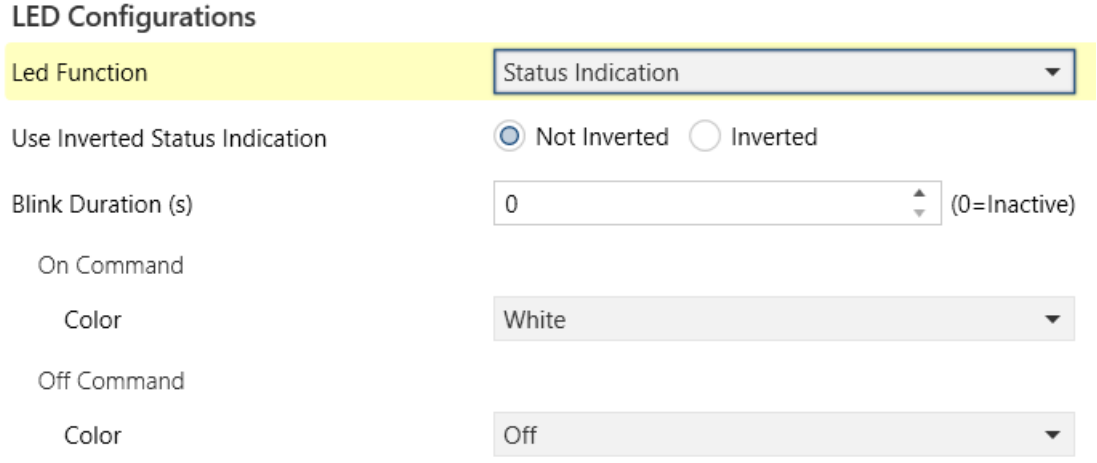


Led Function [Permanently OFF]: LED is always OFF.

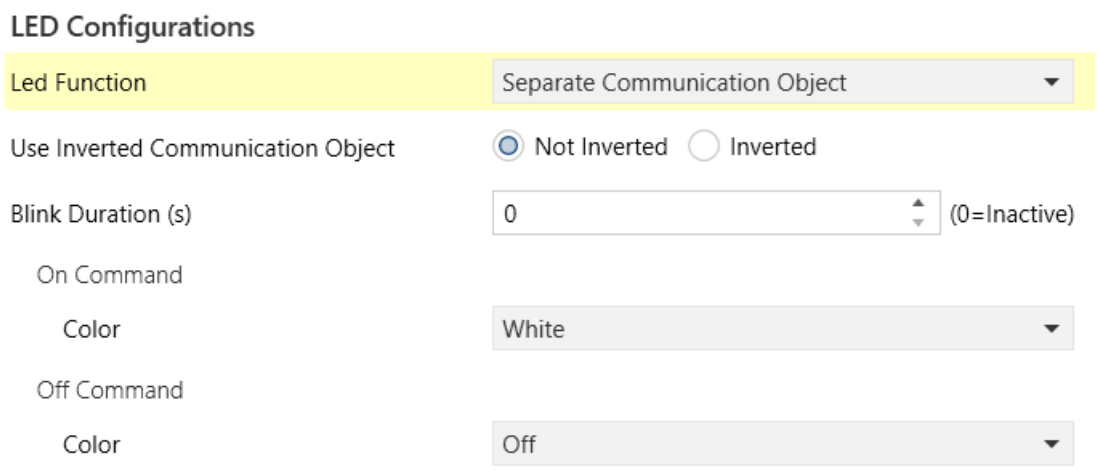
Led Function [Status indication]: LED color will change according to status information.

On command [white] – OFF Command [Off]

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

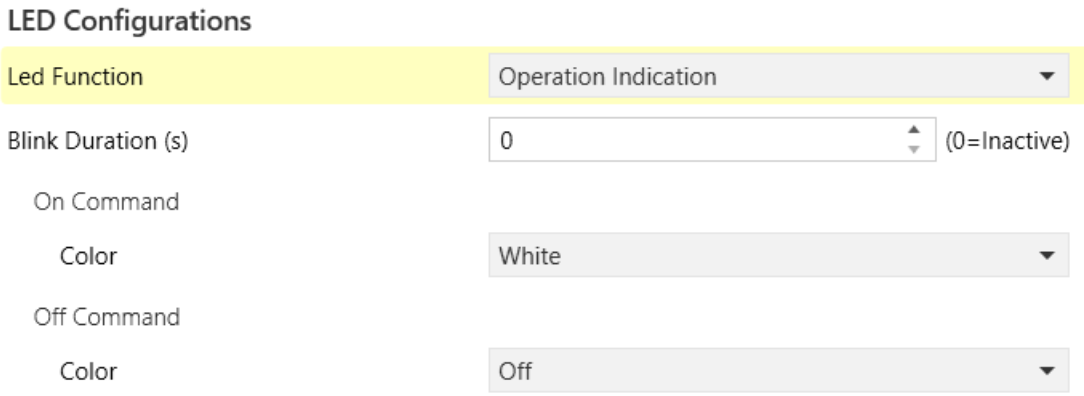


Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



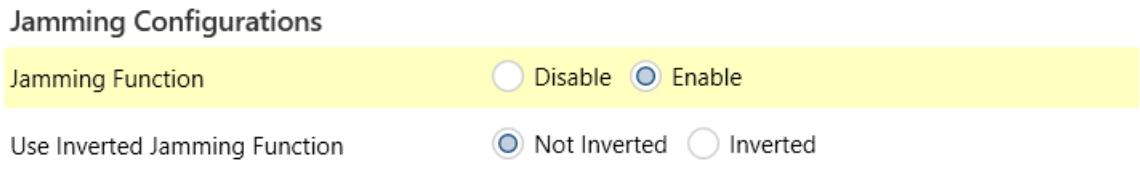
Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



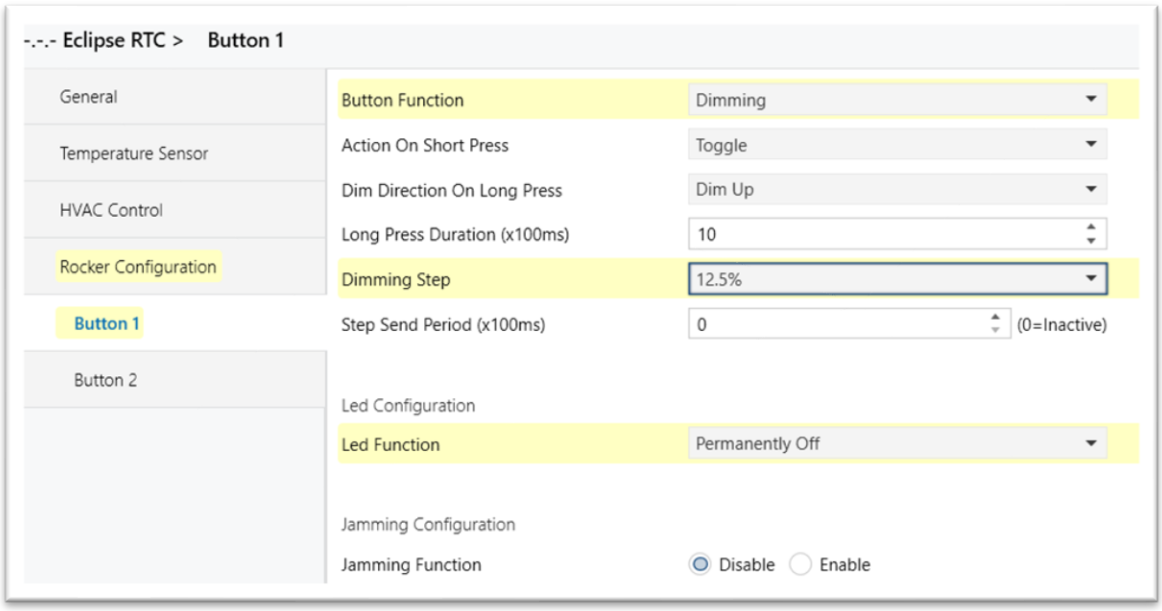
Jamming Configurations

Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.



