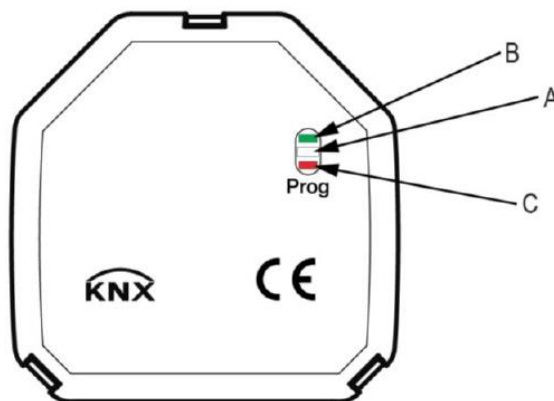


General description:

This User Manual comprises the following KNX-RF System-Mode devices:

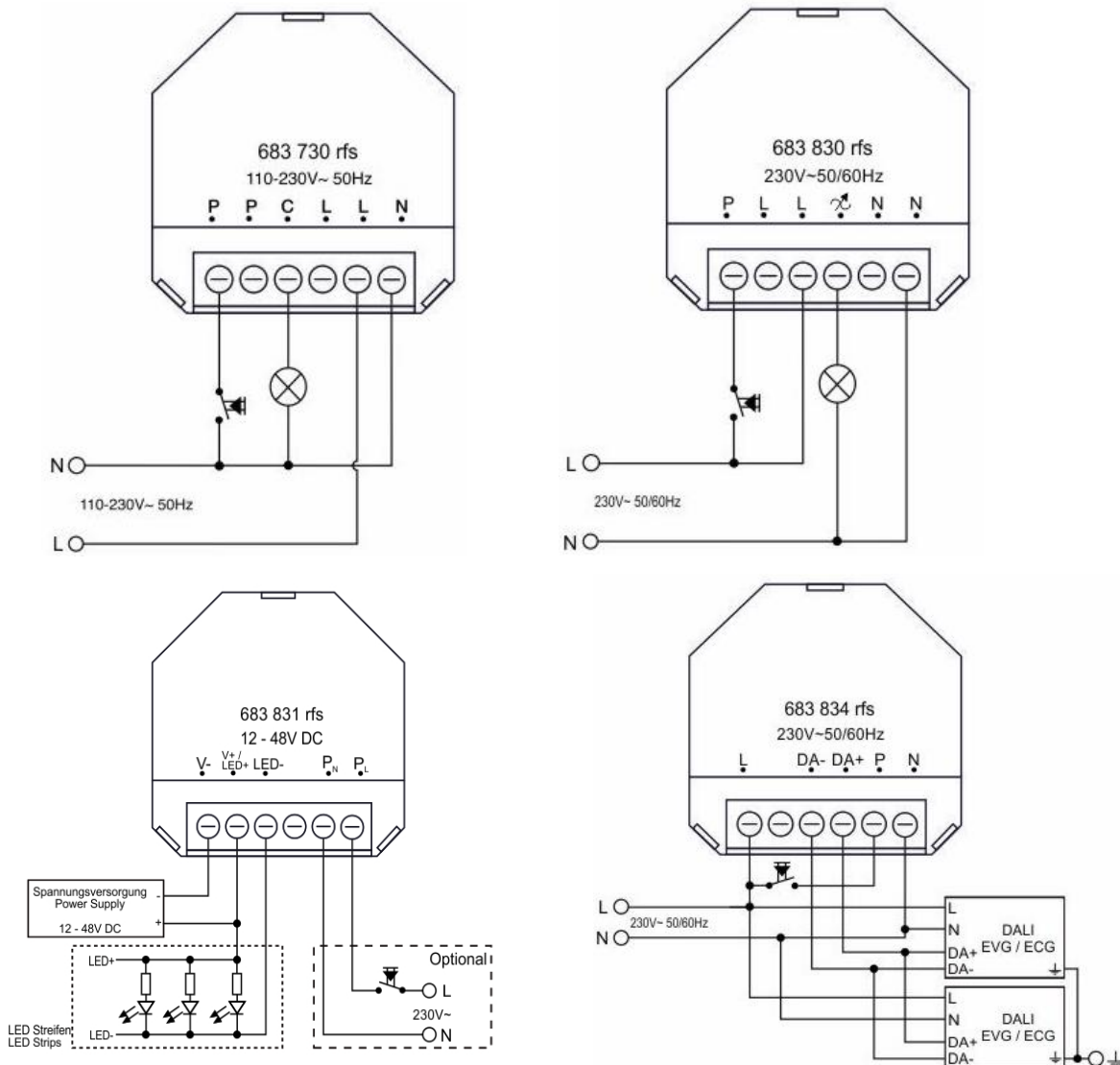
- **683 730 rfs: 1-channel Switching Actuator**
 - Flush-mounting installation within junction box
 - Up to 16A $\cos\varphi=1$ switching capacity
 - Functions: Switch and Staircase Lighting Timer
 - **683 830 rfs: 1-channel Dimming Actuator for LED RLC lamps**
 - Flush-mounting installation within junction box
 - Type of dimming: leading or trailing edge
 - Functions: Switch/Dimmer and Staircase Lighting Timer
 - **683 831 rfs: 1-channel Dimming Actuator for LED Strips**
 - Flush-mounting installation within junction box
 - Type of load: 12...48VDC LED Strips
 - Type of dimming: PWM
 - Functions: Switch/Dimmer and Staircase Lighting Timer
 - **683 834 rfs: 1-channel Dimming Actuator for DALI Drivers or Ballasts**
 - Flush-mounting installation within junction box
 - Maximum number of ECGs: up to 64 Drivers or Ballasts
 - Functions: Switch/Dimmer and Staircase Lighting Timer
- Perfect solution when retrofitting conventional installations, without the need of installing KNX bus cables.
 - For connection to the KNX Bus a KNX to KNX RF S-Mode media coupler is required.
 - Integrated KNX-RF signal repeater (optional) to extend the distance between devices.
 - Connection of (optional) external push button configurable via ETS.
 - Integrated programming key (A), as well as status LEDs (B and C).



