ATTACHMENT

INTELLIGENT

KNX DIMMER RGBW (4CH)
KNX-104-SUF

CONTENTS

1. APPLICATION FUNCTION INTRODUCTION

It is able to set different parameters to every output channel, and control various targets by modifying the setup of the internal parameters.

1.1. SWITCH

The output can be switched ON or OFF by 1 bit data. It is able to set the brightness value as the last one or a defined one (1%-100%) when switching on the luminaries. It is able to set a delay time (changing time) to dim UP the luminaries or dim UP gradually in the default period. When receiving the OFF message, the dimmer will be switched off immediately, or dim DOWN gradually after a delay time (changing time) or in the default changing period.

1.2. RELATIVE DIMMING

4 data bits control: the relative dimming command means it is possible to dim UP or DOWN to the needed brightness value during the set brightness threshold range. It is only valid to dim UP when the brightness value is smaller than the low threshold value and dim DOWN when the brightness value is greater than the high threshold value. It is also able to set whether to switch on the luminaries by the message **"dim UP to a certain value"** when the output is 0 by this function. The relative dimming is used to control the relative changes of the brightness by 4 data bits: the lowest 3 bits are controlling-bit and the highest bit is----- "1" means dim UP, "0" means dim DOWN.
Explanation of setting relative dimming: (1-7: dim DOWN; 0-8 remain unchanged (stop dimming); 9-15 dim UP)

Parameter	0	1	2	3	4	5	6	7
Dim DOWN	Unchanged/stop dimming	255	128	64	32	16	8	4
Parameter	8	9	10	11	12	13	14	15
Dim UP	Unchanged/stop dimming	255	128	64	32	16	8	4

1.3. ABSOLUTE DIMMING

8 data bits control: it is able to dim to the needed brightness value by changing the brightness parameters. The setting of the parameters is similar as relative dimming with the brightness value range: one low threshold value and one high threshold value. And it is not allowed to change the brightness value beyond the set range, the max. range is from 0 to 255. This function offers the possibility to dim UP or DOWN to 0 gradually to the target value by setting the delay time or the default time.
The high and low threshold value limits the total output of the dimmer; any brightness value beyond the range is not valid.
When the output is 0, it is able to set switching off the luminaries or remaining to a lower brightness value; and also in this status it is optional to switch on the luminaries by receiving the message **"absolute dimming"**.

1.4. STATUS REPORT

1 data bit: the dimmer offers the possibility whether sending the latest brightness value report of the controlled target and the changed report of the switch status to the BUS.

1.5. SCENE

8 data bits control: the dimmer offers 15 (1-15) scenes for selection. It is possible to set ONE brightness value and the gradual change time of ON for each scene. After setting, it is easy to call any favorite scene. 1 in the highest bit of the scene command it means **"saving"** command, to save the current brightness value to the relevant scene.

1.6. PRESET VALUE

The dimmer can preset scene, the object directly through 1bit data to transfer the preset scene or through 1bit data to let favorite scene to replace original preset scene. There are two preset values per output, there are two brightness values can be transfer for each preset value. Such as in theater, we need a relatively bright lighting effect when coming in, we can through transfer the first brightness value to be achieved this effect, when the movie starts playing, we need a relatively dark lighting effect, we can through transfer the second brightness value to be achieved. We can return to the previous brightness value when the movie ended.

1.7. RESET

When the BUS is power off, dimmer keeps the current output; the current brightness value will be saved to the memory of the dimmer. When the BUS voltage is recovered, the brightness status may be the last brightness value, or the preset brightness value.

1.8. ERROR REPORT

The dimmer offers the possibility of reporting the error status of the system; the data type is 1 byte:

Error report

Data Bit	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5
Target name	R channel	G channel	B channel	W channel	Device	Device
Function	Overload	Overload	Overload	Overload	Overvoltage, input voltage >50V DC	Over temperature, Device temperature >75°C

1.9. NORMAL OPERATION SIGNS

1 bit data. The sign will be report periodically to the Bus when the dimmer is working normally.

2. PARAMETERS IN THE ETS SETUP DESCRIPTION

2.1. INTRODUCTION

Dimmer has independent switch on/off, dimming function, it has combination mix function and sequence function.

2.2. PARAMETER "DEVICE GENERAL"

Figure 2.2. Parameter window of "Device general"

Parameter "Error report"

This parameter defines the error report status of the system, controlled by 1 byte data bit.

Options: Disable
             Enable

There is no error report after malfunction in the system when selecting **"disable"**, short circuit protection, overheat protection still work.
There is an error report after the malfunction in the system when selecting **"enable"**, It will send an alarm if with over temperature, overload or short circuit.
When output is overload, short circuit, outputs will be shut off, and send error reports. When switch off the output via BUS or output works normal, output will return to normal status. When PCB temperature is higher than 75 °C, the brightness value of LED lighting will lowered 5% per ↑1°C up, if the temperature continues to rise, the brightness value will continue to fall. The output is turned off at the value of 85°C.