3.6.6. Button Oriented [Dimming]

"Action on press" can be selected for ON, OFF, TOGGLE commands. Using Long press function, Dim direction is changeable for UP, DOWN, UP/DOWN commands.



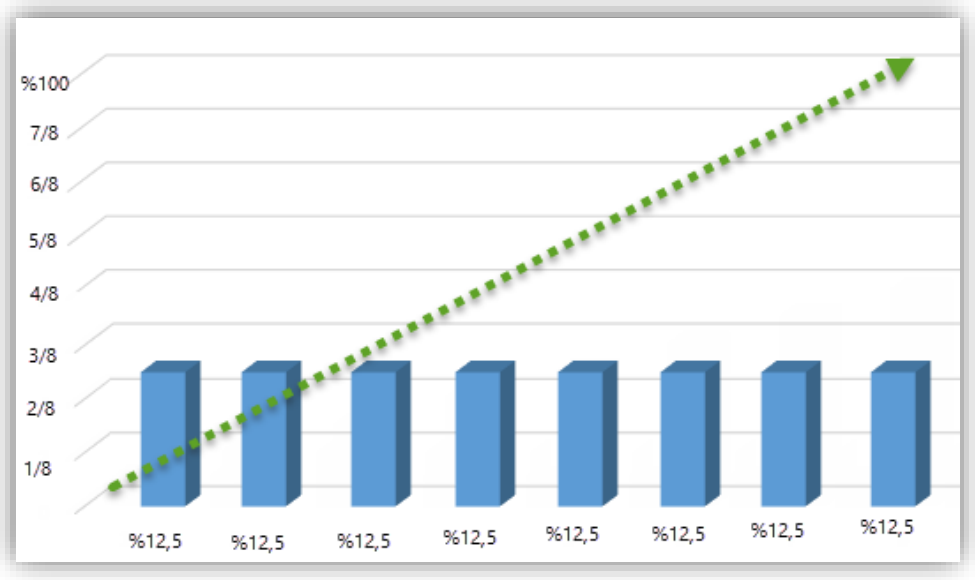
Long Press Duration (x100 ms): Long press duration can be changed. [0…**10**...65535]

As default; 100 ms x 10=1000 ms (1 second)

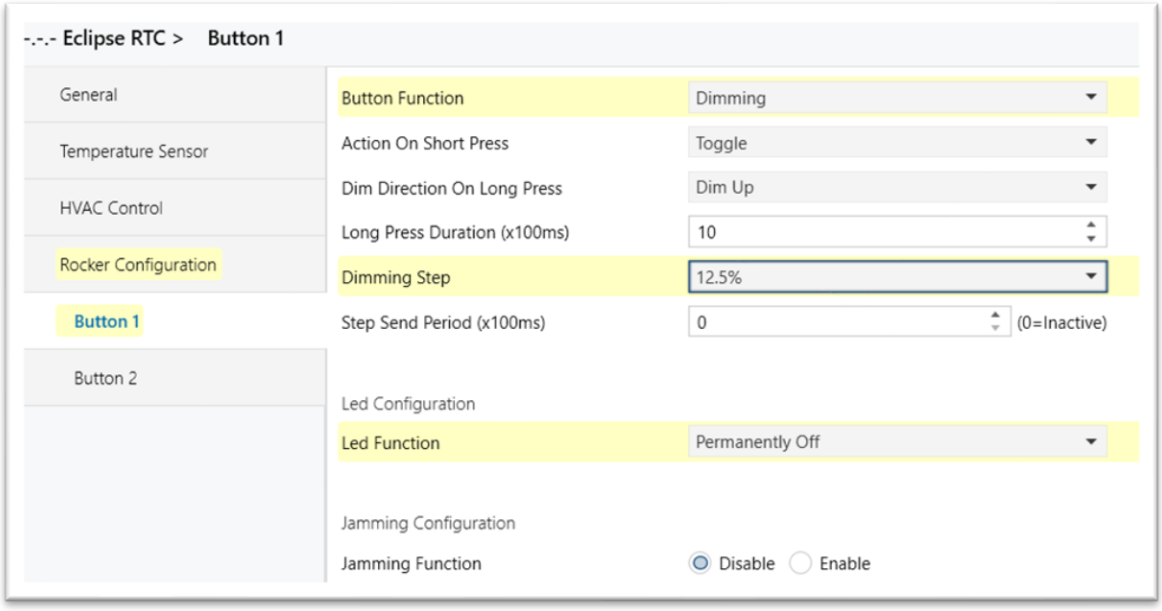
Switch will start to send dimming up/down commands after each press longer than "1 second".

Dimming Step: Dimming step percentage can be changed to specify the maximum dimming step width of a dimming telegram. With a dimming message, you can dim by a maximum of X %.

(%100 option represents "Start-stop" dimming function. Other percentage values correspond to "step dimming function".)

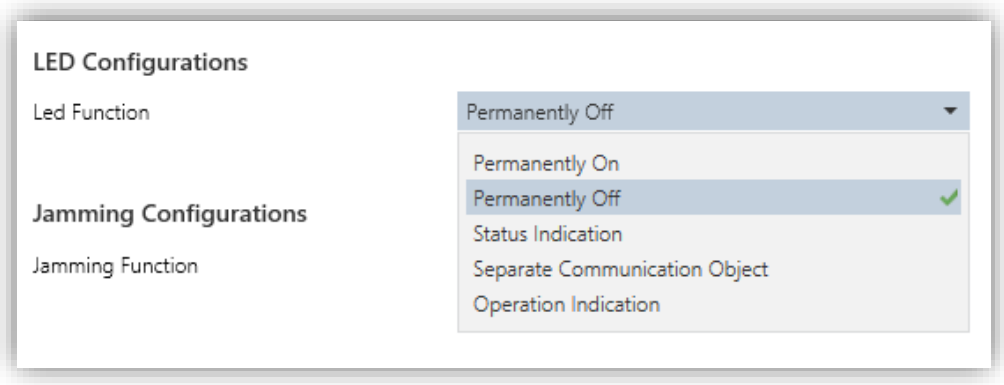


Step Send Period: Defines time interval between two dimming step commands. This interval is another parameter to change dimming speed of the lighting source.

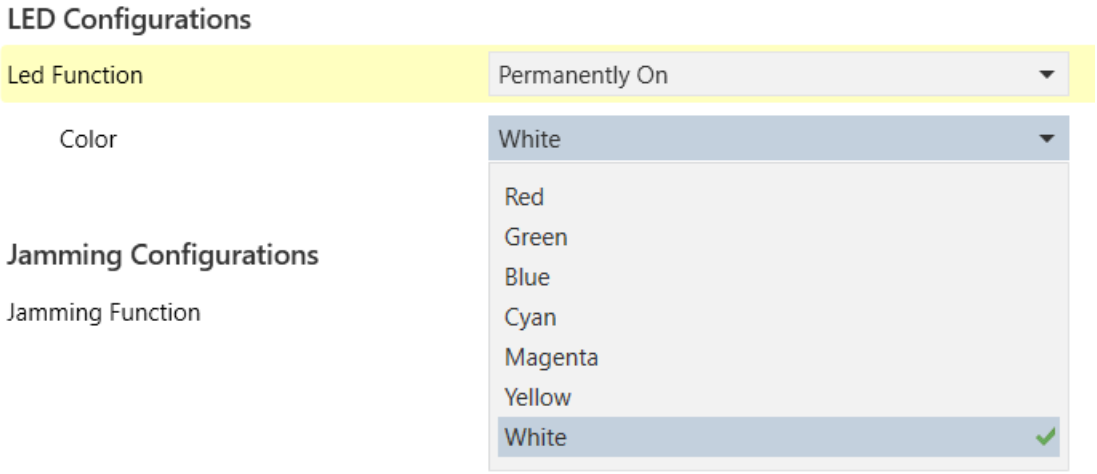


Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.



Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]

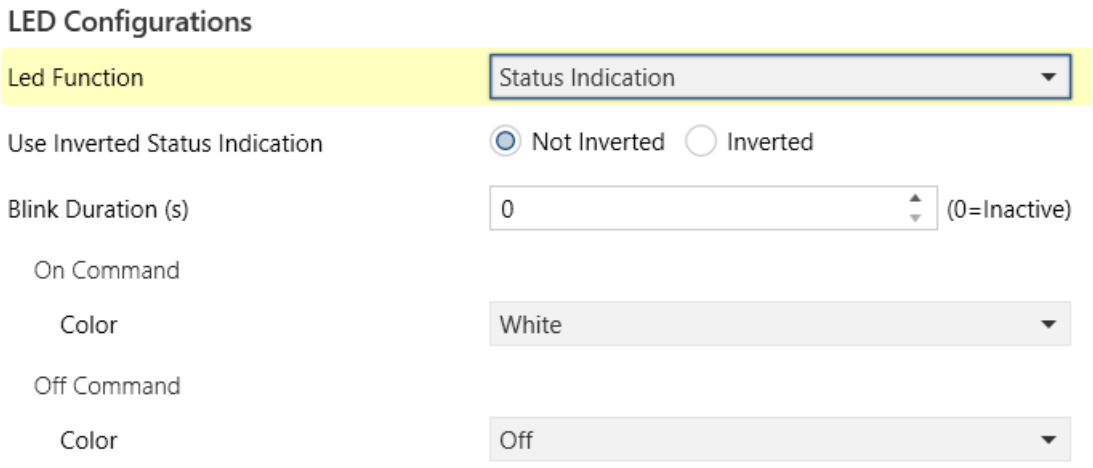


Led Function [Permanently OFF]: LED is always OFF.

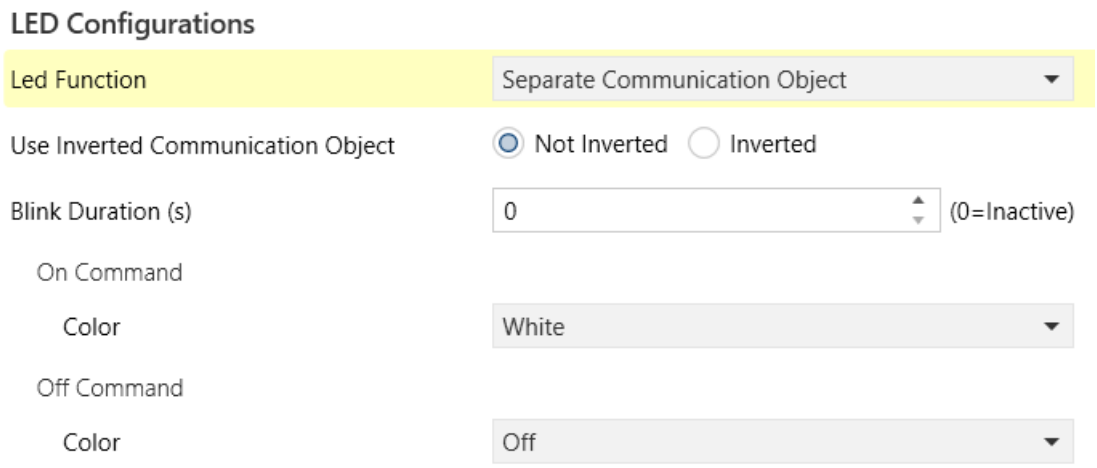
Led Function [Status indication]: LED color will change according to status information.

On command [white] – OFF Command [Off]

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

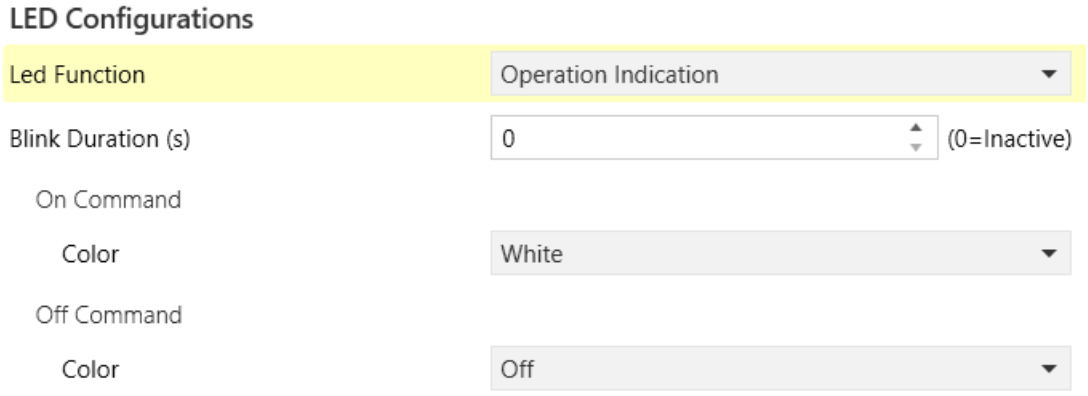


Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



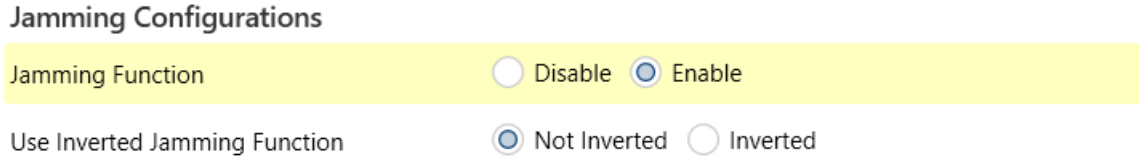
Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



Jamming Configurations

Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.



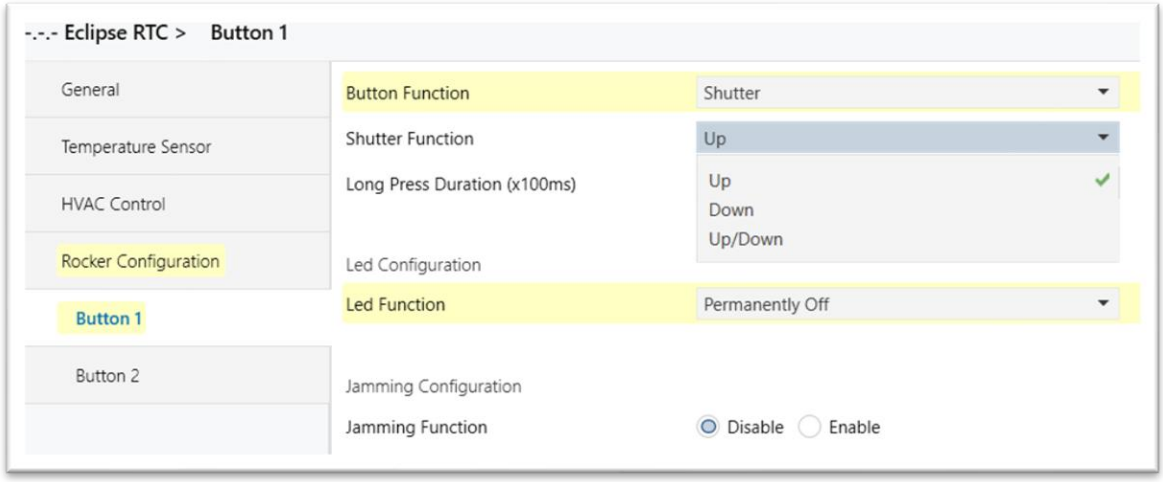
3.6.7. Button Oriented [Shutter]

Shutter command can be selected for each long press [UP, DOWN, TOGGLE].