Technical Specifications

	683 730 rfs	683 830 rfs	683 831 rfs	683 834 rfs
Power supply	110-230V~ 50Hz	230V~ 50/60Hz	12 ... 48VDC	230V~ 50/60Hz
Maximum load	16A cosφ=1	250W (LED trailing edge)	8 A	64 DALI ECGs
KNX Medium	KNX RF 1.R			
Radio-Frequency	868,3MHz			
Transmission Power	< 10dBm			
Range (max.)	In free field: 100m / Indoors: 30m			
Number of Outputs	1			
Application Software	ETS 5			
Commissioning Mode	System-mode			
Dimensions	46 x 46 x 30mm			
Operation Temperature	-10°C ... +45°C			
Degree of Protection	IP20			
According to the Standard	EN60669-2-1			
Compatible with	ISO/IEC 14543-3			

Wiring Diagrams



Starting Up

- The programming and commissioning must be done with ETS5 or higher.
- To download the product application, go to: www.hugo-mueller.de
- Please note: The switch on the housing have no functions right now!
- After wiring the actuator follow these steps:

(Info: The first time the actuator is connected to the mains, as well as after a hard-reset, the red and green LED will flash quickly).

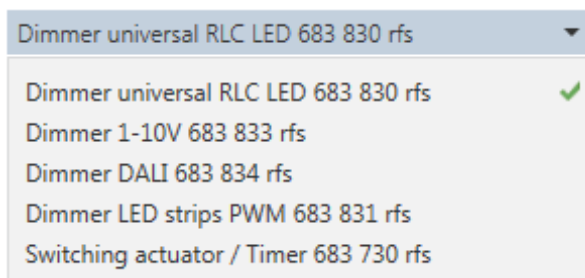
1. Connect und program your RF to TP-Gateway
2. Set device in operation by reconnecting supply voltage.
3. The red LED (C) turns on.
4. Press the programming button (A) briefly. The green LED (B) turns on.
5. Load the physical address and the application software to device.
6. After successful download the green LED (B) turns off.

Project Development and Programming

Defines the actuator/dimmer which is going to be configured:

- Dimmer universal RLC LED 683 830 rfs
- Dimmer 1-10V 683 833 rfs (NOT AVAILABLE!)
- Dimmer DALI 683 834 rfs
- Dimmer LED strips 683 831 rfs
- Switching actuator / Timer 683 730 rfs

The choice of one device or another, will determine the parameters that can be configured later.



