

# 4- CHANNEL RGBW DIMMER

## RE KNT RGB



## INSTRUCTIONS MANUAL

## General Description

- 4 output channels PWM Dimming Actuator designed for the control of LED strips: one-color, RGBW or RGB + W.
- Valid only for LED Strips with 12-24Vcc input voltage constant.
- Modular housing (5 modules wide), DIN-rail mounting.
- PWM dimming technology.
- The 4 channels can be configured as:
  - o 4 independent channels: It is possible to control the different output channels independently for white one-color LED strips.
  - o RGBW Channel: It is possible to control of 4-color LED strips. The 4 colors will be controlled at the same time but different levels of luminosity can be differentiated in each color.
  - o RGB Channel + W independent channel: It is possible to control 3 colors RGB LED strips + 1 independent channel for white color LED strips.
- Maximum load capacity, 10A per channel and 40A in total.
- Built-in potentiometer on the front of the dimmer, which allows checking manually the correct operation of the device without connecting the Bus:
  - o Manual (any position above the minimum): with the potentiometer the 4 independent channels at the same time or RGBW channel can be regulated without having to connect the Bus.
  - o Automatic (at minimum): operation through the Bus.
- Protected against overload, short circuit and overtemperature.
- It incorporates an Anti-panic input for security systems: in case of emergency, enabling this input, the LED strips will be switched on to the maximum, ignoring the dimming.
- Programming and commissioning via ETS4 or later versions.
- Integrated KNX Bus Coupling Unit (BCU).

## Technical Data

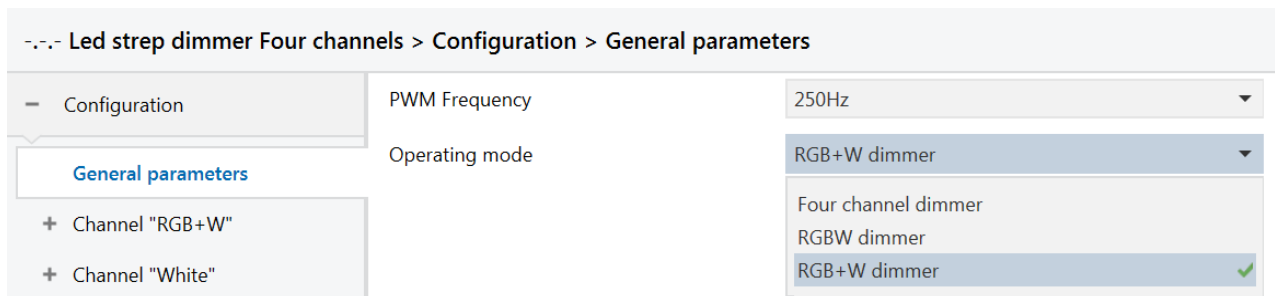
<b>External Nominal Voltage</b>	12-48 Vdc Through the Constant voltage Power Supply
<b>Supply from KNX bus</b>	21 ~ 32Vdc
<b>Consumption</b>	<10mA
<b>Connection to KNX bus</b>	KNX TP1 standard connection terminal
<b>Commissioning</b>	ETS4 or ETS5
<b>KNX Media</b>	TP1
<b>Valid for</b>	One-color, RGB or RGBW LED Strips
<b>Output channels</b>	4
<b>Configuration mode</b>	System Mode
<b>Maximum capacity</b>	10A per channel for one-color LED Strips or 40A in total for RGBW LED Strips
<b>Dimensions</b>	5 modules, 87.5 mm wide x 65mm depth
<b>Mounting</b>	DIN 46277 rail
<b>Working temperature</b>	-5°C ~ +45°C
<b>Storage temperature</b>	-30°C ~ +70°C
<b>Protection degree</b>	IP20 (EN60529)

<b>Directives</b>	Low Voltage 2014/35/UE EMC 2014/30/UE
<b>According to the Standards</b>	KNX Standard 2.0 EN60669-1, 2-1 & 2-3

## Project Development and Commissioning

### I – DIMMER CHANNELS CONFIGURATION

- **General Parameters**
  - The PWM frequency can be chosen from different values (250, 300, 400, 500 or 600Hz). It determines the speed at which the output voltage of the regulator to the LED strips will be regulated.
  - We chose the operating mode of the 4 channels:
    - 4 independent channels for one-color Led Strips (Four channel dimmer).
    - RGBW set channel: control of 4 color LED strips is allowed (RGW dimmer).
    - Channel Set RGB + W channel monochrome: allows control of 3-color RGB LED strips + one independent channel of white monochrome LED strip (RGB+W dimmer).