Switch will start to send [UP, DOWN, TOGGLE] commands after each press longer than "1 second". Switch will send Step/Stop command on each short press,

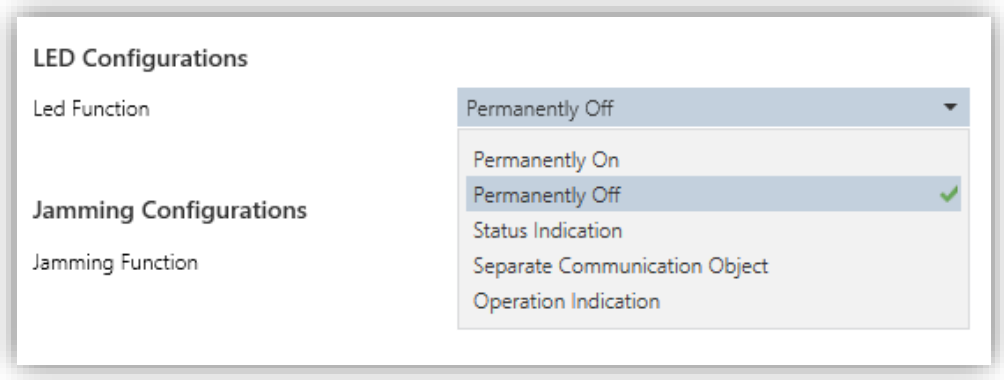
Long Press Duration (x100 ms): Long press duration can be changed. [0…**10**...65535]

As default; 100 ms x 10=1000 ms (1 second)

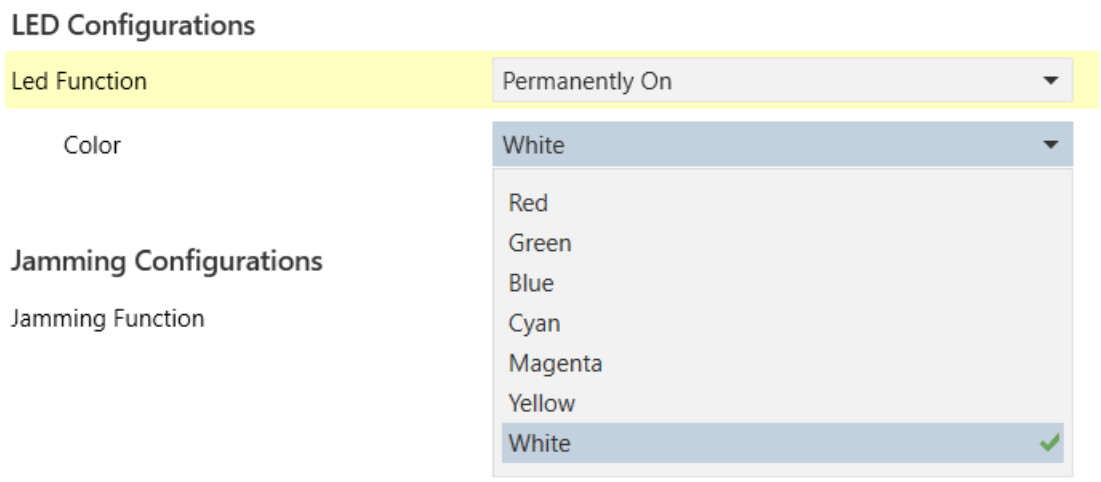


Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.



Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]

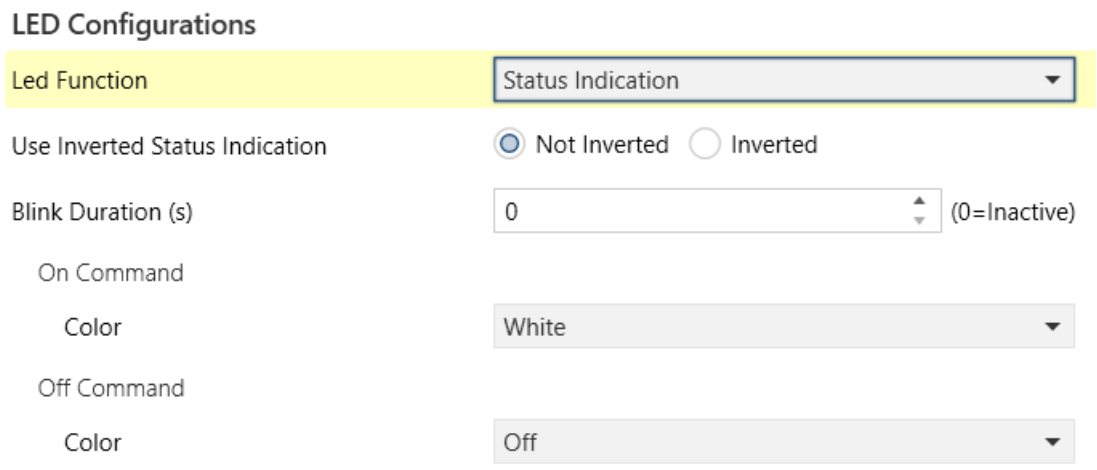


Led Function [Permanently OFF]: LED is always OFF.

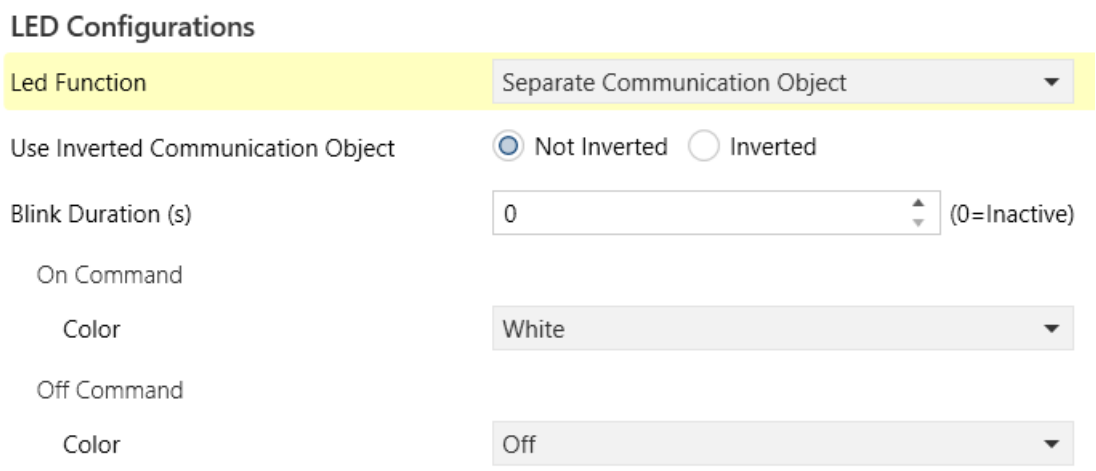
Led Function [Status indication]: LED color will change according to status information.

On command [white] – OFF Command [Off]

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)

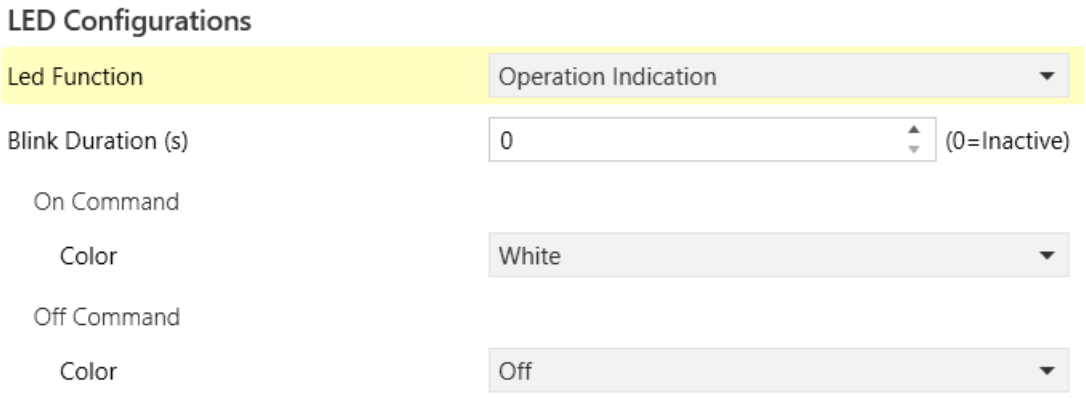


Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



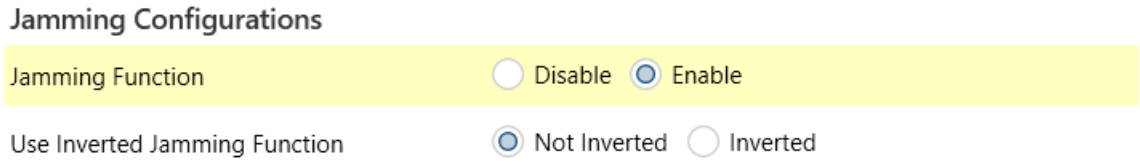
Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