683 730 RFS

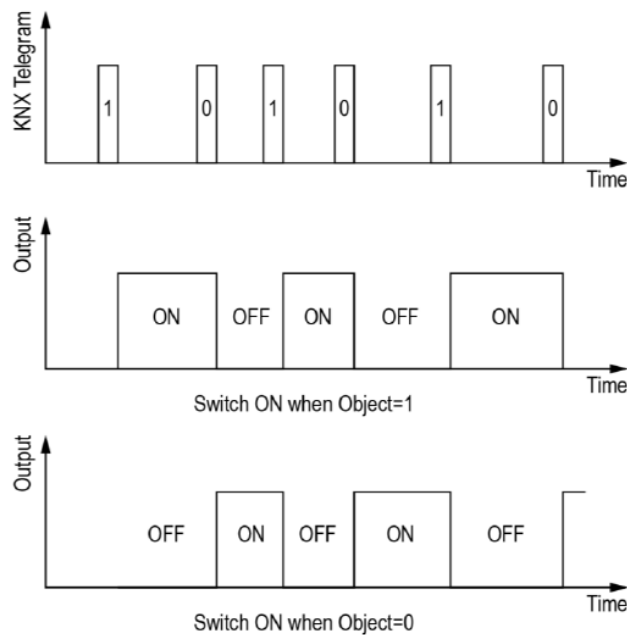
Functional parameters:

Action after Power Supply fault: It sets the behavior after a fault on the Bus.

Action after power supply fault OFF ON

Contact polarity: indicates whether the actuator must be activated when it receives a 1 or a 0 in object "Number 1 - Switch On-Off Input".

Switching contact polarity Switch-on when object is '1' Switch-on when object is '0'



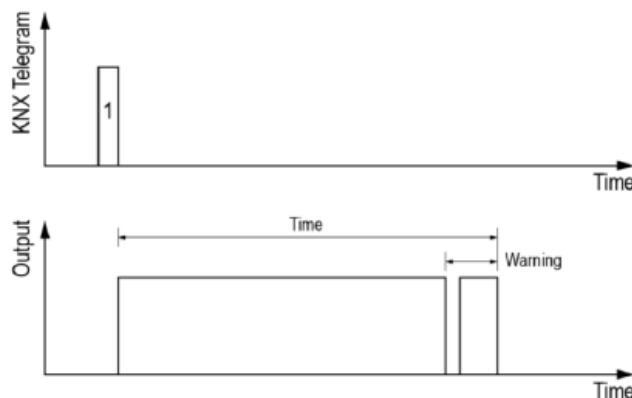
Additional parameters:

Staircase Lighting Timer: it allows adjusting the timing and the pre-warning time of the Staircase Lighting Timer function (optional). This timing is activated through the object "Number 6 - Timed Start-Stop Input".

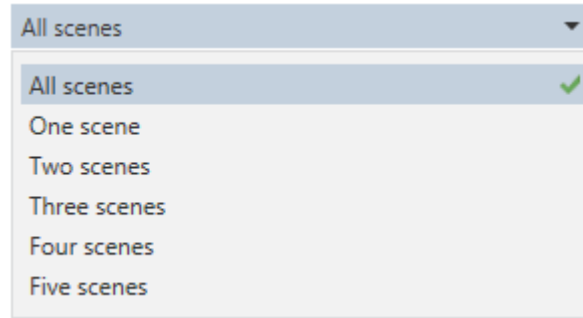
Each time a "1" is received on that object, the time is reset and the timing starts again.

Staircase timer delay (s)

Staircase pre-warning (s)



Scene Management: it allows managing up to 5 different scenes.



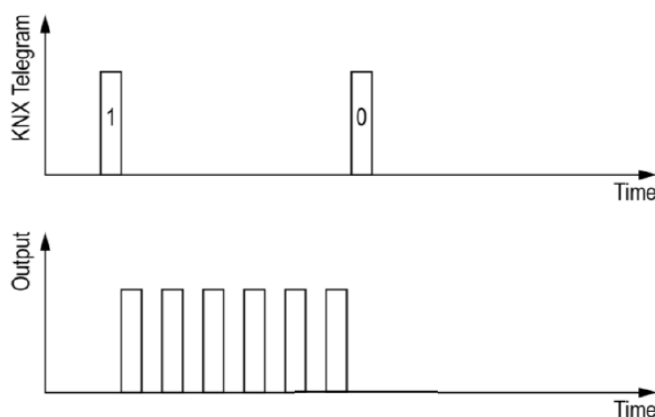
Each of the scenes can be configured with ON or OFF and the desired Scene can be activated through object "Number 4 – Scene Numbered Input".