"Sending cycle time in s [1...65535]"

This parameter defines the time interval that the dimmers send the error report by the bus, which will be started when enabling the error report.

Options: 1.....65535s

"Send object "in operation"

This command is used to send messages "1" or "0" to the BUS periodically to check the device whether is working or not.

Options: No
             Send value "0" cyclically
             Send value "1" cyclically

It will not send any telegram with "No"; and show the following parameters with "Send value '0' cyclically" or "Send value '1' cyclically" to define the time interval of sending telegram.

"Sending cycle time in s " [1...65535]

This parameter defines the time interval of the telegram to report the normal working condition of the dimmer.

Options: 1...65535s

Parameter "Voltage report"

This parameter defines whether use the dimming input voltage report of the dimme.

Options: Inactive
             Respond only after read
             Report cyclely
             Report when lower or higher given value

Select "Inactive", no report input voltage value; Select "Respond only after read", dimmer only send voltage value after read, but not report the voltage

value actively; Select "Report cyclely", dimmer will report the voltage value periodically; Select "Report when lower or higher given value", report voltage value when voltage is over set value.

Parameter "Sending cycle time in s[1...65535]"

This parameter appears when select "Report cyclely" it defines the time interval setting of sending voltage value via BUS.

      Option: 1...65535s

Parameter "Value1=input*0.1V" and "Value2=input*0.1V"

This parameter appears when select "Report when lower or higher given value", it defines upper and lower limit values setting of voltage report.

2.3. PARAMETER "CHANNEL X GENERAL"

"Channel X general" parameter setting can be seen in Figure.5.3, which activate or deactivate the output of Channel X. The "CH X" or "X" in the following text means any one output of the dimmers. The functions are describes as below and all the channels have them same functions setup.

Figure 2.3. Parameter window of "Channel X general"

"Brightness value OBJ transmit after dimming"

This function is used to report the latest brightness value. When enable this function, it will send a frame to the BUS no matter what happen to make the brightness value changed.

      Options: Nothing
                    Transmit new brightness

It will not send any report of the current brightness value with **"Nothing"**. And send a frame to the BUS to report the current brightness value no matter what happens to make the brightness value changed with **"Transmit new brightness"**.

Note: if selected **"transmit new brightness"**, the object **"Brightness status X"** and object **"Brightness X"** cannot be linked together by a same group address, or lead to the device internal loopback, and enter into endless loop, to make the bus system crash.

Parameter "Status report"

This function defines whether report the switch status to the BUS when the setup object **"switch"** is changed. Send "1" to the BUS when the current brightness value is greater than 0; send "0" when the value is equal to 0.

      Options: Nothing
                    It's new status

It will not send any report of the current switch status with **"Nothing"**. And send a status changed report of switch to the BUS with **"It's new status"**.

Note: if selected **"it's new status"**, the object **"Switch status X"** and object **"Switch X"** cannot be linked together by a same group address, or lead to the device internal loopback, and enter into endless loop, to make the bus system crash.

Parameter "Current report"

This parameter defines current detection report setting.

      Option:
                    Inactive
                    Respond only after read
                    Report cycle
                    Report after change

Unable to use current detection report with **"Inactive"**, but overload protection of current stil work; Only other devices send current values to BUS after read with selecting **"Respond only after read"**; Dimmer sends current report to BUS at regular intervals with selecting **"Report cyclely"**, time parameter set by **"Sending cycle time in s[1...65535]"**; Current changes to a certain value, it sends report to BUS when selecting **"Report after change"**, changing value parameter is set by **"Report when current change"**.

Parameter "Sending cycle time in s[1...65535]"

"Report cyclely" appears when select it in "Current report", it is used for setting loop time interval to send the current testing report.

Parameter "Report when current change"

"Report after change" appears when select it in "Current report", it's used for setting current changes to a certain number, then send current report to BUS.

Parameter "Power report"

This parameter defines current report setting.

      Options:
                    Inactive
                    Respond only after read
                    Report cyclely

Select **"Inactive"**, unable to use current report; Only other devices can send current report to BUS with selecting **"Respond only after read"**; Dimmer will send current report to BUS at regular intervals with selecting **"Report cyclely"**, time parameter is set by **"Sending cycle time in s[1..65535]"**;

Parameter "Sending cycle time in s[1..65535]"

"Report cyclely" appears when select it in "Power report", it's used for setting loop time intervals of sending power report.

