KNX Push Buttons
1 Gang STD,
2 Gang STD,
3 Gang STD
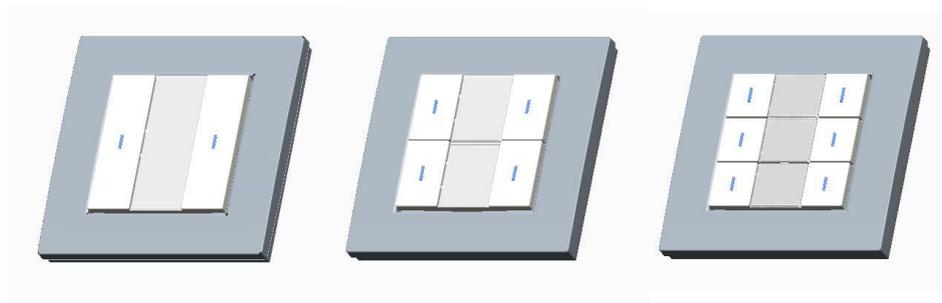
Reference Manual

V 1.0

Contents

1 Functional characteristics

KNX switches with up to 3 rockers and 2 LED per rocker.

They can be used to send commands to actuators, to dim or switch lights on/off, to move blinds up-down or to save/recall light scenes.

The following functions can be configured:

- Switching

- Dimmer control

- Blinds control

- Scene control

- Single button operations

Each LED can be controlled via an objet, display the actual status or remain permanently on or off.

The telegram type (switching, priority, value, temperature value etc.) can be specified individually.

2 Technical data

Power supply: Bus voltage.

Permitted operating temperature: -5 °C... + 45°C

Current draw from bus voltage: Max 10 mA

Bus connection: Bus terminal

3 Application programs

3.1 Selection in the product database

Manufacturer	Panasonic
Product group	Push Buttons
Product type	1 Gang STD / 2 Gang STD / 3 Gang STD
Program version	1.0 / 1.0 / 1.0

Number of communication objects:	Max. 18
Number of group addresses:	60
Number of assignments:	60

3.2 Communication objects

Each channel-related object can assume various functions depending on its configuration.

3.2.1 Object Overview

No	Object name	Function	Object size	Datapoint type	C	R	W	T
0	Rocker 1, 1st object	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, 1st object	Priority	2 Bits	2.001 DPT_Switch_Control	✓	✓		✓
	Rocker 1, 1st object	Percentage	1 Byte	5.001 DPT_Scaling	✓	✓		✓
	Rocker 1, 1st object	HVAC operation mode	1 Byte	20.102 DPT_HVACMode	✓	✓		✓
	Rocker 1, 1st object	Send value (0..255)	1 Byte	5.010 DPT_Value_1_Ucount	✓	✓		✓
	Rocker 1, 1st object	Send temperature value	2 Bytes	9.001 DPT_Value_Temp	✓	✓		✓
	Rocker 1, dimming	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, blinds	Step / Stop	1 Bit	1.007 DPT_Step	✓	✓		✓
	Rocker 1, scene number	Recall / Save light scene	1 Byte	18.001 DPT_SceneControl	✓	✓		✓
	Rocker 1, left key toggle	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, left key dimming	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, left key blinds	Step / Stop	1 Bit	1.007 DPT_Step	✓	✓		✓
	Rocker 1, left key sequencer	1 byte value	1 Byte	5.010 DPT_Value_1_Ucount	✓	✓		✓
1	Rocker 1, 2nd object	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, 2nd object	Priority	2 Bits	2.001 DPT_Switch_Control	✓	✓		✓
	Rocker 1, 2nd object	Percentage	1 Byte	5.001 DPT_Scaling	✓	✓		✓
	Rocker 1, 2nd object	HVAC operation mode	1 Byte	20.102 DPT_HVACMode	✓	✓		✓
	Rocker 1, 2nd object	Send value (0..255)	1 Byte	5.010 DPT_Value_1_Ucount	✓	✓		✓
	Rocker 1, 2nd object	Send temperature value	2 Bytes	9.001 DPT_Value_Temp	✓	✓		✓
	Rocker 1, dimming	Lighter / Darker	4 Bits	3.007 DPT_Control_Dimming	✓	✓		✓
	Rocker 1, blinds	Up / Down	1 Bit	1.008 DPT_UpDown	✓	✓	✓	✓
	Rocker 1, scene last operation	1=Upper side, 0=Lower side	1 Bit	1.002 DPT_Bool	✓	✓		✓
	Rocker 1, left key dimming	Lighter / Darker	4 Bits	3.007 DPT_Control_Dimming	✓	✓		✓
	Rocker 1, left key blinds	Up / Down	1 Bit	1.008 DPT_UpDown	✓	✓	✓	✓
	Rocker 1, left key sequencer	1 bit	1 Bit	1.001 DPT_Switch	✓	✓		✓
2	Rocker 1, left led	Drive Led	1 Bit	1.001 DPT_Switch	✓	✓	✓	
3	Rocker 1, right key toggle	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, right key dimming	Switch ON/OFF	1 Bit	1.001 DPT_Switch	✓	✓	✓	✓
	Rocker 1, right key blinds	Step / Stop	1 Bit	1.007 DPT_Step	✓	✓		✓
4	Rocker 1, right key dimming	Lighter / Darker	4 Bits	3.007 DPT_Control_Dimming	✓	✓		✓
	Rocker 1, right key blinds	Up / Down	1 Bit	1.008 DPT_UpDown	✓	✓	✓	✓
5	Rocker 1, right led	Drive Led	1 Bit	1.001 DPT_Switch	✓	✓	✓	
					C	R	W	T