Number of scenes	Five scenes
Scene number 1	Scene 1
Default state scene 1	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 2	Scene 2
Default state scene 2	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 3	Scene 3
Default state scene 3	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 4	Scene 4
Default state scene 4	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 5	Scene 5
Default state scene 5	<input checked="" type="radio"/> OFF <input type="radio"/> ON

Cycle function:

It allows performing a Sequence (Intermittent) with a pre-established ON and OFF time. This function can be activated through object "Number 15 - Sequential Operation".

On time (s)	1
Off time (s)	1



Auxiliary pushbutton:

Auxiliary pushbutton function	Not assigned
	Not assigned ✓
	Switch
	Switch/dimmer
	Scene control
	Fixed value / Forced

This Actuator can be controlled locally through a wired pushbutton. It is possible to assign different functions, each of which will activate different objects.

Switch:

Auxiliary pushbutton function	Switch
Debounce time	20 ms
Distinction between short/long action	<input checked="" type="radio"/> No <input type="radio"/> Yes
Action after closing the contact	Off
Action after opening the contact	Off

- Debounce Time: adjusts the bounce suppression time when there is a switch. Prevents multiple unwanted actions, caused by bouncing when closing a contact.
- Distinction between Short/Long action: allows to distinguish between a long and a short pulse, being able to assign different actions according to this.

If **NO** distinguishes between Short / Long action:

Distinction between short/long action	<input checked="" type="radio"/> No <input type="radio"/> Yes
Action after closing the contact	Off
Action after opening the contact	Off

If **YES** distinguishes between Short / Long action:

Distinction between short/long action	<input type="radio"/> No <input checked="" type="radio"/> Yes
Number of objects for short/long operation	<input type="radio"/> 1 <input checked="" type="radio"/> 2
Long action after	0.4 s
Long action	Off
Short action	Off

In this case, it is possible to select whether to act on a single object (Number 11 – Switch On-Off Output Short operation) or on 2 different objects (Number 11 - Switch On-Off Output Short operation and Number 12 - Switch On-Off Output Long operation).

Switch Dimmer:

Auxiliary pushbutton function	Switch/dimmer
Debounce time	20 ms
Dimming functionality	<input checked="" type="radio"/> Dimming and switching <input type="radio"/> Dimming only
Long action after	0.4 s
Action after short operation	Toggle switch
Action after long operation	Toggle dim

- **Debounce Time:** adjusts the bounce suppression time when there is a switch. Prevents multiple unwanted actions, caused by bouncing when closing a contact.
- **Dimming Functionality:** allows selecting the working mode: Switch/Dimmer or Dimmer. In any of the 2 cases, the object "Number 12 – Dimming Up-Down Output" could be used for the control of another dimming actuator.
- **Action after operation:** defines the action to be performed after a short / long press on the auxiliary button.

Control Scene:

Auxiliary pushbutton function	Scene control
Debounce time	20 ms
Scene number	Scene 2
Action after short operation	<input type="radio"/> Recall <input checked="" type="radio"/> Ignore
Action after long operation	<input type="radio"/> Save scene <input checked="" type="radio"/> Ignore

- **Debounce Time:** adjusts the bounce suppression time when there is a switch. Prevents multiple unwanted actions, caused by bouncing when closing a contact.
- **Scene Number:** determines the scene number that will be managed with the auxiliary switch. The object "Number 11 - Scene Numbered Output" is enabled.
- **Action after operation:** sets the calling or saving the scene by a short or long press.

Fixed Value / Forced:

Auxiliary pushbutton function	Fixed value / Forced
Debounce time	20 ms
Distinction between short/long action	<input type="radio"/> No <input checked="" type="radio"/> Yes
Value type after short operation	1 Bit
Bit value	<input type="radio"/> 0 <input checked="" type="radio"/> 1
Value type after long operation	1 Bit
Bit value	<input type="radio"/> 0 <input checked="" type="radio"/> 1

- Debounce Time: adjusts the bounce suppression time when there is a switch. Prevents multiple unwanted actions, caused by bouncing when closing a contact.
- Value type after Short/Long operation: allows selecting the type of value that will be sent by object "Number 11 and 12 – Value output".
- Bit (Byte) Value: the value that will be sent after a short / long press is set.

RF – parameters

RF repeater mode	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
------------------	---

It enables the retransmission of RF telegrams in order to extend the distance between transmitters and receivers. It is only recommended to enable this function if there are really coverage problems, otherwise, it is not recommended to activate it, in order not to saturate the wireless network.