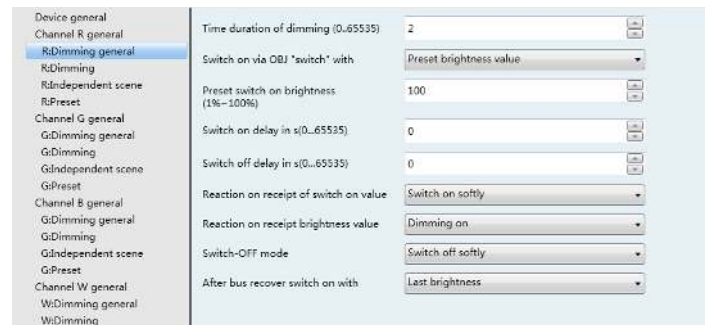## 2.4. PARAMETER SETTING OF "X: DIMMING GENERAL"

Figure 2.4. Parameter window of "X: dimming general"

Parameter "Time duration for dimming (0...65535)"

This parameter defines dimming time. No matter brightness, but also switch dimming method, the max time is 65535s when select Dimming on or Dimming off time.

Parameter "Switch on via OBJ 'switch' with"

It is used to select the brightness value is the last one or the preset one when using the switch mode to switch on the luminaries.

      Options: Preset brightness value
                    Last brightness value

The option **"Preset brightness value (1% - 100%)"** means the brightness value is the preset value when switching on the luminaries by switch mode. When the brightness low threshold value is lower than the switch preset value, the brightness value of the luminaries is the low threshold value after switching on; when the switch preset value is greater than the high threshold, the brightness value is the high threshold one after switching on. The high and low threshold of the brightness are shown in the parameter window **"CH X dimming"**, see Figure 6.5.
The option **"Last brightness value"** means the brightness value is the last status' value which is not equal to 0. If the behavior of switching on the luminaries in switch mode after the BUS reset, and the luminaries during BUS reset are off, so the brightness value is the default brightness value 128; Other cases, the brightness value is the last status' value which is not equal to 0 on switching mode.

Parameter "Preset switch on brightness (1%~100%)"

It is used to set the brightness value when switch on the luminaries in "switch" mode, with the setting range 1%~100%.

Parameter "Switch on delay in s(0...65535)"

It is used to set the delay time of switch on, max time 65535s.

Parameter "Switch off delay in s(0...65535)"

It is used to set delay time of switch off, max time 65535s.

Parameter "reaction on receipt of switch on value"

It shows the time to switch on the luminaries in switch mode.

      Options: Dimming on
                    Switch on softly

The option **"Dimming on"** means the switch dimming time is set by "Time duration for dimming (0..65535)". Then option **"Switch softly"** means the default dimming time is 2s.

Parameter "Reaction on receipt brightness value"

It is used to select time in "brightness" mode.

    Options: Dimming on
                     Switch on softly

The option **"Dimming on"** means "switch" dimming time can be set by "Time duration for dimming (0...65535)". Then option **"switch softly"** means the default "switch" dimming time is 2s.

Parameter "Switch-off mode"

It shows the time to switch off the luminaries in "switch" dimming mode.

    Options: Dimming off
                     Switch off softly
                     Switch off instantly

The option **"Dimming off"** means the "switch" dimming time is set by "Time duration for dimming (0...65535). The option **"switch softly"** means the default "switch" dimming time is 2s. The option **"switch off instantly"** means the luminaries are switch off immediately, time is 0.

Parameter "After bus recover switch on with"

The behavior after the BUS reset is the brightness value before power off or the preset value.

    Options: Preset brightness value
                     Last brightness value

The option **"Preset brightness value"** means the brightness value after the BUS power recovers is the input preset brightness value in the "bus recover preset brightness value (0%~100%)". If the input preset value is smaller than the low threshold, the value after the BUS power recovery is the low threshold; if the preset input value is greater than the high threshold, the value after the BUS power recovery is the high threshold. The option **"Last brightness value"** means the brightness value is the last value before power off after BUS power recovery. It also carry out a bus reset operation after downloading the parameters.

Parameter "Bus recover preset brightness value (0%~100%)"

It is used to set the brightness value during the BUS power recovery, and the range is 0%~100%.

2.5 PARAMETER "X: DIMMING"

Figure 2.5. Parameter window of "X:Dimming"

This window is used to set the parameters in the brightness dimming mode. There are 2 type of brightness dimming mode: Relative dimming and Brightness value:

Relative dimming parameter "low dimming threshold 1~127 (0.4%~49.9%)"

This parameter defines the low threshold value of the relative dimming. When it is smaller than the low threshold, it is not allowed to dim DOWN, only to dim UP, the range is 1~127 (0.4%~49.9%).