3.2.2 Overview of object numbers

	KRR 6x6		
	KRR 4x4		
	KRR 2x2		
	Rocker 1	Rocker 2	Rocker 3
-Rocker x, 1st object *-Rocker x, dimming* *-Rocker x, blinds* *-Rocker x, scene number* *-Rocker x, left key toggle* *-Rocker x, left key dimming* *-Rocker x, left key blinds* *-Rocker x, left key sequencer*	0	6	12
-Rocker x, 2nd object *-Rocker x, dimming* *-Rocker x, blinds* *-Rocker x, scene last operation* *-Rocker x, left key dimming* *-Rocker x, left key blinds* *-Rocker x, left key sequencer*	1	7	13
-Rocker x, left led	2	8	14
-Rocker x, right key toggle *-Rocker x, right key dimming* *-Rocker x, right key blinds*	3	9	15
-Rocker x, right key dimming *-Rocker x, right key blinds*	4	10	16
-Rocker x, right led	5	11	17

3.2.3 Description of objects

Objects 0, 6, 12

The function and the type of object are dependent on the *Function of rocker*, *Object type* and *Function left key* parameters.

Object Function	Description
Switch ON/OFF	Sends 1-bit switching commands in DPT_1.001 format
Priority	Sends priority telegrams in 2-bit format
Percentage	Sends a percentage value between 0 and 100 %
HVAC operation mode	Sends HVAC telegrams: 0 = auto 1 = comfort 2 = standby 3 = night 4 = frost/heat protection
Send value (0..255)	Sends a value between 0 and 255
Send temperature value	Sends a temperature value in 2-byte format
Step / Stop	Sends 1-bit "UP" or "DOWN" telegrams.
Recall / Save light scene	Recall / save light scene via 8-bit telegram
1 byte value	Sends a value between 0 and 255

Objects 1, 7, 13

The function and the type of object are dependent on the *Function of rocker*, *Object type* and *Function right key* parameters.

Object Function	Description
Switch ON/OFF	Sends 1-bit switching commands in DPT_1.001 format
Priority	Sends priority telegrams in 2-bit format
Percentage	Sends a percentage value between 0 and 100 %
HVAC operation mode	Sends HVAC telegrams: 0 = auto 1 = comfort 2 = standby 3 = night 4 = frost/heat protection
Send value (0..255)	Sends a value between 0 and 255
Send temperature value	Sends a temperature value in 2-byte format
Lighter / Darker	4-bit dimming commands for the dimming actuator in DPT_3.007 format
Up / Down	1-bit motion commands for the blinds actuator in DPT_1.008 format
1=Upper side, *0=Lower side*	Sends a 1 bit telegram each time the switch is operated. This can be linked to the LED. Status: 1 when upper rocker side was struck. 0 when lower rocker side was struck.
1 bit	Sends a 1 bit switch value.

