Push button 1-/ 2-/ 3- /4gang comfort flush-mounted 7516x7xx

Technical Documentation

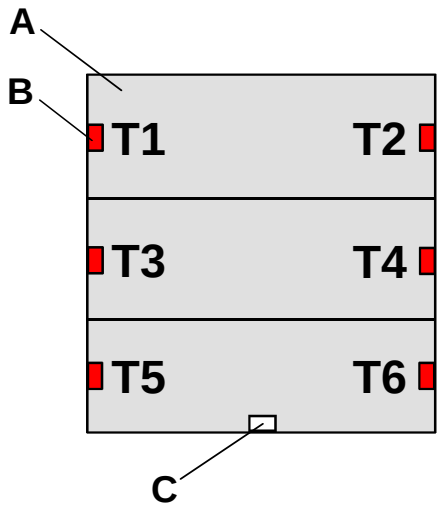
Produktname:	Push button 1-/ 2-/ 3-/ 4gang comfort
Bauform:	UP (flush-mounting type)
Artikel-Nr.:	see below
ETS search path:	Push button / Push button x-gang / Push button x-gang comfort

Functional description:

The push button comfort is plugged onto a flush-mounted bus coupler (flush-mounted BCU). The keys of the device can be programmed for the following functions: switching, dimming, blind/shutter control, value transmitter, light-scene recall, forced guidance and control. Key assignment is free and fixed in the project. Depending on the preset functions, a press on any of the keys sends telegrams to the KNX / EIB which trigger switching, dimming or blind/shutter functions, recall or store light-scenes and set dimming, brightness or temperature values in the respective actuators.

Layout:

e.g. K1 "push button 3gang comfort"



Dimensions:

e.g. K1 "push button 3gang comfort"

Width: 70 mm
Hight: 55 mm
Depth: 13 mm (ohne AST)

Controls:

A: rockers or push buttons
number depending on variant.
(position: left / right)

B: status LED (red)
number depending on variant.

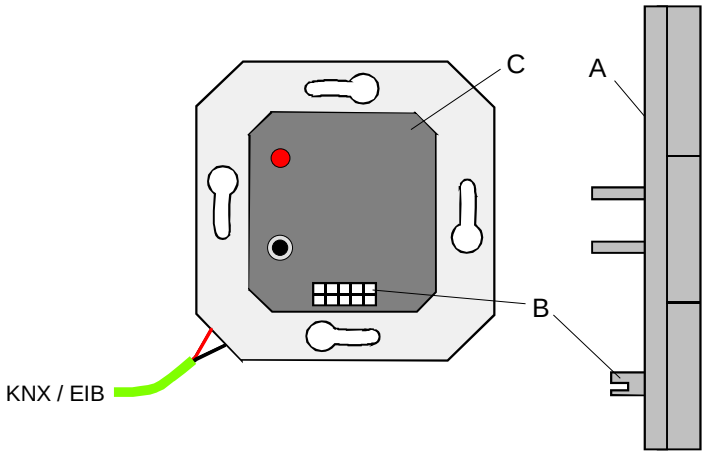
C: 1 x operation LED (white)

Technical data

Type of protection:	IP 20
Safety class:	III
Mark of approval:	KNX / EIB
Ambient temperature:	-5 ℃ ... +45 ℃
Storage / transport temperature:	-25 ℃ ... +70 ℃ (storage above +45 ℃ reduces the service life)
Mounting position:	any
Minimum distances:	none
Type of fastening:	plug-in on flush-mounted bus coupling unit
instabus EIB supply	
voltage:	21 – 32 V DC SELV
power consumption:	typically 150 mW
connection:	2 x 5 pole male connector strip
External supply	---

Response to mains failures	
bus voltage only:	no reaction
mains voltage only:	---
bus and mains voltage:	---
Response on return of voltage	
bus voltage only:	all object values deleted (cf. software information)
mains voltage only:	---
bus and mains voltage:	---
Input:	---
Output:	---
Wiring:	**Terminal connections:**

e.g. K1 "push button comfort 3gang"



A: push button 3gang comfort
B: physical external interface (PEI)
C: bus coupling unit (BCU)

Hardware information

- Article nos.:

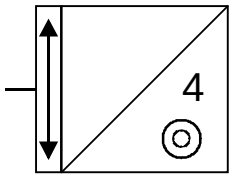
Product	Berker order no.	
Push button 4gang comfort Push button 3gang comfort Push button 2gang comfort Push button 1gang comfort	7516 47 xx 7516 37 xx 7516 27 xx 7516 17 xx	

Software description

ETS search path for push button 4gang comfort:

Push button / Push button x-gang / Push button 4gang comfort

ETS symbol:



PEI type	00 Hex	00 Dez	No adapter used

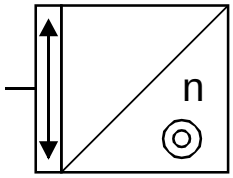
Applications:

No.	Summarized description:	Name:	Version:
1	Multifunction with alarm message	PB 4gang comfort 109002	0.2

ETS search path for push button 3gang comfort:

Push button / Push button x-gang / Push button comfort 3gang

ETS symbol:



PEI type	00 Hex	00 Dez	No adapter used

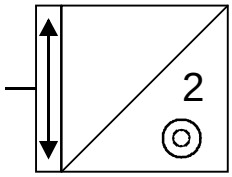
Applications:

No.	Summarized description:	Name:	Version:
1	Multifunction with alarm message	PB 3gang comfort 109102	0.2

ETS search path for push button 2gang comfort:

Push button / Push button x-gang / Push button comfort 2gang

ETS symbol:



PEI type	00 Hex	00 Dez	No adapter used

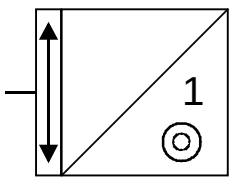
Applications:

No.	Summarized description:	Name:	Version:
1	Multifunction with alarm message	PB 2gang comfort 109202	0.2

ETS search path for push button 1gang comfort:

Push button / Push button x-gang / Push button comfort 1gang

ETS symbol:



PEI type	00 Hex	00 Dez	No adapter used

Applications:

No.	Summarized description:	Name:	Version:
1	Multifunction with alarm message	PB 1gang comfort 109302	0.2

Application:	1. PB 4gang comfort 109002 PB 3gang comfort 109102 PB 2gang comfort 109202 PB 1gang comfort 109302		
Executable from mask version:	1.1		
Number of addresses (max):	25	**dynamic table handling**	Yes ☒ No ☐
Number of assignments (max):	25	**maximum lenght of table**	50
Communication objects:	18		

Function: Switching/Toggle (for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
0-7	Switching	Push button 1 - Push button 8	1 bit	W, C, T, (R) [3]

Function: Dimming (for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
0-7	Switching	Push button 1 - Push button 8	1 bit	W, C, T, (R) [3]
8-15	Dimming	Push button 1 - Push button 8	4 bit	C, T

Function: Blind/shutter (for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
0-7	Move operation	Push button 1 - Push button 8	1 bit	W, C, T, (R) [3]
8-15	Step operation	Push button 1 - Push button 8	1 bit	C, T

Function: Value transmitter (Push button function: light-scene recall with/without storage function for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
8-15	Light scene extension	Push button 1 - Push button 8	1 byte	C, T

Function: Value transmitter (Push button function: value transmitter 1 byte for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
8-15	Value transmitter 1 byte	Push button 1 - Push button 8	1 byte	W, C, T

Function: Value transmitter (Push button function: temperature value transmitter for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
8-15	Temperature value transmitter	Push button 1 - Push button 8	2 bytes	W, C, T

Function: Value transmitter (Push button function: brightness value transmitter for all push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
8-15	Brightness value transmitter	Push button 1 - Push button 8	2 bytes	W, C, T

Function: Value transmitter (Push button function: value transmitter 2 bytes for all push buttons *)

Object [2]	Function	Name [2]	Type	Flag
8-15	Value transmitter 2 bytes	Push button 1 - Push button 8	2 bytes	W, C, T

[1] The functions switching/toggle, dimming, blind/shutter, light scene extension, value transmitter, forced guidance and control can be selected for each individual push button. In this case, the names of the communication objects and the object table change accordingly (dynamic object structure).

[2]: Depending on the projected variant (1-, 2- 3- or 4-gang), the number of push buttons and thus the number of visible communication objects are reduced.

[3]: For objects marked (R), the current object status can be read out (set "R" flag!).