Parameter "upper dimming threshold 128~255 (50.2%~100%)"

This parameter defines the high threshold value of the relative dimming. When it is greater than the high threshold, it is not allowed to dim UP, only to dim DOWN, the range is 128~255 (50.2%~100%).

Parameter "If dimming dowm and value <=low dimming threhold output switch"

This parameter defines the action after relative dimming, whether it will be off or stay in the low threshold value.

    Options: Off
                     To low threshold value

Supposing the low threshold is 50. If it is "Off", it will switch off the luminaries when dim DOWN to 50; if it is "To low threshold value", the value of the luminaries will remain the same even when dimming DOWN to 50.

Brightness value Parameter "low dimming threshold 1~127 (0.4%~49.9%)"

This is for setting the low threshold value, range is 1-127. Dimming start from the low threshold value.

Parameter "upper dimming threshold 128~255 (50.2%~100%)"

This is for setting the up threshold value of brightness dimming, range is 128-255.

Parameter "If output on: receipt of "brightness value=0"output switch"

This function defines it is available or not to switch off the output by the defined brightness vale "0".

    Options: Off
                     To low threshold value

The option **"Off"** means to switch off the output when the brightness is lower than the low shreshold value. The option **"To low threshold value"** means the output remains the low threshold value when brightness is lower than the low threshold value.

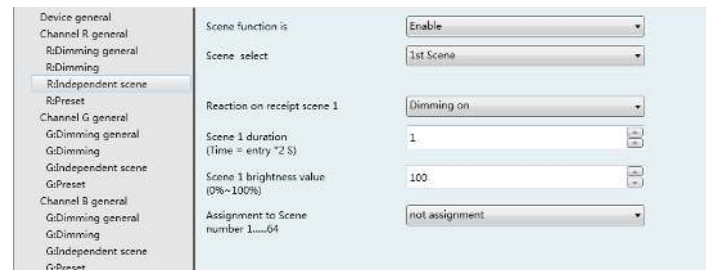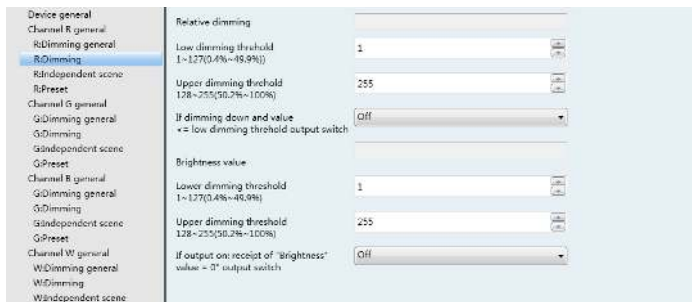## 2.6 PARAMETER WINDOW "X: INDEPENDENT SCENE"

Figure 2.6. Parameter window of "X: Independent scene"

This parameter shown in 2.6 defines the scene function, totally 15 scenes from 1 to 15. It is able to set 15 scenes simultaneously and call any one of them by control panel when needed.

Parameter "Scene function is"

The function defines the enable or disable of the scene function.

    Options: Enable
                     Disable

The option **"Enable"** means it is able to use the scene function of the dimmer X; the window shown in Figure 2.6 will be displayed after selecting. If there is no need to use the function of scene, so select **"Disable"** option.

Parameter "Scene select"

This function is used to select a scene to set the brightness value, dimming time and dimming mode.

    Options: Scene 1
                     Scene 2
                     ......
                     Scene 15

The setting parameters for the other 15 scenes are shown as below:

Parameter "Reaction on receipt scene Y"

The function defines the dimming mode of the set scene. Y means the scene that needs setting, 1~15. The Y shown as below has the same meaning.

    Options: Dimming on
                     Switch on softly

The option **"Dimming on"** means the set scene dimming time is the set time of the parameter "Scene Y duration (time=entry*2s)": the input time multiplies 2. The option **"Switch on softly"** means the scene dimming time is the default time "2S".

Parameter "Scene Y duration (time=entry*S)"

This function defines the dimming time of the set scene. Tha max input time is 255s.

Parameter "Scene Y brightness value (0%~100%)"

This parameter is for brightness of the set scene, dimming range 0%~100%.

Parameter "Assignment to Scene number 1...64"

This function distributes the scene number of the set scene that means the communication object "Scene/save X" will call the scene by the allocated scene number.