#### I.1-RGBW DIMMER CONFIGURATION

- **Functional Parameters:**

This is to specify the basic setting parameters for the RGBW output set channel.

  - Minimum Brightness: sets the minimum dimming level of the strips. This level is between 0% and 100%.
  - Maximum Brightness: sets the maximum dimming level of the strips. This level is between 0% and 100%.
  - Soft turn on time (x 0,1sec): sets the time delay of the switching-on from the reception of the telegram until it reaches the end value. This time can be set 0,1 and 6553 seconds.
  - Soft turn off time (x 0,1sec): sets the time delay of the switching-off from the reception of the telegram until it reaches the end value. This time can be set 0,1 and 6553 seconds.
  - Switch On mode: sets how the strips are switched-on each time it receives an ON telegram. 3 possibilities:
    - Switch On at last turn off brightness.
    - Switch On at maximum brightness.
    - Switch On at this % off brightness.
  - OFF state brightness (%): It is associated with the four RGBW colors. This level is between 0% and 100%.

Programar Ayuda Resaltar Cambios Parámetros por Defecto

--- Led strep dimmer Four channels > Configuration > Channel "RGB-W" > 1.-Functional parameters

Configuration	Minimum Brightness (%)	3
General parameters	Maximum Brightness (%)	99
Channel "RGB-W"	Soft Turn on time ( x 0,1 Sec)	1
1.-Functional parameters	Soft Turn off time ( x 0,1 Sec)	3
2.-Additional parameters	Switch On mode	Switch On at last turn off brightness
Scene parameters	OFF state brightness (%)?	
Sequences	RED:	2
	GREEN:	2
	BLUE:	2
	WHITE:	2

o **Additional Parameters:**

This is to specify the additional control parameters for the RGBW output set channel.

- o Timer time delay (Sec): time delay in case of receiving a timing telegram: 0sec ~ 7.200sec.
- o Prewarning in timer function (Sec): can make a brief flickering of the strips a time before the end of the set time: 0sec ~ 60sec.
- o Action after power supply fault: sets the estate the dimmer will come back after a fault on the 12-24Vcc power supply or KNX bus: OFF, ON, Switch On at this % off brightness, call one Scene or call one Sequence.
- o Dimming speed (From 0% to 100% x 0,1Sec): Time in seconds to regulate from 0% to 100%. Set timing between 0.1sec ~ 486sec.

--- Led strep dimmer Four channels > Configuration > Channel "RGBW" > 2.-Additional parameters

Configuration	Timer time delay (Sec)	60
General parameters	Prewarning in timer function (Sec)	0
Channel "RGBW"	Action after power supply fault	OFF
1.-Functional parameters	Dimming speed (From 0% to 100% x 0,1Sec)	20
2.-Additional parameters		
Scene parameters		
Sequences		

○ **Scene Parameters:**

This function allows us to select up to 5 different scenes, different light environments, so that they are activated when the activation value is received through the corresponding objects of a byte of scenes.

-.-. Led strep dimmer Four channels > Configuration > Channel "RGB-W" > Scene parameters

Configuration	Number of scenes attended	Five scenes
General parameters	Scene number 1	Scene 1
Channel "RGB-W"	Brightness value (%) ?	
1.-Functional parameters	RED:	80
2.-Additional parameters	GREEN:	30
Scene parameters	BLUE:	100
Sequences	WHITE	3

○ **Sequences:**

This function allows us to select up to 5 different sequences, so that they are activated when the activation value is received through the corresponding Ibit sequence objects.