Function: Forced switching (for all keys [1])

Object [2]	Function	Name [2]	Type	Flag
0-7	Forced guidance	Push button 1 – Push button 8	2 bits	W, C, T, (R) [3]

Function: Control (for all Push buttons [1])

Object [2]	Function	Name [2]	Type	Flag
0-7	Control	Push button 1 - Push button 8	1 bit	W, C, T, (R) [3]

Function: Operating level switch-over

Object	Function	Name	Type	Flag
16	Switch-over	Operating level	1 bit	W, C, T, (R) [3]

Function: Alarm function

Object	Function	Name	Type	Flag
17	Alarm message 1 bit	Application module	1 bit	W, C, T, (R) [3]

[1] The functions switching/toggle, dimming, blind/shutter, light-scene extension, value transmitter, forced guidance and control can be selected for each individual push button. In this case, the names of the communication objects and the object table change accordingly (dynamic object structure).

[2]: Depending on the projected variant (1-, 2- 3- or 4-gang), the number of push buttons and thus the number of visible communication objects are reduced.

[3]: For objects marked (R), the current object status can be read out (set "R" flag!).

Object description

0-7	Switching:	1-bit object for transmission of switching telegrams
0-7	Move operation:	1-bit object for move (long-time) operation of a blind/shutter
0-7	Forced guidance:	2-bit object for forced guidance (priority) of switching channels
0-7	Control:	1-bit object for transmission of control telegrams
8-15	Dimming:	4-bit object for relative change of brightness between 0 and 100 %
8-15	Step operation:	1-bit object for step (short-time) operation of a blind/shutter
8-15	Light scene extension:	1-byte object for recalling / storing of light-scenes (1 - 8)
8-15	Value transmitter 1 byte:	1-byte object for transmission of value telegrams (0 - 255)
8-15	Temperature value transmitter:	2-byte object for setting of a defined temperature value (0-40 °C)
8-15	Brightness value transmitter:	2-byte object for setting of a defined brightness value (0-1500 lux)
8-15	Value transmitter 2 bytes:	2-byte object for transmission of value telegrams (0-65535)
16	Switch-over:	1-bit object for switching over between the 2 operating levels
17	Alarm message:	1-bit object for transmission of an alarm message (application module removed)

Scope of functions

General

- Switching/toggle, dimming, blind/shutter, value transmitter/light-scene extension and control functions can be freely assigned to the push buttons
- 2 operating levels parameterizable
- Status indication for each push button by means of LED possible
- Operation indication by means of LED parameterizable
- 4-digit key code for operating level switch-over and for disabling of push button freely selectable
- Alarm message after withdrawal of device from flush-mounted bus coupling unit programmable

Switching/toggle function

- Command on pressing or releasing of key presettable (ON, OFF, TOGGLE, no function)
- Cyclical transmission possible

Dimming function

- Pushbutton or rocker operation parameterizable
- Time between dimming and switching and dimming interval presettable
- Telegram repetition and transmission of stop telegram possible

Blind/shutter function

- Key function (UP, DOWN, TOGGLE) and time between step and move operation presettable
- Slat adjustment time (time during which a MOVE command can be terminated by releasing the key)

Value transmitter / light-scene extension function

- Key functions 1-byte value transmitter or light-scene recall with/without storage function parameterizable
- Key functions 2-byte value transmitter, brightness value transmitter and temperature value transmitter parameterizable
- Value readjustment by means of long key-press possible

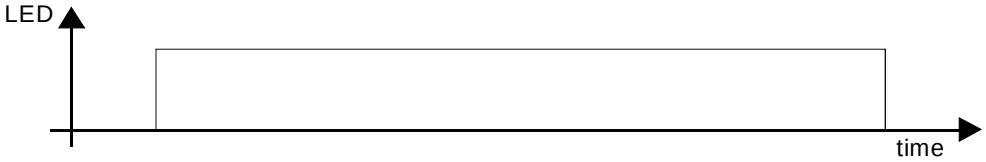
Functional description

Switching/toggle: status indication

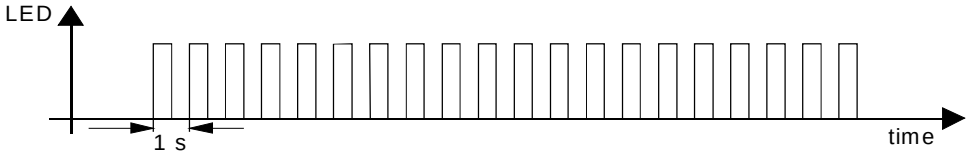
Depending on the "Function of status LED", "Status indication flashing?" and "Cyclical transmission" parameters, the status LEDs of the individual keys show a different behaviour with the switching/toggle function:

Key-press:

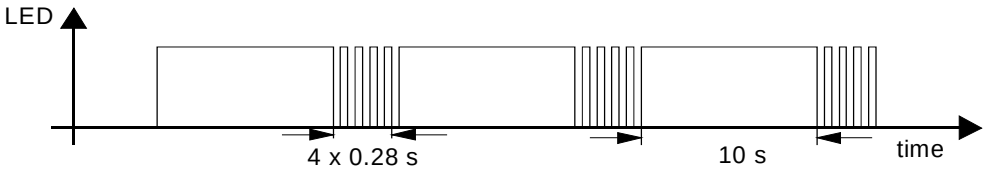
Function of status LED: indication of status
Status indication flashing? NO
Cyclical transmission: no cyclical transmission



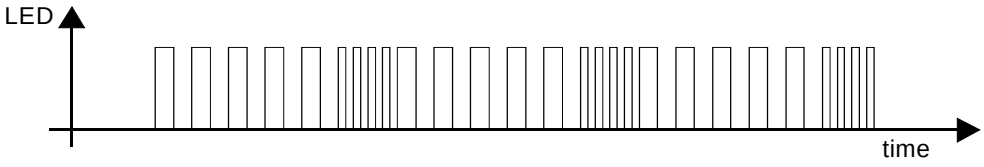
Function of status LED: indication of status
Status indication flashing? YES
Cyclical transmission: no cyclical transmission



Function of status LED: indication of status
Status indication flashing? NO
Cyclical transmission: no cyclical transmission



Function of status LED: indication of status
Status indication flashing? YES
Cyclical transmission: transmission when ON



Value transmitter: readjustment by long key-press

If a value transmitter has been parameterized, the value to be transmitted can be readjusted by a long key-press (> 5 s). In this case, the current value is increased by the parameterized interval and transmitted. After releasing the key, the value last transmitted remains stored. During the next long key-press, the value is readjusted in the opposite direction.

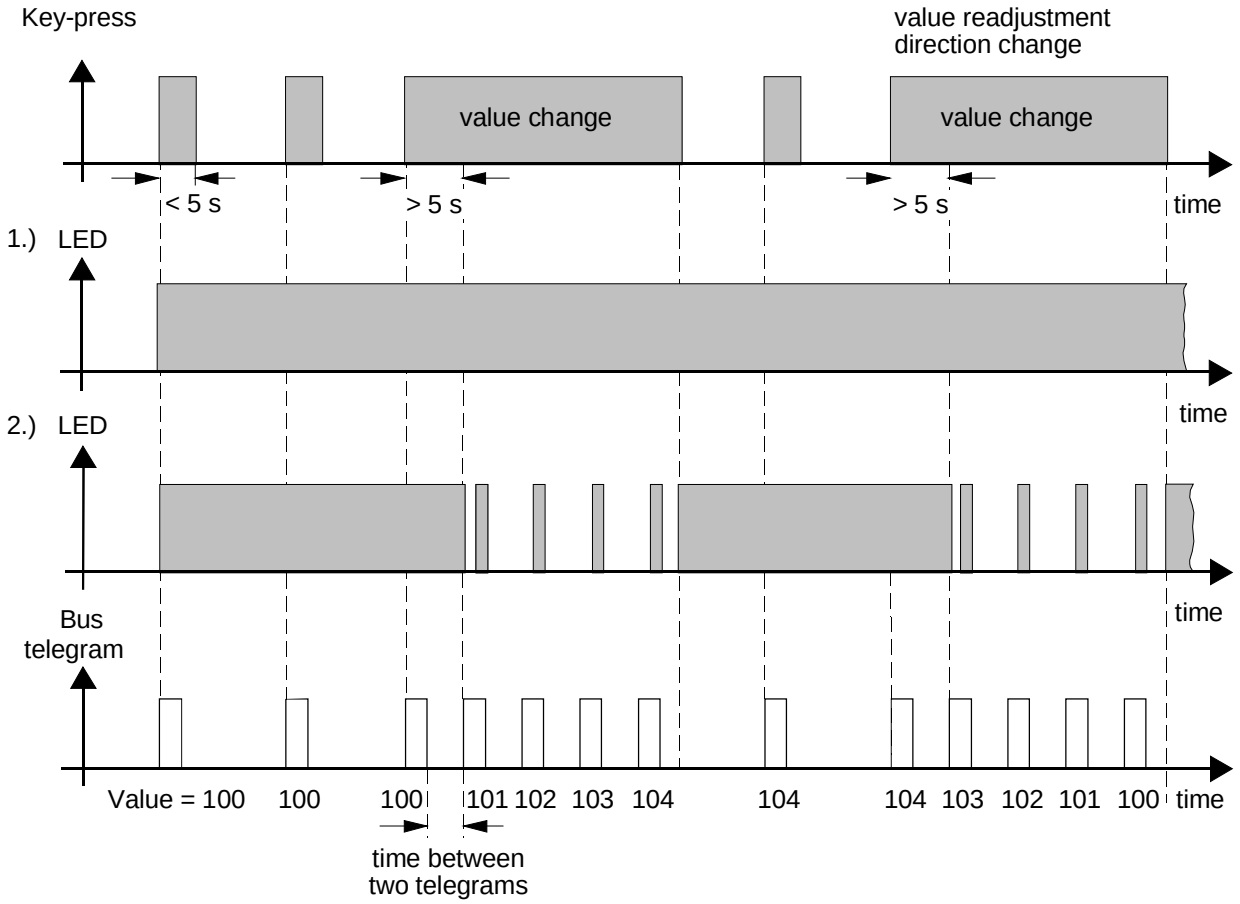
Depending on parametrization, the status LED shows a different behaviour during value readjustment (see below):