683 830 RFS

Dimming mode	<input type="radio"/> Leading-edge <input checked="" type="radio"/> Trailing-edge
Ripple filter	<input checked="" type="radio"/> Filter not active <input type="radio"/> Filter active
Soft turn-on time (x 0.1 s)	10
Soft turn-off time (x 0.1 s)	3
Dimming value fade time (x 0.1 s)	10
Maximum brightness (%)	90
Minimum brightness (%)	3
Switch-on mode	Maximum brightness
Off value (0-100%)	0

Dimming mode:

Type of dimming to be applied to the lamp/driver. Must be indicated in the characteristics of the lamp/driver. If not, check it with the manufacturer of the lamp/driver.

Dimming mode	<input type="radio"/> Leading-edge <input checked="" type="radio"/> Trailing-edge
--------------	---

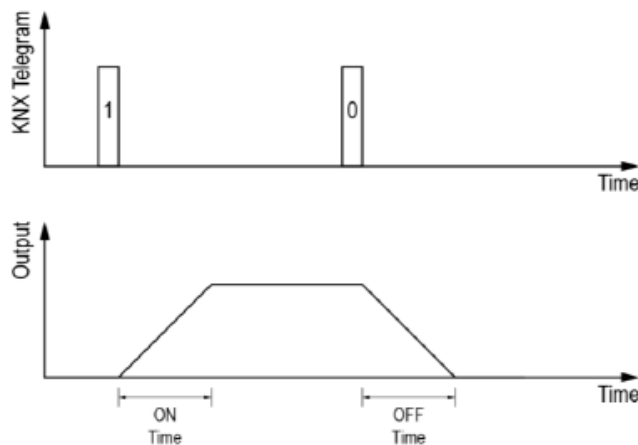
Note: a wrong selection of the Dimming Mode, can cause the breakage of the dimmer or the lamps.

Ripple filter state: ripple is an effect on the supply voltage that can affect the correct operation of the dimmer. Through this parameter, it is possible to activate or deactivate this filter.

Ripple filter	<input checked="" type="radio"/> Filter not active <input type="radio"/> Filter active
---------------	--

Soft Turn-On/Off Time: it allows soft switching on / off, in a fixed time.

Soft turn-on time (x 0.1 s)	10
Soft turn-off time (x 0.1 s)	3



Dimming Value Fade Time: fade time when receiving a dimming value.

Dimming value fade time (x 0.1 s)	10
-----------------------------------	----

Maximum/Minimum Brightness: % of minimum and maximum dimming level. The adjustment of the minimum level allows avoiding unwanted flickering or the switch-off of the lamps at low dimming levels.

Maximum brightness (%)	90
Minimum brightness (%)	3

Switch-On Mode: the level at which the lamps will be switched on after receiving an ON telegram.

Switch-on mode	Last turn-off brightness
	Last turn-off brightness ✓
	Maximum brightness
	Adjustable brightness value (%)

OFF value: % of dimming level when receiving an OFF telegram. Normally, this value must be "0".

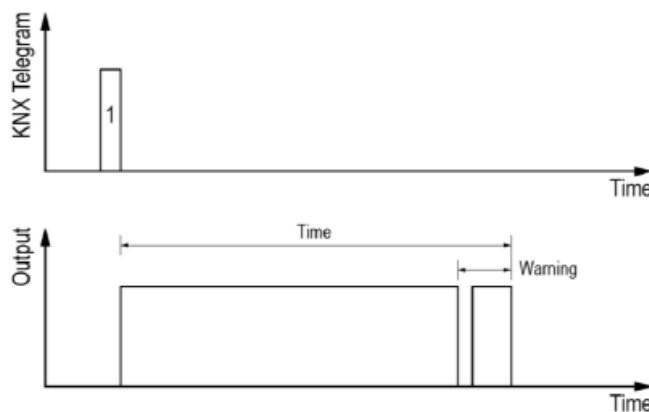
Off value (0-100%)	0
--------------------	---

Additional Parameters:

Staircase timer delay (s)	40
Staircase pre-warning (s)	2
Number of scenes	All scenes
Dimming speed (from 0% to 100%) x 0.1 s	20
Action after power supply fault	OFF
Dimming curve (1-5)	Curve 2

Staircase Timer Function: it allows adjusting the timing and the pre-warning time of the Staircase Lighting Timer function (optional). This timing is activated through the object "Number 6 - Timed Start-Stop Input". Each time a "1" is received on that object, the time is reset and the timing starts again.

Staircase timer delay (s)	40
Staircase pre-warning (s)	2



Scene Management: it allows managing up to 5 different scenes.