-.-. Led strep dimmer Four channels > Configuration > Channel "RGB-W" > Sequences

Configuration	Enable Sequence number 1 ?	<input type="radio"/> No <input checked="" type="radio"/> Yes
General parameters	Enable Sequence number 2 ?	<input checked="" type="radio"/> No <input type="radio"/> Yes
Channel "RGB-W"	Enable Sequence number 3 ?	<input checked="" type="radio"/> No <input type="radio"/> Yes
1.-Functional parameters	Enable Sequence number 4 ?	<input checked="" type="radio"/> No <input type="radio"/> Yes
2.-Additional parameters	Enable Sequence number 5 ?	<input checked="" type="radio"/> No <input type="radio"/> Yes
Scene parameters		
Sequences		
	+ Sequence number 1	

In each independent sequence you can choose:

- Do this sequence:
  - One time.
  - One time and continue with sequence number 1.
  - One time and continue with sequence number 2.
  - One time and continue with sequence number 3.
  - One time and continue with sequence number 4.
  - One time and continue with sequence number 5.
- The number of steps in that sequence with a maximum of up to 5 steps per sequence.

--- Led strep dimmer Four channels > Configuration > Channel "RGB-W" > Sequences > Sequence number 1

<ul style="list-style-type: none"> <li>Configuration</li> <li>General parameters</li> <li>Channel "RGB-W" <ul style="list-style-type: none"> <li>1.-Functional parameters</li> <li>2.-Additional parameters</li> <li>Scene parameters</li> <li>Sequences</li> </ul> </li> </ul>	Do this sequence One time and continue with sequence number 3	One time and continue with sequence number 3
	Number of steps?	Five steps
		One step Two steps Three steps Four steps Five steps

- At each step you can select:
  - Step time in seconds: 0,1 segundos – 6553 segundos.
  - Brightness initial value (0% - 100%).
  - Brightness final value (0% - 100%).

--- Led strep dimmer Four channels > Configuration > Channel "RGB-W" > Sequences > Sequence number 1 > STEP ONE

<ul style="list-style-type: none"> <li>Configuration</li> <li>General parameters</li> <li>Channel "RGB-W" <ul style="list-style-type: none"> <li>1.-Functional parameters</li> <li>2.-Additional parameters</li> <li>Scene parameters</li> <li>Sequences <ul style="list-style-type: none"> <li>Sequence number 1 <ul style="list-style-type: none"> <li>STEP ONE</li> <li>STEP TWO</li> <li>STEP THREE</li> <li>STEP FOUR</li> <li>STEP FIVE</li> </ul> </li> </ul> </li> </ul> </li> </ul>	STEP ONE Step time (x 0,1 Sec) Brightness initial value (%) ? RED GREEN BLUE WHITE Brightness final value (%) ? RED GREEN BLUE WHITE	100 100 100 100 100 100 100 100 100 100 100 100
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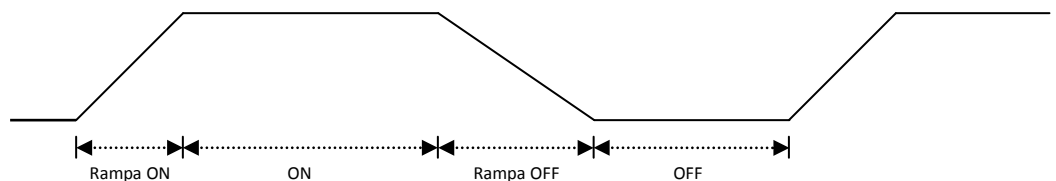
Objetos de Comunicación    Canales    Parámetros

## I.2- 4 CHANNELS DIMMER CONFIGURATION

### ○ **Functional Parameters:**

This is to specify the basic setting parameters for 4 output independent channels LED Strips.

