Content

1   Using the application program

Product family: Operating devices
Product type: Pushbutton
Manufacturer: IPAS GmbH
Name: Piazza 3G Tune
Article no.:   81513-03
Application: 81513-03_Piazza3GT_V1.0.0

The application program can be used for the Piazza 3G Tune product from the Piazza series and can be loaded from the ETS 5 product catalog or from the https://ipas-products.com website.

1.1   General product information

The KNX control panel Piazza 3G Tune has been specially developed for lighting control. The standard operating concept is designed for the control of up to 3 lighting groups. The respective lighting group is selected via 3 individual buttons. The central push / rotary button then controls the selected lighting group.

The KNX control panel Piazza 3G Tune can be mounted in all common switch boxes from Ø55 to Ø68mm via two mounting screws. Piazza 3G Tune can be combined with 55mm socket ranges from various manufacturers (e.g. with frames from Gira Standard 55). It is also possible to arrange several Piazza 3G Tune operating devices within one frame combination.

The bus coupler for the connection to the KNX bus is integrated in the device and the connection is made via a standard bus terminal. Programming LED and programming button are accessible from the rear. With the accessory magnet, the KNX control panel Piazza 3G Tune can be set to programming mode at position 11 in Figure 1 when installed. The LED in position 4 of figure 1 lights up white when the programming mode has been activated.

1.2   Function of the application program

The application program 81513-03_Piazza3GT_V1.0.0 can only be used with the KNX operating device Piazza 3G Tune and commissioned with the KNX commissioning tool ETS from version 5. Parameter settings define the functions of the device. According to the parameterization, group objects and parameter settings are shown, so that only group objects and parameters are visible that are possible for the function. The application is structured in such a way that parameter settings determine the number of group preselection keys 1, 2 or 3. If less than 3 group preset buttons are parameterized, the unused group buttons can be parameterized as ordinary KNX single buttons. In this case, each free individual key can be assigned the functions:

- On
- Off
- To
- Press: On Off
- Set value
- Value To
- Presence
- Scene recall

The status LEDs of the individual keys can be parameterized independently of the key functions.
If only one group is selected, the three keys can each be parameterized as an individual key. The group function always refers to the push / rotary button, which executes the following functions after selecting the group:

> Short press -> Switching function, for example on/off.
> Rotary function in mode A -> function A, e.g. dimming
> Long press -> mode changeover
> Rotary function in mode B -> function B, e.g. colour or saturation change
> Long key press over 1 second -> e.g. additional switching function

Status LEDs signal the group selection, the switching state and the states in mode A and mode B. Figure 1 shows the operating and status elements
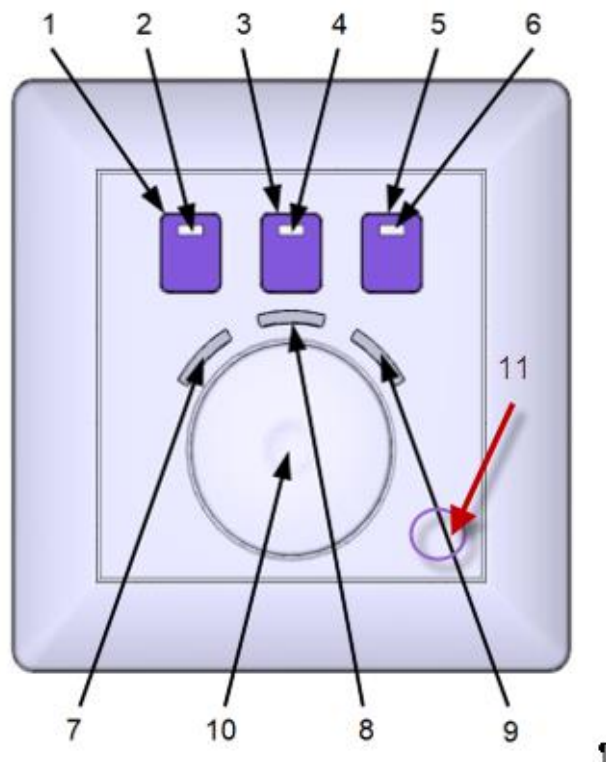
Figure 1:   KNX control panel Piazza 3G Tune

Legend:

1. key 1 - group preselection group 1 resp. single key function key 1

2. LED 1 - Status LED for group preselection group 1 or single button function button 1

3. key 2 - group preselection group 2 or single key function key 2

4. key 2 - status LED for group preselection group 2 or single key function key 2