Each of the scenes can be configured with ON or OFF and the desired Scene can be activated through object "Number 4 – Scene Numbered Input".

Number of scenes	Five scenes
Scene number 1	Scene 1
Default state scene 1	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 2	Scene 2
Default state scene 2	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 3	Scene 3
Default state scene 3	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 4	Scene 4
Default state scene 4	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Scene number 5	Scene 5
Default state scene 5	<input checked="" type="radio"/> OFF <input type="radio"/> ON

Dimming Speed: maximum fade time from 0% to 100% and vice versa. If, for example, it starts at 50% and is regulated up to 100%, the real time will be half of that established in this parameter.

Dimming speed (from 0% to 100%) x 0.1 s	20
---	----

Action after Power Supply fault: sets the behavior after a failure in the Bus.

Action after power supply fault	OFF OFF <input checked="" type="checkbox"/> Maximum brightness Adjustable brightness value (%)
---------------------------------	---

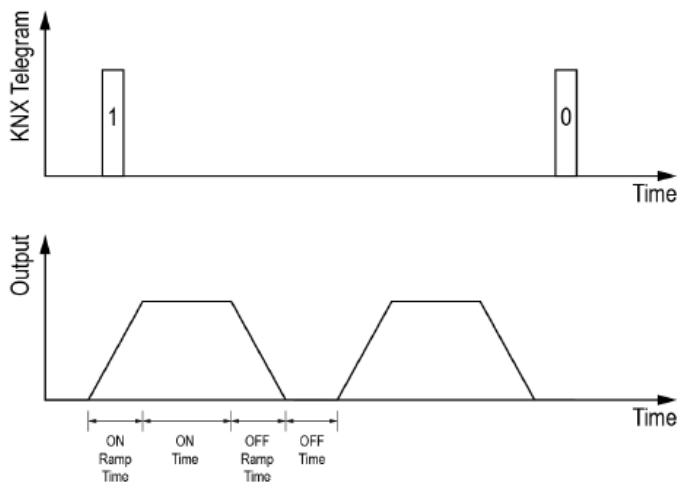
Dimming Curve: this parameter is disabled, it has no assigned function.

Dimming curve (1-5)	Curve 2
---------------------	---------

Cycle function:

It allows performing a Sequence (Intermittent) with a pre-established ON and OFF time. This function can be activated through object "Number 15 - Sequential Operation".

Switch-on ramp time (s)	1
On time (s)	1
Switch-off ramp time (s)	1
Off time (s)	1



Auxiliary pushbutton & RF Parameters:

See above at switch actuator 683 730 RFS

683 831 RFS

Dimmer / actuator type	Dimmer LED strips PWM 683 831 rfs
PWM Frequency	400 Hz
Soft turn-on time (x 0.1 s)	3
Soft turn-off time (x 0.1 s)	3
Dimming value fade time (x 0.1 s)	10
Maximum brightness (%)	90
Minimum brightness (%)	3
Switch-on mode	Last turn-off brightness
Off value (0-100%)	0

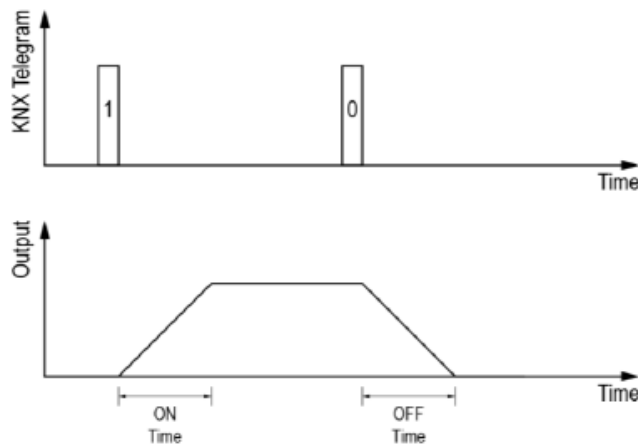
PWM Frequency:

Can be chosen between different values and determines the speed with which the dimmer output voltage will be regulated towards the LED strip.

PWM Frequency	400 Hz
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Soft Turn-On/Off Time: it allows soft switching on / off, in a fixed time.

Soft turn-on time (x 0.1 s)	10
Soft turn-off time (x 0.1 s)	3



Dimming Value Fade Time: fade time when receiving a dimming value.