Jamming Configurations

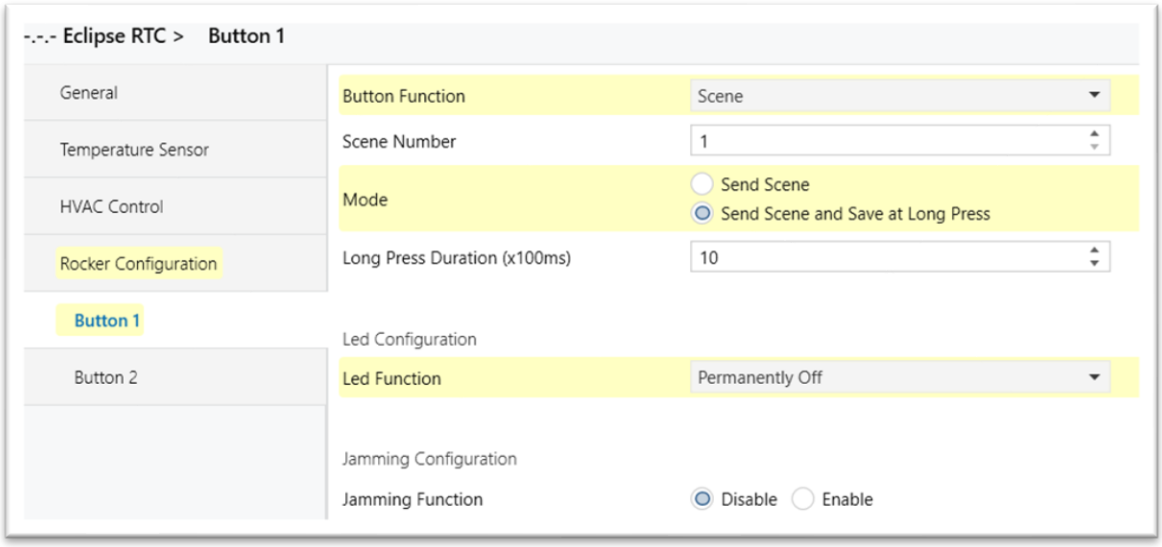
Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.



3.6.8. Button Oriented [Scene]

Scene number determines which scene (1…64) is to be recalled and stored. 64 different scenes can be managed by using single group address on different buttons.

Each short press will call the selected scene. Storing of the current scene can be triggered by long press action. Please check example group monitor record.



Example: Short press -> Button 1 is calling scene number 1.

Long press ->Button 1 is sending the "store scene command" for scene number 1.

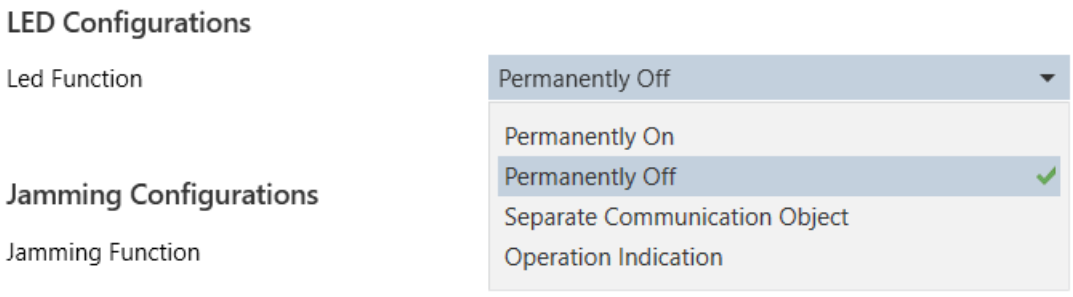
#	Time	Destination A	Destinatior	Info	Type	DPT
1	10/03/2023 11:35:32.962	0/7/7	Scene	$00 | Activate #1	GroupValue_Write	18.001 scene control
2	10/03/2023 11:35:34.704	0/7/7	Scene	$80 | Learn #1	GroupValue_Write	18.001 scene control

Long Press Duration (x100 ms): Long press duration can be changed. [0…**10**...65535]

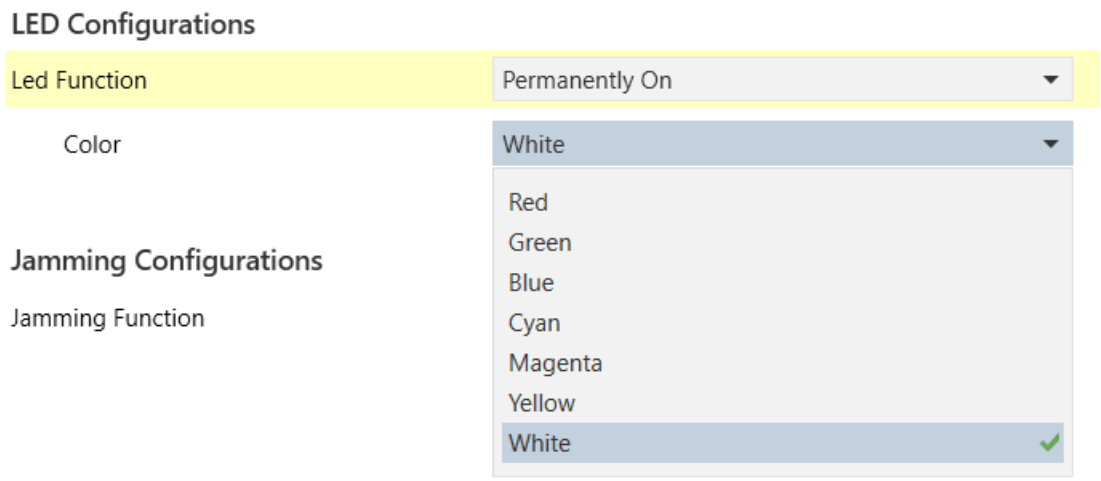
As default; 100 ms x 10=1000 ms (1 second)

Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.

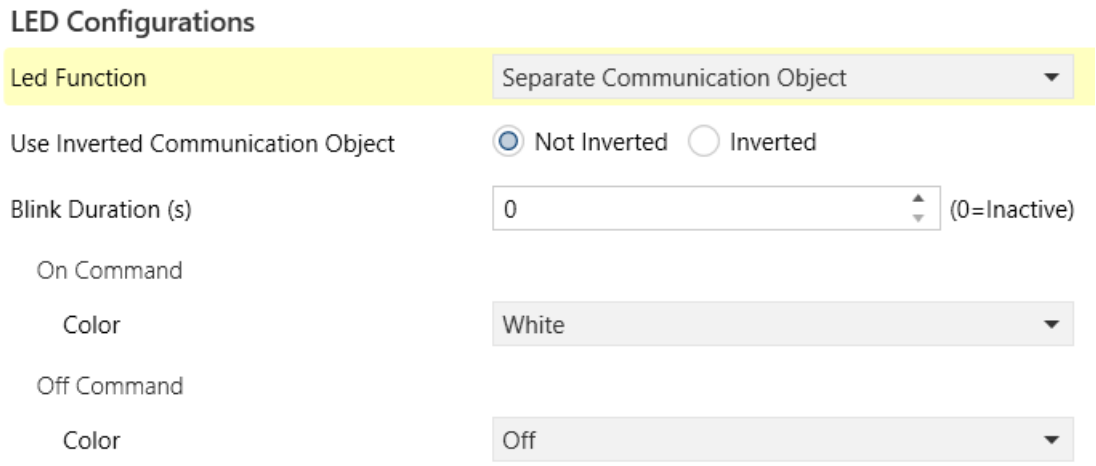


Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]