5. key 3 - group preselection group 3 or single key function key 3

6. LED 3 - Status LED for group preselection group 3 or single key function key 3

7. LED 4 - Status LED for mode A group 1-3

8. LED 5 - Status LED for group 1-3 on/off

9. LED 6 - Status LED for mode B group 1-3

10. rotary pushbutton - switching and rotating function

11. magnetic button - position of magnetic programming button

2 Overview of the ETS communication objects

Total number of communication objects: 63

Maximum number of group addresses: 126

Maximum number of links: 126

Number	Name	Object Function	Description	Group Address	Length	C	R	W	T	U	Data Type	Priori
4	G1,Switching,	On/Off			1 bit	C	-	W	T	U	switch	Low
5	G1,Switching,	Status			1 bit	C	-	W	T	U	switch	Low
6	G1,F1,Counter Pulses,	Value			1 byte	C	-	-	T	-	counter pulses (0..255)	Low
10	G1,F1,Counter Pulses,	Status			1 byte	C	-	W	T	U	counter pulses (0..255)	Low
14	G1,F2,Dimming via set Value,	Value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
18	G1,F2,Dimming via set Value,	Status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
22	G2,Switching,	On/Off			1 bit	C	-	W	T	U	switch	Low
23	G2,Switching,	Status			1 bit	C	-	W	T	U	switch	Low
27	G2,F1,Colour Temperature,	Value			2 bytes	C	-	-	T	-	absolute colour temperature (K)	Low
31	G2,F1,Colour Temperature,	Status			2 bytes	C	-	W	T	U	absolute colour temperature (K)	Low
32	G2,F2,Dimming via set Value,	Value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
36	G2,F2,Dimming via set Value,	Status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
40	G3,Switching,	On/Off			1 bit	C	-	W	T	U	switch	Low
41	G3,Switching,	Status			1 bit	C	-	W	T	U	switch	Low
42	G3,F1,Colour RGB, Red,	Value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
43	G3,F1,Colour RGB, Green,	Value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
44	G3,F1,Colour RGB, Blue,	Value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
46	G3,F1,Colour RGB, Red,	Status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
47	G3,F1,Colour RGB, Green,	Status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
48	G3,F1,Colour RGB, Blue,	Status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
50	G3,F2,Dimming via set Value,	Value			1 byte	C	-	-	T	-	percentage (0..100%)	Low
54	G3,F2,Dimming via set Value,	Status			1 byte	C	-	W	T	U	percentage (0..100%)	Low
58	OS,PB 1	Toggle			1 bit	C	-	W	T	U	switch	Low
60	OS,EB 1, Setpoint Deviation	Value			2 bytes	C	-	W	T	U	temperature (°C)	Low
65	LEDs, scene control	Scene, activate LED			1 byte	C	-	W	T	U	scene control	Low
66	Night Operation	On/ Off			1 bit	C	-	W	T	U	switch	Low
67	Central,Switching	Off			1 bit	C	-	-	T	-	switch	Low

Figure 2 : Piazza 3G Tune communication objects

2.1 Communication objects for the rotary pushbutton

The following communication objects are only displayed with the corresponding parameterization. Only the function of the communication objects for mode A of group 1 is explained. The functions of the communication objects in mode B of group 1 and modes A and B of groups 2 and 3 are analogous to these object descriptions.

Obj	Object name	Function	Typ	DPT	Flags
6	G1,F1,Cyclic binary value	Value	1 Bit	1.006	KÜ
This object is used to continuously send value 1 when the rotary pushbutton is turned to the right and value 0 when it is turned to the left.					
6	G1,F1,Dimming via set value	Value	1 Byte	5.001	KÜ
This object is used to set and send the value between 0 and 100% when the rotary pushbutton is turned.					
10	G1,F1, Dimming via set value	Status	1 Byte	5.001	KSÜA
This object is used to retrieve the status when the rotary pushbutton is turned.					

Obj	Object name	Function	Typ	DPT	Flags
7	G1,F1,Colour HSV, Hue	Value	1 Byte	5.001	KÜ
This object is used to set and send the value between 0 and 100% when the rotary pushbutton is turned. 0% corresponds to 0° and 100% to 360° on the colour circle (Figure 4).					

Obj	Object name	Function	Typ	DPT	Flags
11	G1,F1,Colour HSV, Hue	Status	1 Byte	5.001	KSÜA
This object is used to retrieve the status when the rotary pushbutton is turned.					

Obj	Object name	Function	Typ	DPT	Flags
8	G1,F1,Colour HSV, Saturation	Value	1 Byte	5.001	KÜ
This object is used to send the saturation value when the rotary pushbutton is turned in the HSV colour control.					

Obj	Object name	Function	Typ	DPT	Flags
12	G1,F1,Colour HSV, Saturation	Status	1 Byte	5.001	KSÜA
This object is used to retrieve the status for the saturation value when the rotary pushbutton is turned.					

Obj	Object name	Function	Typ	DPT	Flags
8	G1,F1,Colour HSV, Saturation	Value	1 Byte	5.001	KÜ
This object is used to adjust the saturation value between 0 and 100% when the rotary pushbutton is turned and sent.					

Obj	Object name	Function	Typ	DPT	Flags
12	G1,F1,Colour HSV, Saturation	Status	1 Byte	5.001	KSÜA
This object is used to retrieve the status when the rotary pushbutton is turned.					

Obj	Object name	Function	Typ	DPT	Flags
6	G1,F1,Colour HSV, RGB	Value	3 Byte	232.600	KÜ
This object is used to set the values for RGB when the rotary pushbutton is turned and sent via a combined 3-byte object. The RGB colours are set according to the colour circle (Figure 4)					

Obj	Object name	Function	Typ	DPT	Flags
10	G1,F1,Colour RGB	Status	3 Byte	232.600	KSÜA
This object is used to get the RGB of the status.					

Obj	Object name	Function	Typ	DPT	Flags
6	G1,F1,Colour RGB, red	Value	1 Byte	5.001	KÜ
This object is used to set and send the value for the colour red when the rotary pushbutton is turned. The RGB colours are set according to the colour circle (Figure 4).					