- Minimum Brightness: sets the minimum dimming level of the channel. This level is between 0% and 100%.
- Maximum Brightness: sets the maximum dimming level of the channel. This level is between 0% and 100%.
- Soft turn on time (x 0,1sec): sets the time delay of the switching-on from the reception of the telegram until it reaches the end value. This time can be set 0,1 and 6553 seconds.
- Soft turn off time (x 0,1sec): sets the time delay of the switching-off from the reception of the telegram until it reaches the end value. This time can be set 0,1 and 6553 seconds.
- Switch On mode: sets how the strips are switched-on each time it receives an ON telegram. 4 possibilities:
  - Switch On at last turn off brightness.
  - Switch On at maximum brightness.
  - Switch On at this % off brightness.
  - Cyclic work: allows doing switching cycles:
    - Switch ON Ramp time (Sec): time delay since the telegram is received until it reaches the maximum set value: 0sec ~ 65535sec.
    - ON time (Sec): time that the lamps are turned-on to the maximum set value: 0sec ~ 65535sec.
    - Switch OFF Ramp time (Sec): time delay since the telegram is received until it reaches the minimum set value: 0sec ~ 65535sec.
    - OFF time (Sec): time that the lamps are turned-on to the minimum set value: 0sec ~ 65535sec.



- OFF state brightness (%): It is associated for each independent channel. This level is between 0% and 100%.

### -.-. Led strep dimmer Four channels > Configuration > Channel "Red" > 1.-Functional parameters

Configuration	Minimum Brightness (%)	3
General parameters	Maximum Brightness (%)	99
Channel "Red"	Soft Turn on time ( x 0,1 Sec)	1
1.-Functional parameters	Soft Turn off time ( x 0,1 Sec)	3
2.-Additional parameters	Switch On mode	Cyclic Work
+ Channel "Green"	Switch ON Ramp time( Sec)	1
+ Channel "Blue"	ON time (Seg)	1
+ Channel "White"	Switch OFF Ramp time (Sec)	1
	OFF time (Sec)	1
	OFF state brightness (%)?	2

○ **Additional Parameters:**

This is to specify the additional control parameters for 4 output independent channels LED Strips .

- Timer time delay (Sec): time delay in case of receiving a timing telegram: 0sec ~ 7.200sec.
- Prewarning in timer function (Sec): can make a brief flickering of the strips a time before the end of the set time: 0sec ~ 60sec.
- Action after power supply fault: sets the estate the dimmer will come back after a fault on the 12-24Vcc power supply or KNX bus: OFF, ON or Switch On at this % off brightness.
- Dimming speed (From 0% to 100% x 0,1Sec): Time in seconds to regulate from 0% to 100%. Set timing between 0.1sec ~ 486sec.
- Behavior on incoming dimming value:
  - Go Directly.
  - Go Across dimming speed.
- Number of scenes attended: This function allows us to select up to 5 different scenes, different light environments, so that they are activated when the activation value is received through the corresponding objects of a byte of scenes.

-.-. Led strep dimmer Four channels > Configuration > Channel "Red" > 2.-Additional parameters

- Configuration	Timer time delay (Sec)	60
General parameters	Prewarning in timer function (Sec)	0
- Channel "Red"	Action after power supply fault	OFF
1.-Functional parameters	Dimming speed (From 0% to 100% x 0,1Sec)	20
<b>2.-Additional parameters</b>	Behavior on incoming dimming value	<input checked="" type="radio"/> Go Directly <input type="radio"/> Go Across dimming speed
+ Channel "Green"	Number of scenes attended	All scenes
+ Channel "Blue"		All scenes ✓
+ Channel "White"		One scene
		Two scenes
		Three scenes
		Four scenes
		Five scenes



### **I.3-RGB + W DIMMER CONFIGURATION**

In this configuration allows the control of:

- RGB LED Strips.
- One independent channel for white color LED Strips.

The configuration of the 3-color RGB LED Strips is done in the same way as in section I.1 (page 3-6):

- Functional Parameters.
- Additional Parameters.
- Scenes Parameters.
- Sequences.

The configuration of the independent channel one-color LED Strips is done in the same way as in section I.2 (page 7-8):

- Functional Parameters.
- Additional Parameters.