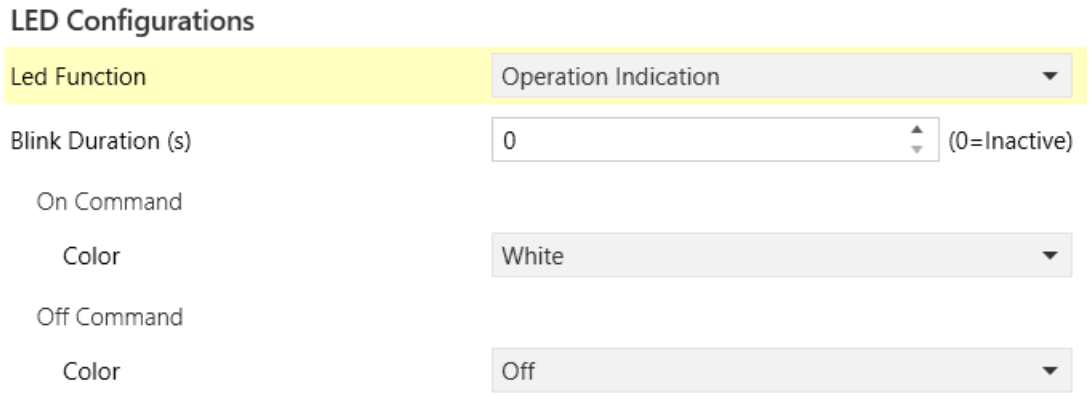
Led Function [Permanently OFF]: LED is always OFF.

Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



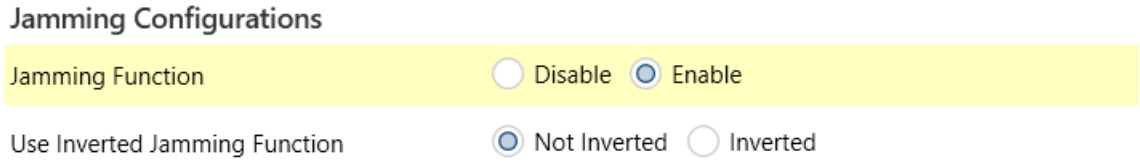
Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



Jamming Configurations

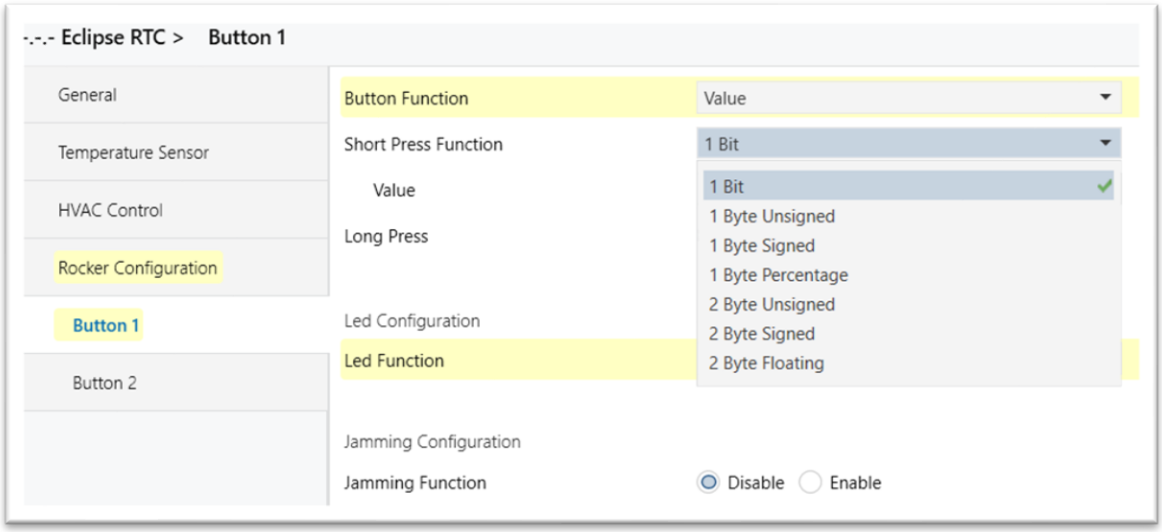
Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.



3.6.9. Button Oriented [Value]

"Action on press" determines the data type for the short press. When button is pressed, this type of data will be sent KNX bus via respective communication object.

Long press function can be enable to send another data type by pressing longer to the same button.

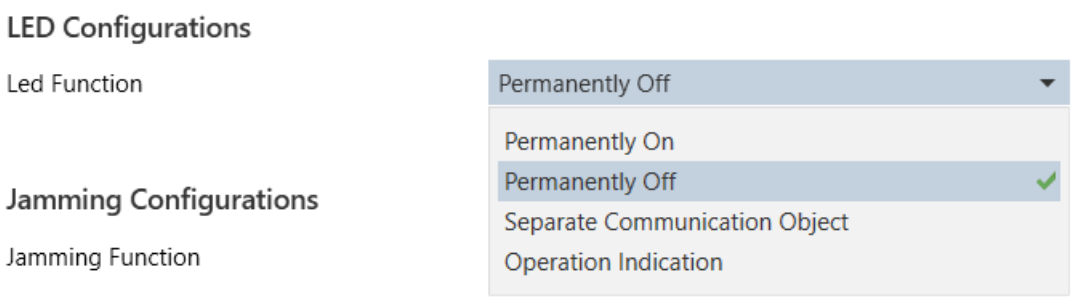


Long Press Duration (x100 ms): Long press duration can be changed. [0…**10**...65535]

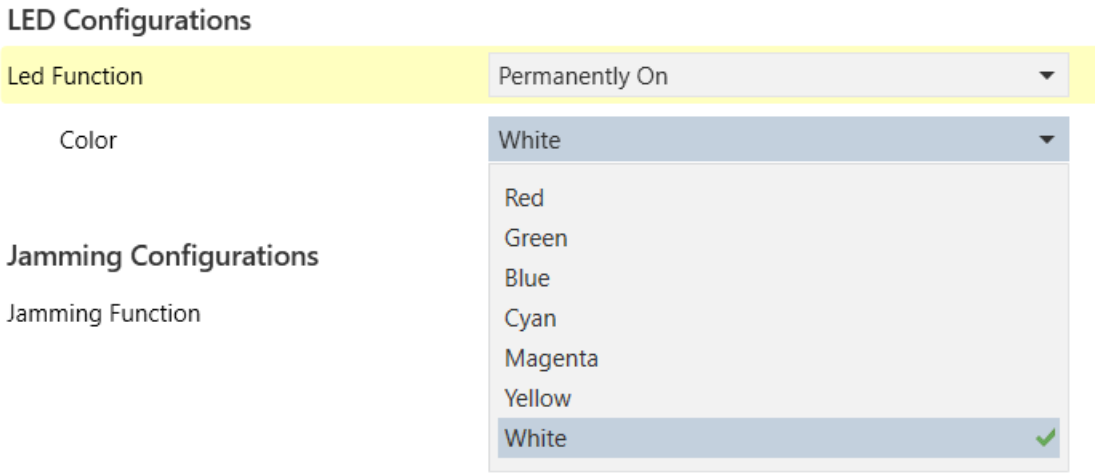
As default; 100 ms x 10=1000 ms (1 second)

Led configurations:

Available functions: Permanently OFF, Permanently ON, Status Indication, Separate Communication Object and Operation Indication.