    Options: Not assignment
                     Assignment to scene 1
                     Assignment to scene 2
                     ......
                     Assignment to scene 64

Note: the parameter setting option is 1~64 field number or unallocated.
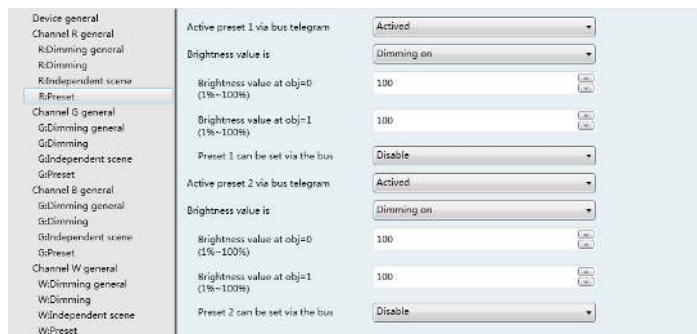
2.7 PARAMETER "X: PRESET"

Figure 2.7. Parameter window of "X: preset"

It is able set the brightness value in "X: preset" shown in Figure 2.7. There are two preset objects per output: "preset 1" and "preset 2" which are used to realize the preset effect of the lighting. Enable to set the preset value via communication with object. It is also able to save the current brightness status as the new preset value. These 2 preset values have the same parameters setup, so here take one as an example.

Parameter "Active preset 1 via bus telegram"

This parameter is used to activate preset 1.

Options: Active
Deactive

It will not activate the preset 1 with "Deactive", and show the following parameter with "Active".

Parameter "Brightness value is"

This parameter defines the time when starting the dimming by "preset 1", and there is 1 bit data to control "X preset 1": "0" and "1", which is able to call 2 different brightness values.

Options: Dimming on
Switching on softly

When select **"dimming on"**, the dimming time of object "X preset 1" is set by "Time duration for dumming (0...65535)". When select **"switching on softly"**, the dimming time of "X preset1" is the default value: 2 seconds

Parameter "Brightness value at obj=0(1%~100%)"

This parameter defines the brightness value when receiving "0" by "X preset 1".

Option: 1~100%

Parameter "Brightness value at obj=1(1%~100%)"

This parameter defines the brightness value when receiving "1" by "X preset 1".

Option: 1~100%

Parameter "Preset 1 can be set via the bus"

This parameter defines the possibility to change the preset value. It is able change the preset value with "enable" and also start the communication object "Set preset 1", which is used to save the current switch status as the new preset value. It will save the current brightness status to the "brightness value at obj=0" and replace that value with "0"; will save the current brightness status to the "brightness value at obj=1" and replace that value with "1".

Options: Enable
Disable

2.8 COLOR CYCLE AND SEQUENCE PARAMETER SETTING

Color cycle and sequence parameter window, Figure.2.8 like below picture:

Figure 2.8. Color cycle and sequence parameter setting window

Color cycle function is that dimmer will change according to fixed color, below is the fixed color:

	Red	Orange	Yellow	White	Green	Cyan	blue	Purple
R	255	255	255	255	0	0	0	255
G	0	165	255	255	255	255	0	0
B	0	0	0	255	0	255	255	255

Parameter "Color Cycle Length via"

This parameter is to set total color cycle time via which means, option:

Parameter
Bus

The option of **"Parameter"** is to set total color cycle time , the option of **"Bus"** is to set total color cycle time via object "Cycle speed control" , time will be multiplies 2 of object, but not less than 30S at least.

Parameter "Cyclic Status value feedback"

This parameter defines the group status report of setting RGB 3 channels.

Options: Yes
No

The option of **"No"** doesn't report the group status of RGB 3 channels, the option of **"Yes"** is to report circularly.

Parameter "Cyclic Channel Status Value Interval"

This parameter is to set the cycle report time intervals of RGB group status, max time is 100s, minimum time is 5s.

Parameter "Color circle stop status"

This parameter is to set color after color cycle stop status, options:

Last colour of colour circle
Actual colour
Preset color

The option of **"Last colour of colour circle"** is that color will stay the last color after the end of color circle; Option of **"Actual color"** is to remain the color without change after the end of color circle; option of **"Preset color"** is that color will be preset color after the end of color circle.

Parameter "Color R:", "Color G:", "Color B:"

It is for setting the color after the end of color circle.

Parameter "Sequences Repeat Mode Select"

This parameter is to set the sequences repeater mode, options:

Repeat None
Repeat Sequence
Repeat All Sequences

The option of **"Repeat None"** is not allow any ending function of circle sequence when a sequence finish in the sequence groups; The option of **"Repeat Sequence"** is to repeater the current sequences. In option of **"Repeat All Sequences"** is to carry out all sequences circularly.

Parameter "Scene sequence Effect"

This parameter is to set effect of sequence,

Option: Fade
Jump
Flash

The option of **"Fade"** is that one color fade to next color in the execution process, dimming time is set by "Scene Y Time: [0...255] in s".
The option of **"Jump"** is one color jump to next color in the execution process, parameter "Scene Y Time: [0...255] in s" is the time to stay at this color.
The option of **"Flash"** is flash all the time in the execution process. The duration time of flash is set by the parameter.