Obj	Object name	Function	Typ	DPT	Flags
7	G1,F1,Colour RGB, green	Value	1 Byte	5.001	KÜ
This object is used to set and send the value for the colour green when the rotary pushbutton is turned. The RGB colours are set according to the colour circle (Figure 4).					

Obj	Object name	Function	Typ	DPT	Flags
8	G1,F1,Colour RGB, blue	Value	1 Byte	5.001	KÜ

This object is used to set and send the value for the colour blue when the rotary pushbutton is turned. The RGB colours are set according to the colour circle (Figure 4).

Obj	Object name	Function	Typ	DPT	Flags
10	G1,F1,Colour RGB, red	Status	1 Byte	5.001	KÜ

This object is used to retrieve the status of the colour red when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
11	G1,F1,Colour RGB, green	Status	1 Byte	5.001	KÜ

This object is used to retrieve the status of the colour green when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
12	G1,F1,Colour RGB, blue	Status	1 Byte	5.001	KÜ

This object is used to retrieve the status of the colour blue when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
9	G1,F1,Colour temperature relative	Value	1 Byte	5.001	KÜ

This object is used to set and send the colour temperature value between 0 and 100% when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
13	G1,F1,Colour temperature relative	Status	1 Byte	5.001	KSÜA

This object is used to retrieve the status when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
9	G1,F1,Colour temperature	Value	2 Byte	7.600	KÜ

This object is used to set and send the colour temperature value between Min Value and Max Value when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
13	G1,F1,Colour temperature	Status	2 Byte	7.600	KSÜA

This object is used to retrieve the status when the rotary pushbutton is turned.

Obj	Object name	Function	Typ	DPT	Flags
6	G1,F1,Counter pulses	Value	1 Byte	5.010	KÜ

This object is used to count up and down the value between two preconfigured values when the rotary pushbutton is turned and sent.

Obj	Object name	Function	Typ	DPT	Flags
10	G1,F1,Counter pulses	Status	1 Byte	5.010	KSÜA

This object is used to retrieve the status when the rotary pushbutton is turned.

2.2 Communication objects for the key functions

The following objects are only displayed if the number of groups in the general settings differs from 3 and the corresponding parameters have been configured. (See General settings: Number of groups parameter). The function of the objects 2 and 3 for the keys 2 and 3 result analogously to the object descriptions.

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Switch, On	1 Bit	1.001	KSÜA
An On telegram is sent via this object when the button is pressed briefly					

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Switch, Off	1 Bit	1.001	KSÜA
An Off telegram is sent via this object when the button is pressed briefly					

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Switch, Um	1 Bit	1.001	KSÜA
This object is used to toggle the value of the object between 0 and 1 when the key is pressed briefly and then sent.					

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Push, On->Off	1 Bit	1.001	KSÜA
This object is used to send value 1 when the key is pressed and value 0 when the key is released.					

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Set value, Value	1 Byte	5.005	KSÜA
The set value, between 0 and 255, is sent via this object when the key is pressed briefly.					

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Set value, Value	1 Byte	5.005	KSÜA
This object is used to switch between two set values with a short keystroke and to send the new value.					

Obj	Object name	Function	Typ	DPT	Flags
1	Button 1	Scene Invoke/Program	1 Byte	18.001	KSÜA
This object is used to call up the set scene when key 1 is pressed briefly. For this purpose, a value between 0..63 is sent corresponding to scene 1..64. If the key is pressed for a very long time, the uppermost bit is also set and a scene programming command is thus sent.					
1	Button 1	Scene Toggle/Program	1 Byte	18.001	KSÜA
This object is used to switch between two set scenes when button 1 is pressed briefly. For this purpose, a value between 0..63 is sent corresponding to scene 1..64. If the key is pressed for a very long time, the uppermost bit is also set and a scene programming command is thus sent.					
1	Button 1	Presence, On/Off	1 Bit	1.001	KSÜA
This object is used to toggle the value of object between 0 and 1 when the key is pressed briefly and then sent.					

2.3 Communication objects for the status LEDs

The following communication objects are only displayed with corresponding parameterization. Only the functions of the communication objects for LED 1 of key 1 are explained. The functions of the communication objects for LED 2 and 3 of button 2 and 3 are identical to this object description.

Obj	Object name	Function	Typ	DPT	Flags
62	LED 1	Scene, activate LED	1 Bit	1.001	KSÜA

This object is used to set the 1-bit status of LED 1. The respective displayed LED colour red, yellow, green, turquoise, blue, violet or LED off can be set via additional parameters.

Obj	Object name	Function	Typ	DPT	Flags
62	LED 1	Scene, activate LED colour	1 Byte	17.001	KSÜA

This object is used to set the status of LED 1. The respective displayed LED colour red, yellow, green, turquoise, blue, pink or LED off depending on a certain scene value (0..63 à scene 1..64) can be set via additional parameter.

2.4 Communication objects for operator station

The following communication objects are only displayed with the corresponding parameterization. Only the functions of the communication objects for the rotary pushbutton and pushbutton of mode 1 are explained. The functions of the communication objects for the rotary pushbutton and pushbutton of mode 2 are identical to these object descriptions.