Dimming value fade time (x 0.1 s)	10
-----------------------------------	----

Maximum/Minimum Brightness: % of minimum and maximum dimming level. The adjustment of the minimum level allows avoiding unwanted flickering or the switch-off of the lamps at low dimming levels.

Maximum brightness (%)	90
Minimum brightness (%)	3

Switch-On Mode: the level at which the lamps will be switched on after receiving an ON telegram.

Switch-on mode	Last turn-off brightness	▼
	Last turn-off brightness	✓
	Maximum brightness	
	Adjustable brightness value (%)	

OFF value: % of dimming level when receiving an OFF telegram. Normally, this value must be "0".

Off value (0-100%)	0	▲ ▼
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Additional Parameters:

See above at LED & RGB Dimmer 683 830 RFS

Cycle function:

See above at LED & RGB Dimmer 683 830 RFS

Auxiliary pushbutton & RF Parameters:

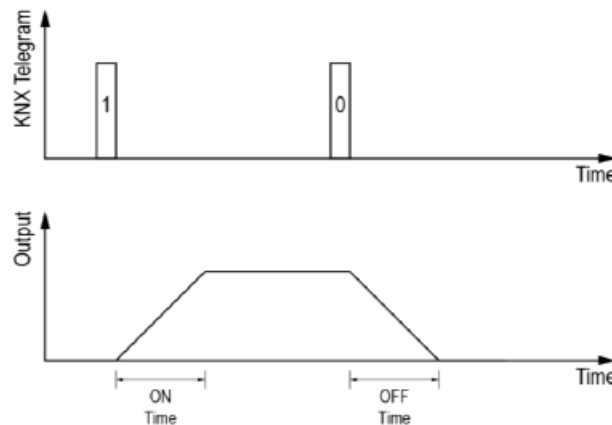
See above at switch actuator 683 730 RFS

683 834 RFS

Dimmer / actuator type	Dimmer DALI 683 834 rfs
Soft turn-on time (s)	0.7
Soft turn-off time (s)	0.7
Dimming value fade time (s)	0.7
Maximum brightness (%)	90
Minimum brightness (%)	3
Switch-on mode	Last turn-off brightness
Off value (0-100%)	0

Soft Turn-On/Off Time: it allows soft switching on / off, in a fixed time.

Soft turn-on time (s)	0.7
Soft turn-off time (s)	0.7



Dimming Value Fade Time: fade time when receiving a dimming value.

Dimming value fade time (s)	0.7
-----------------------------	-----

Maximum/Minimum Brightness: % of minimum and maximum dimming level. The adjustment of the minimum level allows avoiding unwanted flickering or the switch-off of the lamps at low dimming levels.

Maximum brightness (%)	90
Minimum brightness (%)	3

Switch-On Mode: the level at which the lamps will be switched on after receiving an ON telegram.

Switch-on mode	<ul style="list-style-type: none"> Last turn-off brightness Last turn-off brightness ✓ Maximum brightness Adjustable brightness value (%)
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OFF value: % of dimming level when receiving an OFF telegram. Normally, this value must be "0".

Off value (0-100%)	0
--------------------	---

Additional Parameters:

See above at LED & RGB Dimmer 683 830 RFS

Cycle function:

See above at LED & RGB Dimmer 683 830 RFS

Auxiliary pushbutton & RF Parameters:

See above at switch actuator 683 730 RFS

Communication objects

683 730 RFS

	Number	Name	Object Function ^	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	1	Switch on-off	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	4	Scene number	Input			1 byte	C	-	W	-	-	scene number, scene number	Low
■	5	Forced	Input			2 bit	C	-	W	-	-	1-bit controlled, switch control	Low
■	6	Timer start-stop	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	15	Cycle function (switch on-off)	Input			1 bit	C	R	W	T	U	switch	Low
■	9	Info: Switch on-off status	Output			1 bit	C	-	-	T	-	1-bit, switch	Low
■	11	Ext. Input: Switch on-off	Output			1 bit	C	R	W	T	U	switch	Low
■	12	Ext. Input: Switch on-off long operation	Output			1 bit	C	R	W	T	U	switch	Low
■	16	Info: Cycle function status	Output			1 bit	C	R	W	T	U	switch	Low