Objects 2, 8, 14

This object is only available when the parameter *Function of the left LED* is set on *display object value* (parameter page *LED rocker X*).

Depending on the settings, the LED may be set ON and OFF either with a 1 or a 0 telegram.

Objects 3, 9, 15

This object is only available when the parameter *Function of Rocker x* is set on *single button operations*.

Object Function	Description
Switch ON/OFF	Sends 1-bit switching commands in DPT_1.001 format
Step / Stop	Sends 1-bit "UP" or "DOWN" telegrams.

Objects 4, 10, 16

This object is only available when the parameter *Function of Rocker x* is set on *single button operations and Function right key is set on dimming or blinds*.

Object Function	Description
Lighter / Darker	4-bit dimming commands for the dimming actuator in DPT_3.007 format
Up / Down	1-bit motion commands for the blinds actuator in DPT_1.008 format

Objects 5, 11, 17

This object is only available when the parameter *Function of the right LED* is set on *display object value* (parameter page *LED rocker X*).

Depending on the settings, the LED may be set ON and OFF either with a 1 or a 0 telegram.

3.3 Parameters

3.3.1 Parameter pages

Function	Description
General	Function of the rocker(s) and how to set the programming mode.
Rocker 1..4	Parameters for the relevant rocker
Button settings	Behavior of the rocker buttons
Led settings	Behavior of the rocker LEDs

3.3.2 Parameter description

3.3.2.1 General

The first and most important parameter is *Function of Rocker X*.

Designation	Values	Description
Function of rocker 1..4	*switching*	Rocker sends 6 possible telegram types: Switching (1-bit) Priority (2-bits) Percentage (1 byte) Hvac operation mode (1 byte) Value 0.. 255 (1-byte) Temperature value (2-bytes)
	dimming	To command a dimming actuator
	blinds	To command a blind actuator
	scenes	To program or recall scenes.
	single button operations	To use upper and lower button of the rocker separately.
Program mode operation		Activating of ETS programming mode:
	Only at bottom of device	only by pressing the programming button at the backside of the device.
	Display also via LED rocker 1	As described above, but while programming mode is active the LED of rocker 1 will be flashing.
	Operation and Display via rocker 1	Programming mode can be activated by entering a code through rocker 1. While programming mode is active, the LED of rocker 1 will be flashing.
Input sequence (within 5 sec.)	*left-right-right-left-left-right*	Code sequence for programming mode: Hit the upper and lower part of rocker 1 in this order to set or clear programming mode. **Important:** This sequence must be entered within a delay of max. 5 s.

3.3.2.2 Rocker 1..4, the "switching" function

The following functions are available:

Designation	Values	Description
Object type for the 1st object of rocker		Channel sends:
	switching (1-bit)	Switching telegrams
	priority (2-bit)	Priority telegrams
	percentage (1 byte)	A percentage value between 0 and 100 %
	HVAC operation mode(1byte)	HVAC operation mode in DPT_20.102 format.
	value 0.. 255 (1-byte)	Any desired value between 0 and 255
	temperature value (2-byte)	A temperature value in DPT_xxx format
Left key operation for 1st obj.	For object type *switching (1-bit)*	
	No telegram	Ignore
	On	Send ON telegram
	Off	Send OFF telegram
	Toggle	Reverse channel status
	For object type *priority (2-bit)*	
	Priority inactive (00) *Priority ON (11)* *Priority OFF (10)*	**Table 1: Telegrams** Function / Value: Priority inactive (no control) — 0 (00_{bin}) Priority ON (control: enable, on) — 3 (11_{bin}) Priority OFF (control: disable, off) — 2 (10_{bin})
	For object type *percentage (1-byte)*	
	0..100 %	Any value between 0 and 100 % can be sent.
	For object type *HVAC operation mode (1-byte)*	
	Auto	HVAC mode is set by the thermostat
	Comfort *Standby* *Night mode* *Frost/Heat protection*	Send a HVAC mode telegram to the thermostat.
	For object type *Value 0..255(1-byte)*	
	0..255	Any value between 0 and 255 can be sent.
	For object type *temperature value (2 bytes)*	
	0..40 °C	Any temperature between 0 and 40 °C can be sent. For e.g. as set point value for a thermostat.
Right key operation for 1st obj.	See above, *Left key operation for 1st obj.*	

Continued:

Designation	Values	Description
Transmit on 1st object	*by pushing*	Telegram is sent: when button is pressed
	by releasing	when button is released
Required 2nd object	*No*	Second object is disabled
	Yes	Second object is enabled. This object has the same parameterization possibilities as 1st object of rocker. A second telegram with another value or function can be sent.