Parameter "Duration time of flash=input*50ms", Pause time of flash=input*50ms

These 2 parameters are to set duration time of flash, on/off time. Pause time of flash is the input time multiplies 50ms.

2.9 SCENE GROUP SETTING

Scene group function is that only need a scene command to call a color scene. Scene group has 6 pages, each page has 10 scenes, total 60 scenes. Please see Figure 2.9 like below picture:
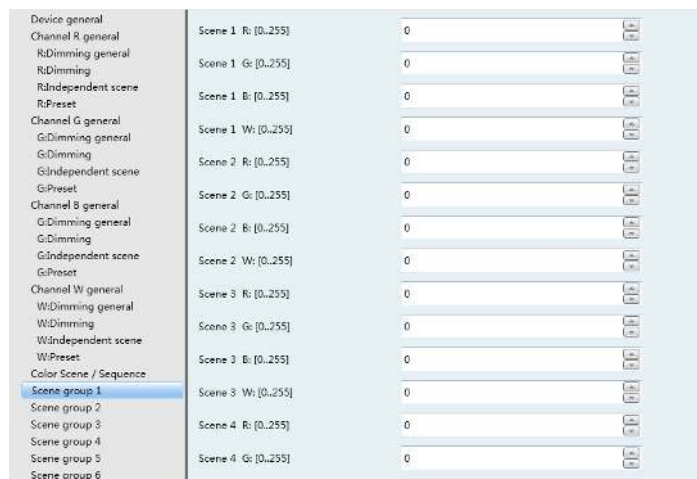

Figure 2.9. Scene group setting window

Parameter "Scene Y R: [0..255]", "Scene Y G: [0..255]", Scene Y B: [0..255]", Scene Y W: [0..255]"

These 4 parameters are used for setting brightness value of each channel of scene group, then it can combine corresponding color.

2.10 SEQUENCE PARAMETER SETTING

Sequence function is to change according to a set of color and preset time. Enable to set color and time of each sequence. Setting window like Figure 2.10. Sequence action can divide to 6 groups, each group get 1action, total 72 actions.

Figure 2.10. Sequence parameter setting

Parameter "Scene Y R: [0..255]", "Scene Y G: [0..255]", Scene Y B: [0..255]", Scene Y W: [0..255]"

These 4 parameters are used for brightness value of each channel, so it can combine corresponding color.

Parameter "Scene 1 Time: [0..255] in s"

This parameter is used for setting corresponding time of each sequence.

3. COMMUNICATION OBJECT DESCRIPTION

Communication object is the media of devices on the bus communicate with other device, that is, just communication object can communicate with the BUS. The role of each communication objects as following.

3.1 COMMUNICATION OBJECT OF "DEVICE GENERAL"

■⇄|0	General	In operate	1 bit	C - - T -	switch	Низкий
■⇄|1	General	Error report	1 byte	C R - T -		Низкий
■⇄|2	General	Voltage report	2 bytes	C - - T -	voltage (mV)	Низкий

Figure 3.1. Communication object window of "Device General"

Note: "C" in "Flag" column in the below table means that the object has a normal link to the bus; "W" means the object value can be modified via the bus; "R" means the value of the object can be read via the bus; "T" means that a telegram is transmitted when the object value has been modified; "U" means that value response telegrams are interpreted as a write command, the value of the object is updated.

Number	Function	Object Name	Data	Flags
0	In operate	In operate	1bit	C,T
This object is used to declare the working condition by sending "1" or "0" to the bus cyclically, which is enabled when selecting "send value '0' cyclically" or "end value '1' cyclically" in the parameter **"Send object 'in operation'"** and disabled when selecting "no". It will send "0" with option "send value '0' cyclically" and "1" with "send value '1' cyclically".			
1	Report error of device	Error report	1byte	C, R,T
This object is used to report the error status of the system. It will be disabled with "Error report", and report error information when the system has the malfunction with the option "Enable". It will also send an alarm to switch off the device with over temperature, overload or short circuit. Below is the specific description of 8 bit command: 8 bits are 0 — the system works normally. No.0 is 1 — overload for R channel No.1 is 1 — overload for G channel No.2 is 1 — overload for B channel No.3 is 1 — overload for W channel No.4 is 1 — over voltage for the device, the input voltage > 50VDC. No.5 is 1 — over temperature for the device, >75°C Others are not use.			
2	Voltage report	Voltage report	2byte	C, R,T
This object is to report the working voltage of system,the data type is KNX 2byte floating point data, the unit is mV.			