Obj	Object name	Function	Typ	DPT	Flags
58	BS, Pushbutton 1	Switch, Off	1 Bit	1.001	KSÜA

An off telegram is sent via this object when the button is pressed briefly

Obj	Object name	Function	Typ	DPT	Flags
58	BS, Pushbutton 1	Switch, On	1 Bit	1.001	KSÜA

An On telegram is sent via this object when the button is pressed briefly

Obj	Object name	Function	Typ	DPT	Flags
58	BS, Pushbutton 1	Switch, Toggle	1 Bit	1.001	KSÜA

This object is used to toggle the value of the object between 0 and 1 when the key is pressed briefly and then sent.

Obj	Object name	Function	Typ	DPT	Flags
58	BS, Pushbutton 1	Toggle Value	1 Byte	5.005	KSÜA

This object is used to switch between two set values with a short keystroke and to send the new value.

Obj	Object name	Function	Typ	DPT	Flags
60	BS, Rotary pushbutton 1, Setpoint shift	Value	2 Byte	9.001	KSÜA

Via this object, the setpoint temperature is increased when the rotary pushbutton is turned to the right and decreased and sent when it is turned to the left. The step width and number of steps can be set via corresponding parameters.

Obj	Object name	Function	Typ	DPT	Flags
60	BS, Rotary pushbutton 1, Counter Pulse	Value	1 Byte	20.102	KSÜA

This object is used to set the rotary pushbutton of the room operating mode when turning.

Obj	Object name	Function	Typ	DPT	Flags
60	BS, Rotary pushbutton 1, Cyclic Binary Value	Value	1 Bit	1.006	KSÜA

This object is used to continuously send value 1 when the rotary pushbutton is turned to the right and value 0 when it is turned to the left.

Obj	Object name	Function	Typ	DPT	Flags
60	BS, Rotary pushbutton 1, Counter pulse	Value	1 Byte	5.010	KSÜA

This object is used to count up and down the value between two preconfigured values when the rotary pushbutton is turned and sent.

Obj	Object name	Function	Typ	DPT	Flags
60	BS, Rotary pushbutton 1, Set value	Value	1 Byte	5.001	KSÜA

This object is used to adjust and send the value between 0 and 100% when the rotary pushbutton is turned. The step width can be configured via the corresponding parameter.
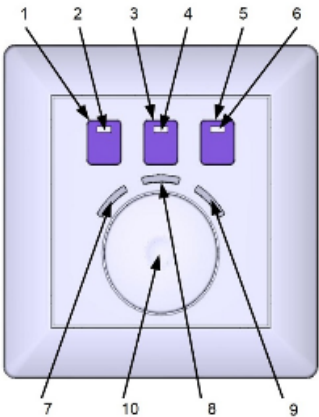
2.5 General communication objects

Obj	Object name	Function	Typ	DPT	Flags
65	LEDs, scene control	Scene, activate LED	1 Byte	18.001	KSÜA

This object is used to set the status of LEDs 1-3. The respective displayed LED colours red, yellow, green, turquoise, blue, pink or LED off depending on a certain scene value (0..63 à scene 1..64) can be set via additional parameters.

Obj	Object name	Function	Typ	DPT	Flags
66	Night operation	On/Off	1 Bit	1.001	KSÜA

Night mode can be activated via this object.

Obj	Object name	Function	Typ	DPT	Flags
67	Central switching	Off	1 Bit	1.001	KÜ

This object is used to send the value 0 when the rotary pushbutton is pressed for a long time.

Obj	Object name	Function	Typ	DPT	Flags
67	Central switching	On	1 Bit	1.001	KÜ

This object is used to send the value 1 when the rotary pushbutton is pressed for a long time.

Obj	Object name	Function	Typ	DPT	Flags
67	Central switching	Toggle	1 Bit	1.001	KÜ

This object is used to toggle between Value 0 and Value 1 when the rotary pushbutton is pressed and held.

3   Overview of the ETS parameters

The ETS parameters of the Piazza 3G Tune are divided into up to 5 groups. Depending on the selection, different numbers of parameter pages are displayed.

Figure 3: ETS parameters of Piazza 3G Tune

3.1 General Settings

The general settings for the push button are made on this parameter page. Values marked in bold are default values.

3.1.1 General

Parameter	Settings
Number of Groups	1 Group 2 Groups **3 Groups** 1 Group + operator station 2 Groups + operator station 3 Groups + operator station
This parameter can be used to set the desired number of groups that are controlled via the push/turn control. If the number of groups differs from 3, the number of freely configurable keys is automatically calculated and displayed. - 1 group: Keys 1-3 freely configurable - 2 groups: Key 1-2 channel preselection, key 3 freely configurable - 3 groups: Key 1-3 Channel preselection. - 1 group + operator station: key 1 channel preselection, keys 2-3 freely configurable. - 2 groups + operator station: key 1-2 channel preselection, key 3 freely configurable - 3 groups + operator station: key 1-3 channel preselection.	
Parameter	Settings
Debouncing	10 ms 15 ms **20 ms** 30 ms
This parameter can be used to set the end bounce time for the pushbuttons. The keystroke is only detected after the set time has elapsed.	
Parameter	Settings
Duration long press	600 ms **800 ms** 1 s 1,2 s
This parameter can be used to set the delay for the long keystroke. The long keystroke is only detected after the set time has elapsed.	
Parameter	Settings
Duration long press programming (Scene)	2 s **3 s** 4 s 5 s
This parameter can be used to set the delay for the very long keystroke. The very long keystroke is required for scene programming with single key function and for the function of the rotary pushbutton. A very long keystroke is only detected after the set time has elapsed.	
Parameter	Settings
Button Press Event Object Available	**No** / Yes
This parameter can be used to set the presence of an event object for the keystroke. If yes is set, then a 1 is sent to the event object when the key is pressed for the first time. This can be used, for example, to wake up the Piazza Sense display from sleep mode.	