Nº	Nombre	Función	Longitud	C	R	W	T	U	Tipo Datos	Prioridad	Descripción
0	Red channel, SwitchOnOff Input	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
1	RGBW Red channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
1	RGB Red channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
1	Red channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
2	Red channel, Absolute Set value control Input	Dimming Value	1 Byte	√	•	√	•	•	percentage (0...100%)	Baja	Valor absoluto de regulación (total)
3	Red channel, Timed StartStop Input	Timed Start-Stop	1 bit	√	•	√	•	•	on/off	Baja	Comienzo o Fin de una conmutación temporizada
4	Red channel, Forced Input	Forced	2 bits	√	•	√	•	•	enable control	Baja	
5	Red channel, Scene Number Input	Scene numbered	1 Byte	√	•	√	•	•	scene control	Baja	Número de escena
6	Red channel, Info Switch On-Off Output	Info Switch On-Off	1 bit	√	√	•	√	•	on/off	Baja	Información del estado (encendido o apagado)
7	Red channel, Info Actual Dimming Value Output	Info Dimming Value	1 Byte	√	√	•	√	•	percentage (0..100%)	Baja	Información del nivel de regulación (%)
8	Red channel, Dimming Speed (From 1% to 100%)	Object 8_Dimming Speed	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Velocidad de regulación (%)

Nº	Nombre	Función	Longitud	C	R	W	T	U	Tipo Datos	Prioridad	Descripción
16	Green, channel SwitchOnOff Input	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
17	RGBW Green channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
17	RGB Green channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
17	Green channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
18	Green channel, Absolute Set value control Input	Dimming Value	1 Byte	√	•	√	•	•	percentage (0...100%)	Baja	Valor absoluto de regulación (total)
19	Green channel, Timed StartStop Input	Timed Start-Stop	1 bit	√	•	√	•	•	on/off	Baja	Comienzo o Fin de una conmutación temporizada
20	Green channel, Forced Input	Forced	2 bits	√	•	√	•	•	enable control	Baja	
21	Green channel, Scene Number Input	Scene numbered	1 Byte	√	•	√	•	•	scene control	Baja	Número de escena
22	Green channel, Info Switch On-Off Output	Info Switch On-Off	1 bit	√	√	•	√	•	on/off	Baja	Información del estado (encendido o apagado)
23	Green channel, Info Actual Dimming Value Output	Info Dimming Value	1 Byte	√	√	•	√	•	percentage (0..100%)	Baja	Información del nivel de regulación (%)
24	Green channel, Dimming Speed (From 1% to 100%)	Object 8_Dimming Speed	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Velocidad de regulación (%)

Nº	Nombre	Función	Longitud	C	R	W	T	U	Tipo Datos	Prioridad	Descripción
32	Blue channel, SwitchOnOff Input	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
33	RGBW Blue channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
33	RGB Blue channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
33	Blue channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
34	Blue channel, Absolute Set value control Input	Dimming Value	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Valor absoluto de regulación (total)
35	Blue channel, Timed StartStop Input	Timed Start-Stop	1 bit	√	•	√	•	•	on/off	Baja	Comienzo o Fin de una conmutación temporizada
36	Blue channel, Forced Input	Forced	2 bits	√	•	√	•	•	enable control	Baja	
37	Blue channel, Scene Number Input	Scene numbered	1 Byte	√	•	√	•	•	scene control	Baja	Número de escena
38	Blue channel, Info Switch On-Off Output	Info Switch On-Off	1 bit	√	√	•	√	•	on/off	Baja	Información del estado (encendido o apagado)
39	Blue channel, Info Actual Dimming Value Output	Info Dimming Value	1 Byte	√	√	•	√	•	percentage (0..100%)	Baja	Información del nivel de regulación (%)
40	Blue channel, Dimming Speed (From 1% to 100%)	Object 8_Dimming Speed	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Velocidad de regulación (%)