683 830 RFS

	Number	Name	Object Function ^	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	1	Switch on-off	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	4	Scene number	Input			1 byte	C	-	W	-	-	scene number, scene number	Low
■	5	Forced	Input			2 bit	C	-	W	-	-	1-bit controlled, switch control	Low
■	6	Timer start-stop	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	3	Dimming absolute set-point value	Input			1 byte	C	-	W	-	-	8-bit unsigned value, percentage (0..100%)	Low
■	8	Dimming speed (from 1% to 100%) x 0.1s	Input			2 bytes	C	-	W	-	-	2-byte unsigned value, time (100 ms)	Low
■	7	Block dimmer	Input			1 bit	C	-	W	-	-	1-bit, boolean	Low
■	2	Dimming up-down (relative set-point value)	Input			4 bit	C	-	W	-	-	3-bit controlled, dimming control	Low
■	15	Cycle function (switch on-off)	Input			1 bit	C	R	W	T	U	switch	Low
■	10	Info: Actual dimming value	Output			1 byte	C	-	-	T	-	8-bit unsigned value, percentage (0..100%)	Low
■	9	Info: Switch on-off status	Output			1 bit	C	-	-	T	-	1-bit, switch	Low
■	11	Ext. Input: Switch on-off	Output			1 bit	C	R	W	T	U	switch	Low
■	12	Ext. Input: Switch on-off long operation	Output			1 bit	C	R	W	T	U	switch	Low
■	16	Info: Cycle function status	Output			1 bit	C	R	W	T	U	switch	Low

683 831 RFS

	Number	Name	Object Function ^	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	1	Switch on-off	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	4	Scene number	Input			1 byte	C	-	W	-	-	scene number, scene number	Low
■	5	Forced	Input			2 bit	C	-	W	-	-	1-bit controlled, switch control	Low
■	6	Timer start-stop	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	3	Dimming absolute set-point value	Input			1 byte	C	-	W	-	-	8-bit unsigned value, percentage (0..100%)	Low
■	8	Dimming speed (from 1% to 100%) x 0.1s	Input			2 bytes	C	-	W	-	-	2-byte unsigned value, time (100 ms)	Low
■	7	Block dimmer	Input			1 bit	C	-	W	-	-	1-bit, boolean	Low
■	2	Dimming up-down (relative set-point value)	Input			4 bit	C	-	W	-	-	3-bit controlled, dimming control	Low
■	15	Cycle function (switch on-off)	Input			1 bit	C	R	W	T	U	switch	Low
■	10	Info: Actual dimming value	Output			1 byte	C	-	-	T	-	8-bit unsigned value, percentage (0..100%)	Low
■	9	Info: Switch on-off status	Output			1 bit	C	-	-	T	-	1-bit, switch	Low
■	11	Ext. Input: Switch on-off	Output			1 bit	C	R	W	T	U	switch	Low
■	12	Ext. Input: Switch on-off long operation	Output			1 bit	C	R	W	T	U	switch	Low
■	16	Info: Cycle function status	Output			1 bit	C	R	W	T	U	switch	Low

683 830 RFS

	Number	Name	Object Function ^	Description	Group Address	Length	C	R	W	T	U	Data Type	Priority
■	1	Switch on-off	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	4	Scene number	Input			1 byte	C	-	W	-	-	scene number, scene number	Low
■	5	Forced	Input			2 bit	C	-	W	-	-	1-bit controlled, switch control	Low
■	6	Timer start-stop	Input			1 bit	C	-	W	-	-	1-bit, switch	Low
■	3	Dimming absolute set-point value	Input			1 byte	C	-	W	-	-	8-bit unsigned value, percentage (0..100%)	Low
■	8	Dimming speed (from 1% to 100%) x 0.1s	Input			2 bytes	C	-	W	-	-	2-byte unsigned value, time (100 ms)	Low
■	14	Re-address DALI lamps	Input			1 bit	C	-	W	T	-	start/stop	Low
■	7	Block dimmer	Input			1 bit	C	-	W	-	-	1-bit, boolean	Low
■	2	Dimming up-down (relative set-point value)	Input			4 bit	C	-	W	-	-	3-bit controlled, dimming control	Low
■	15	Cycle function (switch on-off)	Input			1 bit	C	R	W	T	U	switch	Low
■	10	Info: Actual dimming value	Output			1 byte	C	-	-	T	-	8-bit unsigned value, percentage (0..100%)	Low
■	9	Info: Switch on-off status	Output			1 bit	C	-	-	T	-	1-bit, switch	Low
■	11	Ext. Input: Switch on-off	Output			1 bit	C	R	W	T	U	switch	Low
■	12	Ext. Input: Switch on-off long operation	Output			1 bit	C	R	W	T	U	switch	Low
■	16	Info: Cycle function status	Output			1 bit	C	R	W	T	U	switch	Low