3.1.2 LED: General

Parameter	Settings
Operating Mode of LEDs	Normal operation **ECO Mode**
This parameter can be used to set the operating mode of the LEDs. In ECO mode, the LEDs are dimmed to the preset brightness after a preset time.	

Parameter	Settings
LED brightness by ECO Mode	100% 90% 80% 70% 60% 50% 40% **30%** 20% 10% LEDs Off
This parameter can be used to set the brightness of the LEDs in ECO mode. The LEDs are dimmed to this brightness after a preset time.	

Parameter	Settings
LED brightness by normal operating	**100%** 90% 80% 70% 60% 50% 40% 30% 20% 10% LEDs Off
This parameter can be used to set the brightness of the LEDs in normal mode. This brightness is also set when the LEDs wake up, by pressing the keys in ECO mode.	

Parameter	Settings
LED brightness by night operation	100% 90% 80% 70% 60% 50% 40% 30% 20% 10% **LEDs Off**
This parameter can be used to set the brightness of the LEDs in night mode. Night mode can be activated via a separate object.	

Parameter	Settings
Wake up LEDs when pressed	No waking up **5 s** 10 s 20 s 30 s 1 Min

This parameter can be used to set for how long the LEDs should switch to normal operation when the keys are pressed in ECO mode or night mode.

Parameter	Settings
Request of LED status after bus reset	No request 1 second after bus reset 2 seconds after bus reset 3 seconds after bus reset 4 seconds after bus reset 5 seconds after bus reset 6 seconds after bus reset 7 seconds after bus reset 8 seconds after bus reset 9 seconds after bus reset 10 seconds after bus reset 15 seconds after bus reset 20 seconds after bus reset

This parameter can be used to set whether and after what time the statuses for the LEDs are queried. This query is necessary so that all status LEDs display the correct status and so that the buttons set the correct values from the first actuation. This is especially useful if the same actuator is controlled by several sensors. It is recommended to set the time differently for different sensors.

Parameter	Settings
Colour of LED for group preselection	LED Off Red Yellow **Green** Turquoise Blue Pink

This parameter can be used to select the colour of the status LEDs for the group preselection. The colour is the same for all 3 groups.

Parameter	Settings
Function of LED 4	Always Off **Status if available**

The function of LED 4 can be selected via this parameter.

Parameter	Settings
Function of LED 5	Always Off **Status if available**

The function of LED 5 can be selected via this parameter.

Parameter	Settings
Function of LED 6	Always Off **Status if available**

The function of LED 6 can be selected via this parameter.

3.1.3 Rotary pushbutton: general

General settings for the function of the rotary switch are made on this parameter page. The following applies: one revolution corresponds to 24 steps. Values marked in bold are standard values.

Parameter	Settings
Automatically switch back to Mode 1	Yes **No**
This parameter can be used to set whether the pushbutton should automatically switch back to Function 1.	

Parameter	Settings
Delay for switch back to Mode 1	**10 s** 20 s 30 s 1 Min
This parameter can be used to set the time after which the pushbutton should switch back to Function 1.	

Parameter	Settings
Encoder push button function by very long press	No Function Central Off Central On Central Toggle **Keylock**
This parameter can be used to set which function is to be executed when the rotary knob is pressed for a very long time. The key lock function can be used, for example, for cleaning the pushbutton or as a child lock.	

Parameter	Settings
Step width for Dimming via set Value	1%...10%[**5%**]
This parameter is used to set the percentage by which the value is to change with a step of the rotary switch.	

Parameter	Settings
Number of colours in HSV (H) mode	100 50 **25** 20 10
In the HSV colour mode, a maximum of 100 different colours of the colour wheel (Figure 4) can be set. This parameter sets the maximum number of colours that can be set. The set value also has an influence on how many steps are required for the run from 0° to 360° on the colour circle.	

Parameter	Settings
Step width for HSV(S) mode	1%...10%[**5%**]
This parameter is used to set the percentage by which the value changes with a step of the rotary switch.	

Parameter	Settings
Number of colours in RGB mode	120 60 **24** 12 6
In the RGB colour mode, a maximum of 120 different colours of the colour wheel (Figure 4) can be set. This parameter determines the maximum number of colours that can be set. The set value also has an influence on how many steps are required for the run from 0° to 360° on the colour circle.	

Parameter	Settings
Step width for Colour Temperature	1%...10%[**2%**]
The absolute range of the colour temperature changes relatively by the selected value per step. (For example, if the colour temperature changes by 2% / step, the temperature change corresponds to 60K if the absolute colour temperature range is between 3000K and 6000K).	