3.3.2.3 Rocker 1..4, the "dimming" function

Depending on the duration of the keystroke (short/ long key stroke), dimming or ON/OFF telegrams are sent to the dimmer. See below.

Designation	Values	Description
Reaction at long/short keystroke	***Upper: Brighter/ON, Lower: Darker/OFF***	Long stroke, upper rocker side = lighter Long stroke, lower rocker side = darker Short stroke, upper rocker side = ON Short stroke, lower rocker side = OFF
	Upper: Brighter /Toggle, Lower: Darker/Toggle	Long stroke, upper rocker side = lighter Long stroke, lower rocker side = darker Short stroke, upper rocker side = toggle Short stroke, lower rocker side = toggle
	Upper: Darker/OFF, Lower: Brighter /ON	Long stroke, upper rocker side = darker Long stroke, lower rocker side = lighter Short stroke, upper rocker side = OFF Short stroke, lower rocker side = ON
	Upper: Darker/Toggle, Lower: Brighter/Toggle	Long stroke, upper rocker side = darker Long stroke, lower rocker side = lighter Short stroke, upper rocker side = toggle Short stroke, lower rocker side = toggle
Long keystroke starting at	*300 ms* *400 ms* ***500 ms*** *600 ms* *700 ms* *800 ms* *900 ms* *1000 ms*	This function serves to clearly differentiate between long and short keystrokes. If the key is pressed at least as long as the set time, then a long keystroke will be registered.
Dimmer increment	***100 %*** *50 %* *25 %* *12,5 %* *6 %* *3 %* *1,5 %*	With a long keystroke, the dimming value is: Increased (or decreased) until the key is released. Raised (or lowered) by the selected value

3.3.2.4   Rocker 1..4, the "blinds" function

Motion or step/stop commands are sent to the blinds actuator depending on the duration of the keystroke (short/ long key stroke). See below.

Designation	Values	Description
Operation of keys	**Upper=UP, Lower=DOWN**	Long stroke, upper rocker = move up Long stroke, lower rocker = move down Short stroke, upper rocker = step up/stop Short stroke, lower rocker = step down/stop
	Upper=DOWN, Lower=UP	Long stroke, upper rocker = move down Long stroke, lower rocker = move up Short stroke, upper rocker = step down/stop Short stroke, lower rocker = step up/stop
Stop driving after	**releasing the key**	Blinds will move as long as the button remains pressed
	short keystroke	Blind must be stopped by a short keystroke
Long keystroke starting at	*300 ms* *400 ms* **500 ms** *600 ms* *700 ms* *800 ms* *900 ms* *1000 ms*	This function serves to clearly differentiate between long and short keystrokes. If the key is pressed at least as long as the set time, then a long keystroke will be registered.

3.3.2.5   Rocker 1..4, the " scene" function

Designation	Values	Description
Scene number for Upper side	*scene 1 .. scene 64*	Scene number to be sent by pressing the upper side of the rocker
Scene number for Lower side	*scene 1 .. scene 64*	Scene number to be sent by pressing the lower side of the rocker
Save after long keystroke	*no*	Scenes can only be recalled, not saved
	yes	On long keystroke the switch will send scene save telegram

3.3.2.6 Rocker 1..4, the " single button operation" function

Left and right buttons of the rocker can be programmed separately for switching, dimming, blind control etc.