3.2 GENERAL COMMUNICATION OBJECT FOR EACH CHANNEL

RGBW each channels has the same communication object, take R channel as an example:

■⇄|3	Channel R, switching	Switching	R... 0... 1 bit	C - W - -	switch	Низкий
■⇄|4	Channel R, switching	Switch status	1 bit	C R - T -	switch	Низкий
■⇄|5	Channel R, dimming	Relative dimming	4 bit	C - W - -	dimming control	Низкий
■⇄|6	Channel R, dimming	Absolute dimming	R... 0... 1 byte	C - W - -	percentage (0..100%)	Низкий
■⇄|7	Channel R, dimming	Brightness status	R... 0... 1 byte	C R - T -	percentage (0..100%)	Низкий
■⇄|8	Channel R, scene	Scene	R... 0... 1 byte	C - W - -		Низкий
■⇄|9	Channel R, preset	Preset 1	1 bit	C - W - -	switch	Низкий
■⇄|10	Channel R, preset	Set preset 1	1 bit	C - W - -	switch	Низкий
■⇄|11	Channel R, preset	Preset 2	1 bit	C - W - -	switch	Низкий
■⇄|12	Channel R, preset	Set preset 2	1 bit	C - W - -	switch	Низкий
■⇄|13	Channel R, current	Current report	2 bytes	C R - T -	current (mA)	Низкий
■⇄|14	Channel R, power	Power report	2 bytes	C R - T -		Низкий
■⇄|15	Channel R, timer	Delay on/off	H... 0... 1 bit	C - W - -	switch	Низкий

Figure 3.2. General communication object for each channel

No.	Function	Object name	Data	flags
3	Switching	Channel X, switching	1bit	W,C
This communication object is only used for switch on/off of dimmer. Device receive on/off command from this communication object, if receive logic value "1", dimmer switch on, "0" is OFF.			
4	Switch status	Channel X, switching	1bit	C,R, T
This object is used to report the status of the current switch to the bus. The dimmer will send "1" to the bus when the value of the brightness is larger than 0, "0" to the bus with value of "0". The object will be enabled when selecting "It is new status" in the parameter **"Status report"**.			
5	Relative dimming	Channel X, dimming	4bit	C,W
This object is used to dim up or down the outputs. It will dim down when the input value is from 1 to 7. During this range, smaller amplitude of dimming down with larger value; that means it will dim down to the biggest amplitude with 1, while to the smallest amplitude with 7, and 0 means stop dimming down. It will dim up when the input value is from 9-15. During this range, smaller amplitude of dimming up with larger value; that means it will dim up to the biggest amplitude with 9, while to the smallest amplitude with 15, and 8 means stop dimming up.			
6	Absolute dimming	Channel X, dimming	1byte	C,R,T
This object is used to switch on or switch off of dimmer via receiving brightness value rate. If receiving the brightness value rate is over 0, dimmer switch on. If receiving the brightness value rate is "0", then dimmer may switch off, or brightness remains the low threshold, it's depends on brightness dimming parameter.			
7	Brightness status	Channel X, dimming	1byte	W,C
This object is used to send the brightness status of the current output to the bus whatever causes the changes of the value. Communication object send the data to BUS, and report the current brightness value rate; The object will be enabled when selecting "Transmit new brightness" in the parameter **"Brightness value OBJ transmit after dimming"**.			

No.	Function	Object name	Data	flags
8	Scene	Channel X, scene	1byte	C,W
This object is used to send an 8bit command to transfer or save the scene. This object is opening when on enable scene function. The mean of 8bit as following: Set up an 8bit command (binary code) as: FXNNNNNN F: "0" transfer scene; F: "1" save scene; X: Un-used, not affect the results; NNNNNN: scene number (0...63) The parameter setup is 1-64.				
9	Preset 1	Channel X, preset	1bit	W,C
It is the communication object of preset 1 and call the preset value. When the object receives the logical value of "0", the brightness value of dimming are defined by "Brightness value at obj=0"; when the object receives the logical value of "1", the brightness value of dimming are defined by "Brightness value at obj=1". This object will be started after activating preset1.				
10	Set preset 1	Channel X, preset	1bit	W,C
This object is used to modify brightness value of preset1. It will start the parameter "preset1 can be set via the bus" with "Enable". Via this object can save current brightness status as new preset value. It will save the current brightness value to "brightness value at obj=0" with "0", that is to replace the is value; It will save the current brightness value to "brightness value at obj=1" with "1", that is to replace the is value.				
11	Preset 2	Channel X, preset	1bit	W,C
It is the communication object of preset 2 and calls the preset value. When the object receives the logical value of "0", the brightness value of dimming are defined by "Brightness value at obj=0"; when the object receives the logical value of "1", the brightness value of dimming are defined by "Brightness value at obj=1". This object will be started after activating preset 2.				
12	Set preset 2	Channel X, preset	1bit	W,C
This object is used to modify brightness value of preset 2. It will start the parameter **"preset 2 can be set via the bus"** with "Enable". Via this object can save current brightness status as new preset value. It will save the current brightness value to "brightness value at obj=0" with "0", that is to replace the is value; It will save the current brightness value to "brightness value at obj=1" with "1", that is to replace the is value.				
13	Current report	Channel X, current	2byte	C, R,T
This object is used to report the present current value of channel, report data type is KNX 2 byte floating data, unit is mA.				
14	Power report	Channel X, power	2byte	C, R,T
This object is used to report the present current value of channel, report data type is KNX 2 byte floating data, unit is W.				
15	Delay on/off	Channel X, timer	1bit	C, T
This object is used to transfer delay function. Delay switch on with receiving "1", delay switch off with receiving "0", delay time is set by parameter. During the delay function process, dimmer finish delay function with receiving any changing dimmer status command, such as switch on/off, dimming(relative ,absolute), scene, color cycle, sequence ect.				