3.1.4 Correction of RGB colours

If two of the primary colours are mixed in the same ratio, three additional secondary colours yellow, turquoise and pink are produced. This mixing process can be continued as desired, producing further shades of the colour wheel (see Figure 4). To produce secondary colours as well as all other colours cleanly, the intensity of the primary colours should be matched. In practice, the matching of the primary colours is often not given for technological reasons. In the age of LED technology, LED RGB luminaires are being used more and more frequently. Typical for RGB LEDs is the different current consumption of the different coloured LEDs. The consequence is different intensities of the RGB LEDs (Figure 5).The result is adjusted colours that do not clearly match the colours of the colour wheel.
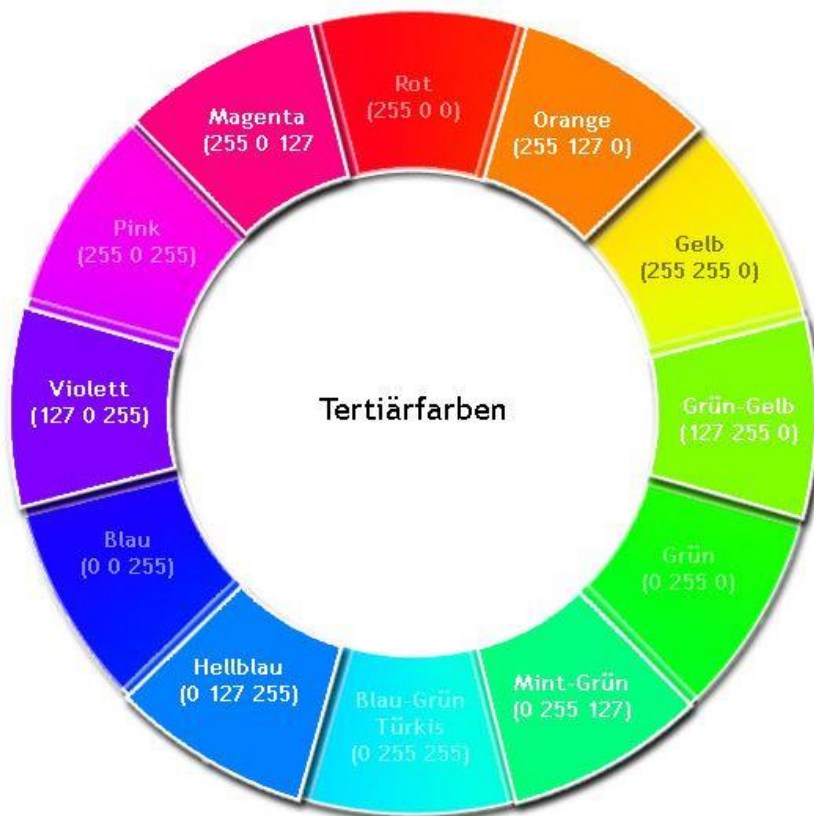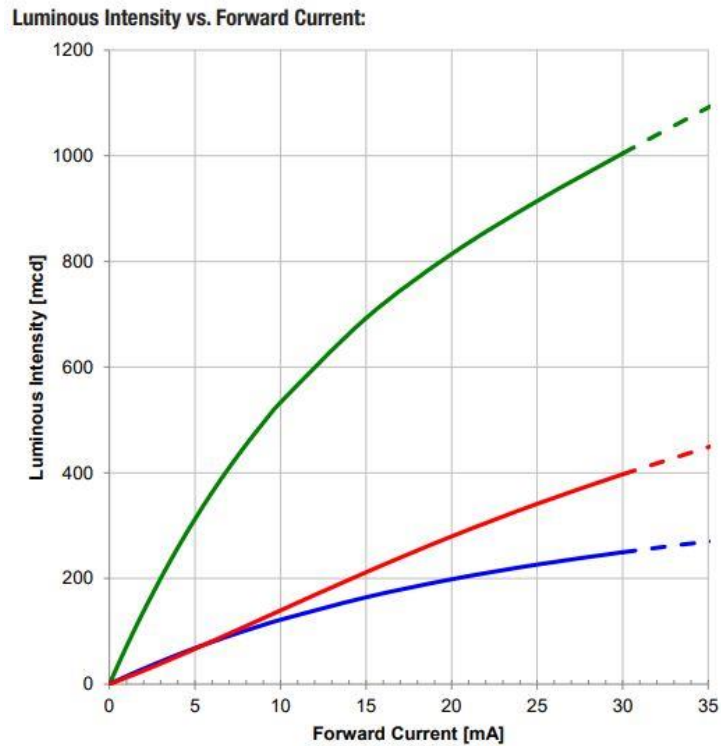

Figure 4: Colour circle Image source: https://bilder-plus.de/farbkreis-rgb.php

Luminous Intensity vs. Forward Current:

Figure 5: Bildquelle: https://katalog.we-online.de/led/datasheet/150141M173100.pdf

Another cause for deviations from the colour wheel are possible different perceptions of the viewers. The colour mixing in an RGB luminaire is based on the so-called additive colour mixing of the three primary colours red, green and blue. Additive colour mixing takes place in the human eye and brain. Due to nature, humans perceive different colour tones differently. At the same intensity, green often appears brighter to the observer than red. Using the following three parameters, the result of additive colour mixing can be adapted to the colours of the colour wheel.

Parameter	Settings
Light intensity of the colour red	50%...100%[**100%**]
This parameter can be used to reduce the light intensity of the red colour.	