Designation	Values	Description
Function left key	***toggle***	Toggle related object status
	dimming	Distinguishes between a long and a short keystroke then performs below functions: Short keystroke = ON/OFF (toggle) Long keystroke = lighter /darker Release = stop dimming **Not**: Dimming direction to lighter or darker change with every keystroke.
	blinds	Distinguishes between a long and a short keystroke then performs below functions: Short keystroke = Step Long keystroke = Move **Not**: Direction changes with every long keystroke. The **stop command** is triggered either by releasing the button or pressing it briefly, depending on the configuration. See below: *Stop driving when release left key*
	sequencer	Sends different values each time the button is pressed. For every step 1 byte and 1 bit values are sent. The number of steps can be adjusted. 1st Press: Value 1 2nd Press: Value 2 3rd Press: Value 3 .. See below: *Sequence type, Number of steps*

Designation	Values	Description
Stop driving when release left key	*No*	Blinds will stop moving after a short keystroke.
	Yes	Blinds will stop moving by releasing the button
Sequence type		Available if sequencer is selected.
	cyclic	Starts again from the beginning (from step 1) after the end of the first sequence. *For 3 step sequencer:* step1 > step2 > step3 > step1 > step2> step3 >… ----- 1st sequence----- ----- 2nd sequence-----
	up-down	After 1st sequence is finished return back from previous step. *For 3 step sequencer:* step1 > step2 > step3 > step2 > step1> step2 > step3 ------- 1st seq -------- --- 2nd seq. --- --- 3rd seq.---
	cyclic with additional bit	Same with cyclic but 1 more step is added which only sends 1 bit object. **See below:** *Value of additional 1 bit object*
	up-down with additional bit	Same with up-down but 1 more step is added which only sends 1 bit object. **See below:** *Value of additional 1 bit object*
Number of steps	*2*	Select the number of steps for sequencer
	3	
	4	
Value for step 1-4	Value from 0 to 255	Set 1 byte object value for appropriate step number.
Value of 1 bit object for step 1-4	*0*	Set 1 bit object value for appropriate step number.
	1	
Value of additional1bit object	*0*	Set 1 bit object value for additional step number.
	1	
Function right key	*toggle*	Select right key functions. Same options except sequencer.
	dimming	**See above**: *Function left key*

Designation	Values	Description
	blinds	
Stop driving when release right key	*No* *Yes*	**See above:** *Stop driving when release left key*
Long keystroke starting at	*300 ms* *400 ms* **500 ms** *600 ms* *700 ms* *800 ms* *900 ms* *1000 ms*	This function serves to clearly differentiate between long and short keystrokes. If the key is pressed at least as long as the set time, then a long keystroke will be registered.

3.3.2.7 LED rocker 1..4, the "switching, dimming, blind, scene" functions

Designation	Values	Description
Function of LED	***fixed display***	The LED must always remain ON or OFF.
	display object value	The LED can be set ON or OFF through an object.
	feedback	The LED will light up when a key is pressed, depending on the parameter settings.
Function of LED = fixed display		
LED Behaviour	***always OFF***	LED remains always OFF.
	always ON	LED remains always ON.
Function of the LED = display object value		
LED Behaviour		Reaction on received telegrams on the LED object.
	object value 1 = LED ON	
	object value 0 = LED ON	
	object value 1 = LED ON for 3 s	
	object value 0 = LED ON for 3 s	
	any obj. value = LED on for 3 s	

Designation	Values	Description
Function of the LED = feedback		
LED Behaviour		Behavior of the rocker LED when a key is pressed.
	left side = LED ON, ***right side = LED OFF***	
	left side = LED OFF, *right side = LED ON*	
	both sides = LED ON for 3 s	
	left side = LED ON for 3 s	
	right side = LED ON for 3 s	
	led of button, Push/Release = Led On/Off	**Switching:** Led on when pressed and led off when released. **Dimming, Blinds, Scenes:** Short keystroke led blink on release. Long keystroke led on as long as button is pressed and led off when released.

3.3.2.8 LED rocker 1..4, the " single button operation" function

Designation	Values	Description
Function of LED	See table 3.3.2.7	
Function of LED = fixed display		
LED Behaviour	See table 3.3.2.7	
Function of the LED = display object value		
LED Behaviour	See table 3.3.2.7	
Function of the LED = feedback		
LED Behaviour		Behavior of the rocker LED when a key is pressed.
	Led toggle	
	LED ON for 3 s	
	Push/Release = Led On/Off	**Toggle, Sequencer:** Led on when pressed and led off when released. **Dimming, Blinds:** Short keystroke led blink on release. Long keystroke led on as long as button is pressed and led off when released.

4 Startup Behaviour

After soft(ETS parameters downloaded) or hard reset (power on the device) the device is not sending any telegram to bus.