3.3 GROUP COMMUNICATION OBJECT

Figure 3.3. Group communication object

No.	Function	Object name	Data	flags.
56	Switching ON/OFF RGB	Group, switching	1bit	W,C
This object is used for switch on/off of RGB 3 channels at the same time, RGB 3 channels will be all on with receiving "1", RGB 3 channels will be off with receiving "0".				
57	Switch status of RGB	Group, switching	1bit	C,R, T
This object is used to report present RGB channels status to BUS, the status will be "0" when RGB 3 channels are all switch off, otherwise it will be "1".				
58	Relative dimming, RGB	Group, dimming	4bit	C,W
This object is used to control relative dimming of RGB 3 channels. Transfer this function to keep present color without change, each channel adjust according to brightness value rate ratio. If present brightness of RGB channel is 200, 150, 100, when receiving dimming down "25%" command, brightness value rate of RGB channels wil dim down to 64, 48, 32 separately. Transfer brightness value rate is 136, 102, 68, Color won't do much change after adjustment.				
59	Absolute dimming RGB	Group, dimming	3byte	C,R,T
This object is used to control brightness value rate of dimmer, complete the brightness value rate setting of RGB 3 channels at 1 time.				
60	Brightness status RGB	Group, dimming	3byte	W,C
This object is used to report output brightness of RGB 3 channels to BUS, whatever reason to change brightness value rate, the object can send data to BUS, and report the present brightness value rate.				
61	Scene no.	Group, scene	1byte	C,W
This object is used to send an 8bit command to transfer or save the scene. This object is to transfer the scene rate of RGBW 4 channels. The mean of 8bit as following: Set up an 8bit command (binary code) as: FXNNNNNN F: "0" transfer scene; F: "1" save scene; X: Un-used, not affect the results; NNNNNN: scene number (0...59)				

3.4 COLOR CYCLE COMMUNICATION OBJECT

■↕	55	Colour cycle	Cycle speed control	2 bytes	C	-	W	-	-	pulses	Низкий
■↕	63	Colour cycle	Start/Stop	1 bit	C	R	W	-	-	start/stop	Низкий
■↕	64	Colour cycle	Pause/Repause	1 bit	C	R	W	-	-	enable	Низкий

Figure 3.4. Color cycle communication object

No.	Function	Object name	Data	Flags
55	Cycle speed control	Color cycle	2byte	W,C
This object is used to set total time of color cycle, time is multiplies 2 of input value. It appears when choose "Bus" from **"Color Cycle Length via"** parameter. When the time of computation is less than 30s, then set color cycle function according to 30s.				
63	Start/Stop	Color cycle	1bit	W,C
This object is used to start / stop color cycle , start color cycle with receiving "1" , stop color cycle with receiving "0". During color cycle function process, dimmer will finish color cycle function automatically once receiving any changing dimmer output status command, such as switch on/off, dimming (relative, absolute), scene, delay, sequences ect.				
64	Pause/Repause	Color cycle	1bit	W,C
This object is used to pause, recovery cycle function, pause with value rate "1", recovery the present status with rate "0".				

3.5 SEQUENCE COMMUNICATION OBJECT

| ■↕| 62 | Sequence | Recall | 1 Byte | C | - | W | - | - | Low |
| ■↕| 65 | Sequence | Pause/Repause | 1 bit | C | R | W | - | - | Low |

Figure 3.5. Sequence communication object

No.	Function	Object name	Data	Flags
62	Recall	Sequence	1byte	W,C
This object is used for transfer sequences, there are total 6 sequences from 0 to 5. First sequence is "0". Under color cycle function, dimmer will finish color cycle function automatically once receiving any changing dimmer output status command, such as switch on/off, dimming(relative, absolute), scene, delay, sequences ect.				
65	Pause/Repause	Sequence	1bit	W,C
This object is used for pause and recovery the color sequence function. Pause with value "1", recovery with value "0".				