Parameter	Settings
Light Intensity of the colour green	50%...100%[**100%**]
This parameter can be used to reduce the light intensity of the green colour.	

Parameter	Settings
Light Intensity of the colour blue	50%...100%[**100%**]
This parameter can be used to reduce the light intensity of the blue colour.	

3.2   Group 1

The parameter group Group 1 contains the parameter pages for configuring the rotary pushbutton functions of Group 1. The parameter groups of Group 2 and Group 3 are identical to this parameter group and can be configured according to the same principle.

3.2.1   Function: Rotary pushbutton

On this parameter page the functions of the rotary pushbutton for group 1 can be set. Values marked in bold are default values.

Parameter	Settings
G1, Function 1	no function Cyclic binary value **Dimming via Set value** Colour control (HSV) Hue Colour control (HSV) Saturation Colour control RGB Colour temperature Counter pulses
This parameter can be used to set the desired first function of the rotary pushbutton . (Status LED 4)	

Parameter	Settings
G1, Function 2	no function Cyclic binary value **Dimming via Set value** Colour control (HSV) Hue Colour control (HSV) Saturation Colour control RGB Colour temperature Counter pulses
This parameter can be used to set the desired second function of the rotary pushbutton . (Status LED 6)	

Parameter	Settings
Behavior on colour change	**Do not send saturation value** Always send saturation value Send saturation value after bus reset Send saturation value on change
This parameter can be used to set whether the saturation value is sent with the colour change.	

Parameter	Settings
Saturation value in %	0....100 **[100]**
This parameter can be used to set the value for saturation.	

Parameter	Settings
Selection of object type	3 separated Objects **3 Byte combined objects**
This parameter can be used to select the type of the object.	

Parameter	Settings
Type of colour temperature control	relativ **absolut**
The desired type of colour temperature control can be set via this parameter. With the "relative" setting, the colour temperature is adjusted via 1 byte object. With the "absolute" setting, the value for the temperature is set directly in Kelvin via 2 byte object.	
Parameter	Settings
Min Value colour temperature in K	1000....10000 **[3000]**
This parameter can be used to set the Min Value for warm light. This setting is important for the Status LED and should also be made for the relative colour temperature control.	
Parameter	Settings
Max Value colour temperature in K	1000....10000 **[6500]**
This parameter can be used to set the Max Value for warm light. This setting is important for the Status LED and should also be made for the relative colour temperature control.	
Parameter	Settings
Min counter value	0....255 **[0]**
This parameter can be used to set the smallest counter value at which the counter is to start.	
Parameter	Settings
Max counter value	0....255 **[255]**
This parameter can be used to set the largest counter value at which the counter should stop.	

3.2.2 Function: LEDs

On this parameter page the settings for status LEDs of group 1 can be made. Values marked in bold are default values.

Parameter	Settings
LED 5 Colour on value 0	**LED Off** Red Yellow Green Turquoise Blue Pink
This parameter sets the colour of LED 5 at value 0.	

Parameter	Settings
LED 5 Colour on value 1	LED Off Red Yellow **Green** Turquoise Blue Pink
This parameter sets the colour of LED 5 at value 1.	

3.3 Button 1

The parameter group Key 1 contains the parameter pages for configuring the individual key functions. The parameter groups of key 2 and key 3 are identical with this parameter group and can be configured according to the same principle.

3.3.1 Function: Button

On this parameter page, the functions of key 1 can be made. Values marked in bold are default values.

Parameter	Settings
Function of push button 1	No Function One Off **Toggle** Press On ->Off Set Value Value To Scene Select/Program. Scene Toggle/Program Presence
This parameter can be used to set the desired function of key 1.	

Parameter	Settings
Value if push button is pressed 0..255	0....255 **[0]**
This parameter is used to set the value that is sent when button 1 is pressed.	

Parameter	Settings
1. Value if push button is pressed 0..255	0....255 **[0]**
This parameter is used to set the value that is sent when the 1st key is pressed. Each time the key is pressed, the value toggles between the 1st and 2nd set value.	

Parameter	Settings
2. Value if push button is pressed 0..255	0....255 **[255]**
This parameter is used to set the value that is sent when key 1 is pressed for the 2nd time. Each time the key is pressed, the value toggles between the 1st and 2nd set value.	

Parameter	Settings
Scene if push button is pressed	**Scene 1/ Value 0** Scene 2/ Value 1 ... Scene 64/ Value 63
This parameter is used to set the scene that is selected when button 1 is pressed briefly, or reprogrammed when it is pressed for a very long time.	

Parameter	Settings
1. Scene Value if push button is pressed	**Scene 1/ Value 0** ... Scene 64/ Value 63
This parameter is used to set the scene that will be selected at 1st short press of button 1, or reprogrammed at very long press.	

Parameter	Settings
2. Scene Value if push button is pressed	Scene 1/ Value 0 **Scene 2/ Value 1** ... Scene 64/ Value 63
This parameter is used to set the scene that will be selected at 2nd short press of button 1, or reprogrammed at very long press.	

3.3.2 Function: LED

On this parameter page, the functions of the status LED 1 of key 1 can be made. Values marked in bold are default values.