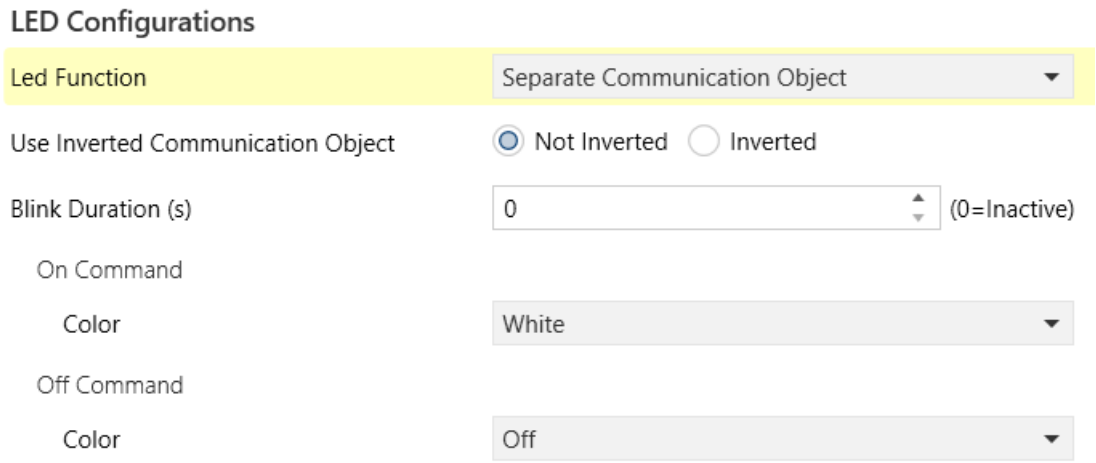


Led Function [Permanently ON]: LED is always ON for selected color. [Red, Green, Blue, Cyan, Magenta, Yellow, White]



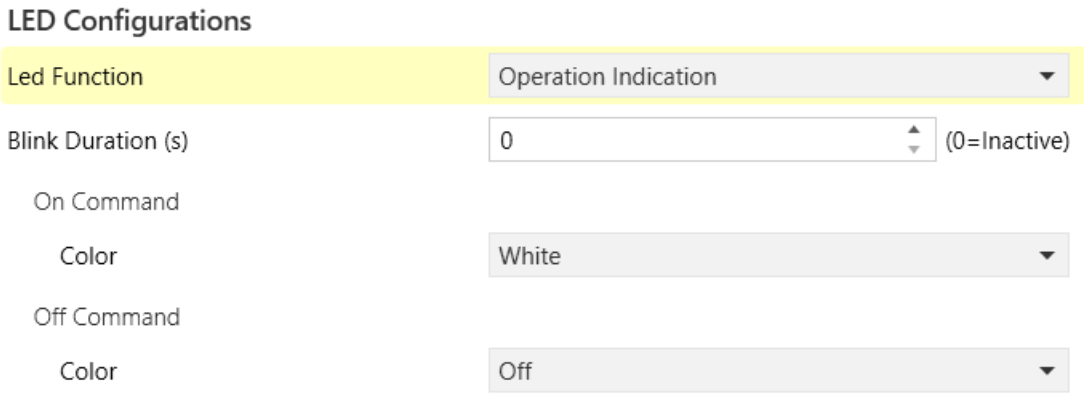
Led Function [Permanently OFF]: LED is always OFF.

Led Function [Separate Communication Object]: LED color will change according to value received by LED status object.



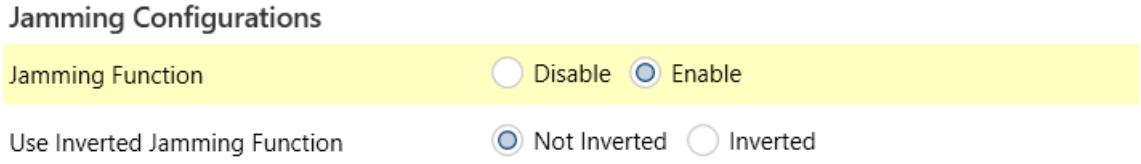
Led Function [Operation indication]: Status LED of rocker button will stay on color selected for "OFF command" until it is pressed. The pressed button will stay on color selected for "ON command" until it is released.

Blink duration: Status LED of the pressed rocker button will blink for the time period selected at "Blink Duration(s)" parameter. (Blinking interval is fixed.)



Jamming Configurations

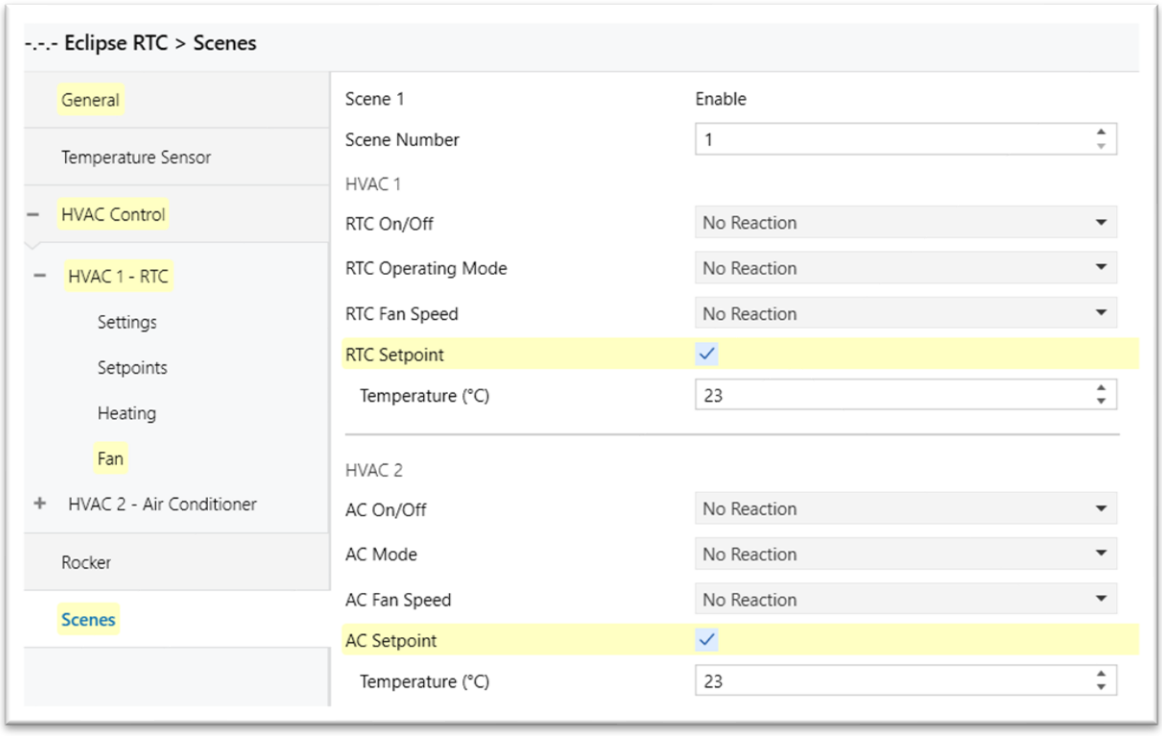
Jamming function is used to block to respective button or rocker via "Rocker - Jamming" by writing "true or false" data from the bus. Button will not work until it is enabled via jamming object.



3.7. Scenes

Eclipse Thermostat has 4 scenes available to change the states of HVAC 1 and HVAC 2 via recalling a scene.

Scene number can be individually selected between 1 and 64 for each scene. Thus, scenes can be recalled by using "Scene number" via "Scene – Call".



Possible actions for RTC:

RTC On/Off: No Reaction, On, Off

RTC Operating Mode: No Reaction, Comfort, Standby, Night, Protection

RTC Fan Speed: 1, 2, 3, 4, 5, Auto, Off

RTC Setpoint: 5…40

Possible actions for Air Conditioner:

AC On/Off: No Reaction, On, Off

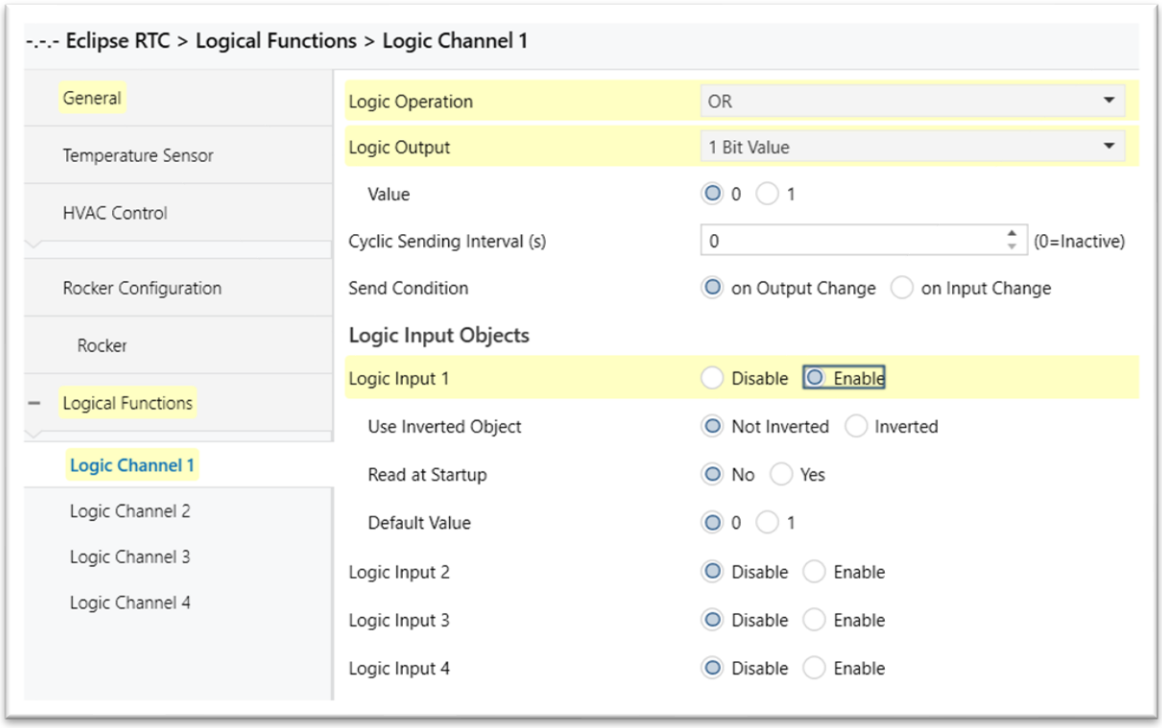
AC Mode: Auto, Heat, Cool, Fan, Dry

AC Fan Speed: 1, 2, 3, 4, 5, Auto

AC Setpoint: 5…40

3.8. Logic Functions

Logic function tab contains "Logic channels (4)" which are available with three different logic gates. [OR, AND, XOR]



Logic operation: [OR, AND, XOR]

Logic Output:
1 bit
1 byte unsigned value
1 byte signed value
1 byte percentage
2 byte unsigned value
2 byte signed value
2 byte floating value

Send condition:

[On output change] Output object sends on output change.

[On input change] Output object sends on input change.

Logic Input Objects: [Logic input 1-4]

Each logic channel has a maximum of 4 logic input objects.

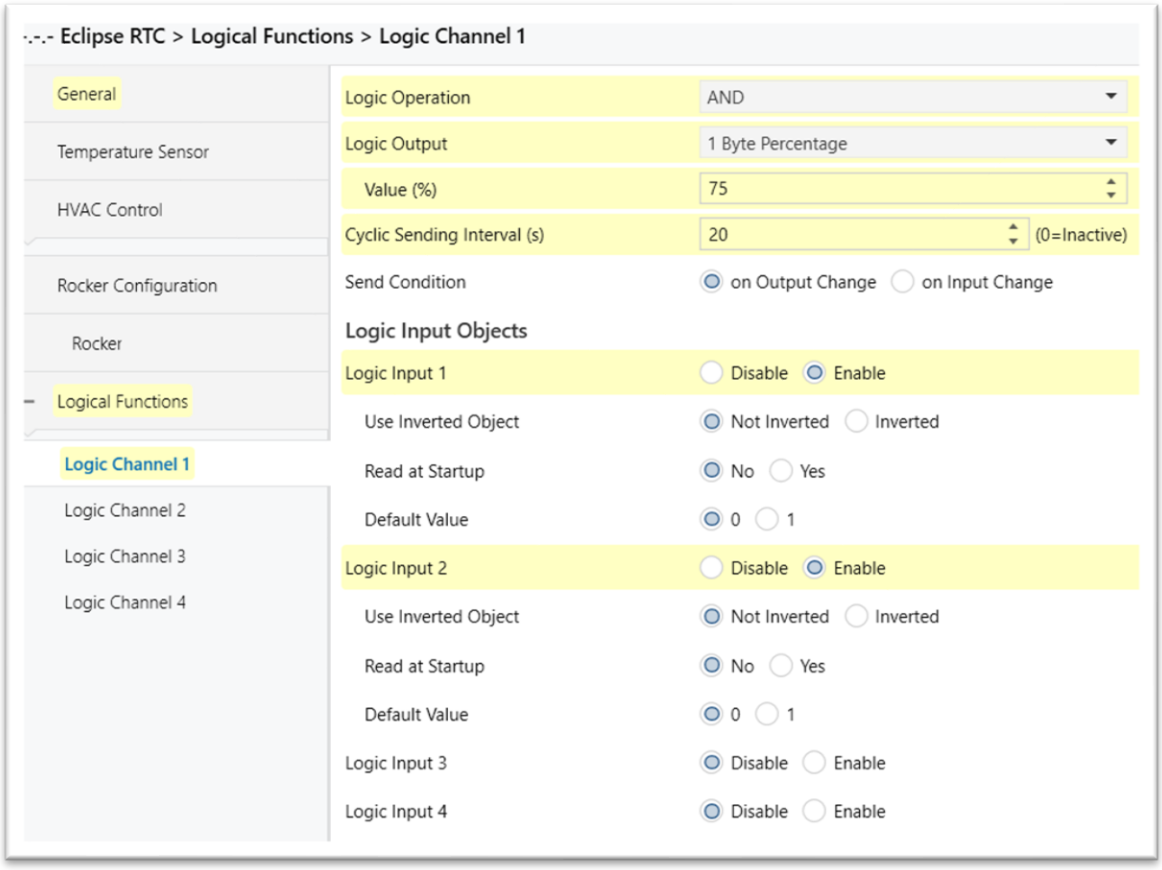
Logic input 1 [Use inverted Object]: Object value will be inverted before the processing in the logic gate.

Logic input 1 [Read at Start-up]: Object will be read out after switch is power return.

Logic input 1 [Default value]: Defines default value of the input object.

Example:

"Input 1" and "Input 2" objects are defined for "AND" logic operation. If both objects are "True" at the same time, then output object will send "1 byte percentage" %75 value for every 20 seconds periodically.

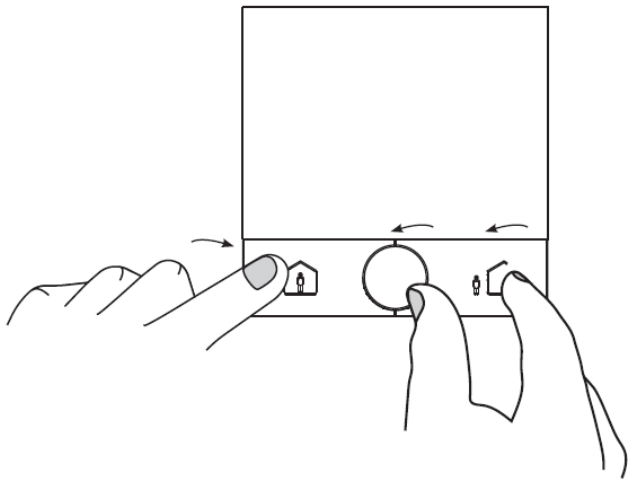


Address	Name	Description	Central	Pass	Data Type	Length	No.	Last Value
0/7/3	Input 1		No	No	boolean	1 bit	1	$01 | True
0/7/4	Input 2		No	No	boolean	1 bit	1	$01 | True
0/7/5	Output (1 Byte)		No	No	percentage (0..100%)	1 byte	1	$BF | 75%

4. Commissioning

For commissioning the device, the following activities are required:

- Make electrical connections
- Turn on the bus power supply
- Switch the device operation to programming mode
    - Alternatively, instead of using programming button, it is possible to switch operation of the device to programming mode **by pressing button 1, button 2 and super knob simultaneously**



- Download into device the physical address and the configuration with ETS program
- At the end of the download operation of the device returns to normal mode
- Now the device is programmed and ready to use

Configuration and commissioning of the device require the use of ETS4 or later releases. These activities must be carried out according to the design of the building automation system done by a qualified planner.