Nº	Nombre	Función	Longitud	C	R	W	T	U	Tipo Datos	Prioridad	Descripción
48	White channel, SwitchOnOff Input	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
49	RGBW White channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
49	White channel, Relative Set value control Input	Relative Set value control	4 bits	√	•	√	•	•	dimming control	Baja	Valor relativo de regulación (incremento)
50	White channel, Absolute Set value control Input	Dimming Value	1 Byte	√	•	√	•	•	percentage (0...100%)	Baja	Valor absoluto de regulación (total)
51	White channel, Timed StartStop Input	Timed Start-Stop	1 bit	√	•	√	•	•	on/off	Baja	Comienzo o Fin de una conmutación temporizada
52	White channel, Forced Input	Forced	2 bits	√	•	√	•	•	enable control	Baja	
53	White channel, Scene Number Input	Scene numbered	1 Byte	√	•	√	•	•	scene control	Baja	Número de escena
54	White channel, Info Switch On-Off Output	Info Switch On-Off	1 bit	√	√	•	√	•	on/off	Baja	Información del estado (encendido o apagado)
55	White channel, Info Actual Dimming Value Output	Info Dimming Value	1 Byte	√	√	•	√	•	percentage (0..100%)	Baja	Información del nivel de regulación (%)
56	White channel, Dimming Speed (From 1% to 100%)	Object 8_Dimming Speed	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Velocidad de regulación (%)

Nº	Nombre	Función	Longitud	C	R	W	T	U	Tipo Datos	Prioridad	Descripción
64	RGBW channel, SwitchOnOff Input	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
64	RGB channel, SwitchOnOff Input	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
66	RGBW Dimming value Input	Dimming Value	3 Bytes	√	•	√	•	•	RGBW 3x(0..255)	Baja	Valor absoluto de regulación RGBW 3x(0..255)
66	RGB Dimming value Input	Dimming Value	3 Bytes	√	•	√	•	•	RGB 3x(0..255)	Baja	Valor absoluto de regulación RGB 3x(0..255)
67	RGBW channel, Timed StartStop Input	Timed Start-Stop	1 bit	√	•	√	•	•	on/off	Baja	Comienzo o Fin de una conmutación temporizada
67	RGB channel, Timed StartStop Input	Timed Start-Stop	1 bit	√	•	√	•	•	on/off	Baja	Comienzo o Fin de una conmutación temporizada
68	RGBW channel, Forced Input	Forced	2 bits	√	•	√	•	•	enable control	Baja	
68	RGB channel, Forced Input	Forced	2 bits	√	•	√	•	•	enable control	Baja	
69	RGBW channel, Scene Number Input	Scene numbered	1 Byte	√	•	√	•	•	scene control	Baja	Número de escena
69	RGB channel, Scene Number Input	Scene numbered	1 Byte	√	•	√	•	•	scene control	Baja	Número de escena
70	RGBW channel, Info Switch On-Off Output	Info Switch On-Off	1 bit	√	√	•	√	•	on/off	Baja	Información del estado (encendido o apagado)
70	RGB channel, Info Switch On-Off Output	Info Switch On-Off	1 bit	√	√	•	√	•	on/off	Baja	Información del estado (encendido o apagado)
71	RGBW channel, Dimming Speed (From 1% to 100%)	Object 8_Dimming Speed	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Velocidad de regulación (%)
71	RGB channel, Dimming Speed (From 1% to 100%)	Object 8_Dimming Speed	1 Byte	√	•	√	•	•	percentage (0..100%)	Baja	Velocidad de regulación (%)
72	Sequence 1 SwitchOnOff	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
73	Sequence 2 SwitchOnOff	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
74	Sequence 3 SwitchOnOff	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
75	Sequence 4 SwitchOnOff	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)

Nº	Nombre	Función	Longitud	C	R	W	T	U	Tipo Datos	Prioridad	Descripción
76	Sequence 5 SwitchOnOff	Switch	1 bit	√	•	√	•	•	on/off	Baja	Encender (1) o Apagar (0)
77	Info sequence 1 On-Off Output	Switch	1 bit	√	√	√	√	•	on/off	Baja	Información del estado (encendido o apagado)
78	Info sequence 2 On-Off Output	Switch	1 bit	√	√	√	√	•	on/off	Baja	Información del estado (encendido o apagado)
79	Info sequence 3 On-Off Output	Switch	1 bit	√	√	√	√	•	on/off	Baja	Información del estado (encendido o apagado)
80	Info sequence 4 On-Off Output	Switch	1 bit	√	√	√	√	•	on/off	Baja	Información del estado (encendido o apagado)
81	Info sequence 5 On-Off Output	Switch	1 bit	√	√	√	√	•	on/off	Baja	Información del estado (encendido o apagado)