Parameter	Settings
Function of LED 1	Always Off Always On **Status when available** Status via object 1 bit Status via object 1 byte Status via central scene object
This parameter is used to set the function of LED 1.	

Parameter	Settings
LED Colour on Press (Feedback)	**No feedback** LED Off Red Yellow Green Turquoise Blue Pink
Each status LED (LED1-3) next to a key can be used as a feedback of the key operation. This parameter is used to parameterize the colour / state that is displayed when the key is pressed.	

Parameter	Settings
LED Colour	**LED On** Red Yellow Green Turquoise Blue Pink
This parameter is used to set the colour / state of the LED.	

Parameter	Settings
LED Colour on Value 0	**LED Off** Red Yellow Green Turquoise Blue Pink
This parameter is used to set the colour of the LED with an object value of 0.	

Parameter	Settings
LED Colour on Value 1	**LED Off** Red Yellow Green Turquoise Blue Pink
This parameter is used to set the colour of the LED at an object value 1.	

Parameter	Settings
Activate LED at scene / value	**Scene 1 / Value 0** Scene 2 / Value 1 …
This parameter is used to set at which object value the LED is activated.	

Parameter	Settings
LED Colour	**LED Off** Red Yellow Green Turquoise Blue Pink
This parameter sets the colour of the LED.	

Parameter	Settings
Activate LED at scene / Value	**Scene 1 / Value 0** Scene 2 / Value 1 Scene 3 / Value 3 …. Scene 64 / Value 63
This parameter is used to set the scene that must be retrieved in the central scene object so that the LED next to the corresponding button is selected.	
LED Colour	**LED Off** Red Yellow Green Turquoise Blue Pink
This parameter is used to set the colour of the LED if the central scene object has the value set above. With any other value of the object, the LED remains off.	

3.5   Operating Station

The parameter group Operating station contains the parameter pages for the configuration of the rotary and push button for the operation of the room air conditioner controller.

3.5.1   Function: Rotary pushbutton

On this parameter page, the functions of the rotary and push button can be selected. Values marked in bold are default values.

Parameter	Settings
Function Rotary pushbutton Modus A	No function **Setpoint shift** Room Operating mode setting Cyclic binary value Counter pulses Set value (0..100%)
This parameter is used to select the function of the rotary pushbutton in mode A.	

Parameter	Settings
Function Rotary pushbutton Modus B	No function Setpoint shift Room Operating mode setting **Cyclic binary value** Counter pulses Set value (0..100%)
This parameter sets the function of the rotary pushbutton in mode B.	

Parameter	Settings
Step width Setpoint Deviation	0,5 K 0,8 K **1 K** 1,2 K 1,5 K 2 K 2,5 K
This parameter is used to select the step size for the setpoint shift.	

Parameter	Settings
Deviation of Setpoint	**+/- 3 Steps** +/- 4 Steps +/- 5 Steps +/- 6 Steps e
This parameter is used to select the number of steps for the setpoint shift.	

Parameter	Settings
Min counter value	0..255 **[1]**
This parameter can be used to set the smallest counter value at which the counter is to start.	

Parameter	Settings
Max counter value	0..255 **[4]**
This parameter can be used to set the largest counter value at which the counter should stop.	

Parameter	Settings
Possible Room Operation Modes	**All operating modes** Comfort/Energy saving mode Comfort/energy-saving/protected mode
This parameter can be used to set which operating modes are to be available when switching over.	

Parameter	Settings
Lock the switch of room operation modes on auto mode	**No** / Yes
This parameter is used to select whether the adjustment of the room operating modes should be blocked in auto mode.	

Parameter	Settings
Step width in %	1..10 **[2]**
This parameter can be used to set the step width when setting the value. With the setting 2%, 2 full turns of the rotary knob are required to adjust the value from 0 to 100%.	

Parameter	Settings
Function Rotary pushbutton Mode A	No Function Off **Ein** Toggle Value Toggle
This parameter is used to select the function of the pushbutton in mode A, when the button is pressed briefly.	

Parameter	Settings
Function Rotary pushbutton Mode B	No Function Off **Ein** Toggle Value Toggle
This parameter is used to select the function of the pushbutton in mode B, when the button is pressed briefly.	

Parameter	Settings
1.Value if push button in pressed 0..255	0..255 **[1]**
This parameter is used to select the value that is set at the first short keystroke.	

Parameter	Settings
2. Value if push button in pressed 0..255	0..255 **[3]**
This parameter is used to select the value that is set with the second short keystroke.	

3.5.2 Function: LED

The settings for LED 5 can be made on this parameter page. LED 5 can be used as a status display for the functions of the short keystrokes of the rotary pushbutton.

Parameter	Settings
LED 5 Colour at Value 0	LED Off **Red** Yellow Green Turquoise Blue Pink
This parameter is used to select the colour of LED 5 at value 0.	

Parameter	Settings
LED 5 Colour at Value 1	LED Off Red Yellow **Green** Turquoise Blue Pink
This parameter is used to select the colour of LED 5 at value 1.	

Parameter	Settings
LED 5 Colour at first value	LED Off **Red** Yellow Green Turquoise Blue Pink
This parameter is used to select the colour of LED 5 at the first value.	

Parameter	Settings
LED 5 Colour at second value	LED Off Red Yellow Green Turquoise **Blue** Pink
This parameter is used to select the colour of LED 5 at the second value.	