1.) Function of status LED: indication of status
Status indication flashing? NO
Function of status LED during value readjustment: indication of status

⇨ Status LED permanently lit up

2.) Function of status LED: indication of status
Status indication flashing? NO
Function of status LED during value readjustment: flashing during value readjustment

⇨ During value change, the status LED flashes with every new value



Key function	Value range	Interval
Light-scenes with/without storage f.	1...8	---
Brightness value transmitter	0...1500 lux	50 lux
Temperature value transmitter	0...40 ℃	1 ℃
Value transmitter 1 byte	0...255	1...10
Value transmitter 2 bytes	0...65535	1, 2, 5, 10, 20, 50, 75, 100, 200, 500 , 750, 1000

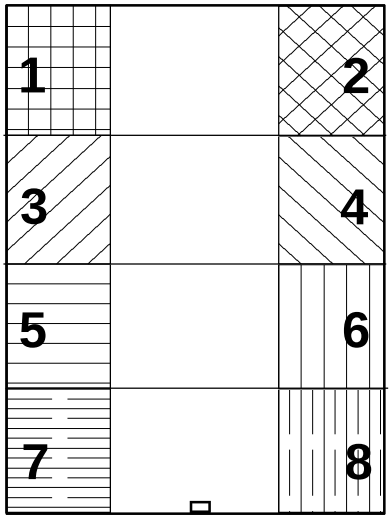
Operating levels

In operating level 1, each key can be assigned any of the functions switching/toggle, dimming, blind/shutter, forced guidance, value transmitter/light-scene extension or control. In operating level 2, the lefthand and the righthand key column is assigned a function from among the key functions of operating level 1.

Operating level 1:

- per key one function from among: switching/toggle, dimming, blind/shutter, forced guidance, value transmitter/light-scene extension or control

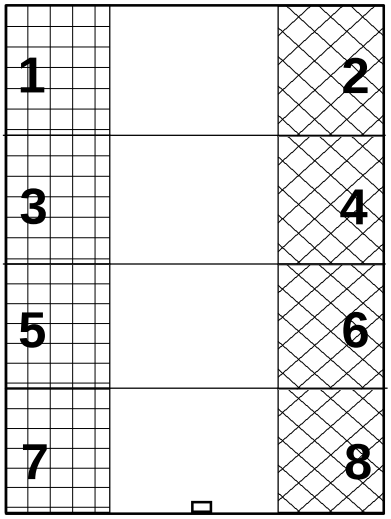
e.g. 4-gang:



Operating level 2:

- lefthand key colum ⇨ 4 keys with the same function
- righthand key colum ⇨ 4 keys with the same function
- function to be selected from the functions of level 1

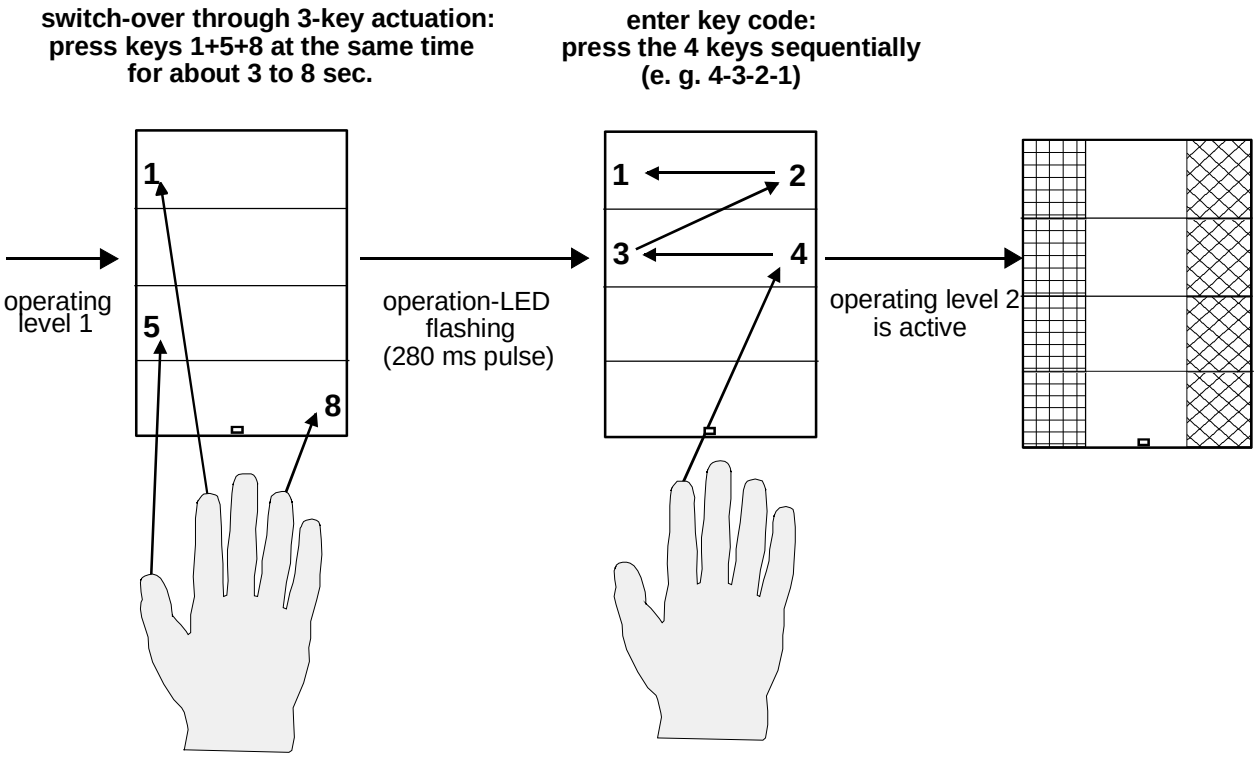
e.g. 4-gang:



Switching over between operating levels is ensured by a separate object "Operating level". The polarity of this object can be programmed. In the 4-gang type, switching over can additionally be effected locally on the push button itself (see next page).
Operating level 2 can be permanently activated (e.g. switch-back to operating level 1 manually or via object) or, as an alternative, remain activated for a parameterized time. The switch-over mode is determined by the "Switch-over" parameter.

Manual switch-over between the two operating levels

The push button comfort 4-gang can be switched by means of a 3-key actuation (keys 1+5+8) and key code between the two operating levels (the "Level switch-over" parameter must then be set to "manual" or "via object and manual").
The operating level switch-over is effected by means of the 3-key actuation for approx. 3 s and by entry of the parameterized key code. The following illustration shows manual switching from operating level 1 to operating level 2. Switching back to operating level 1 is analogous with the first procedure.

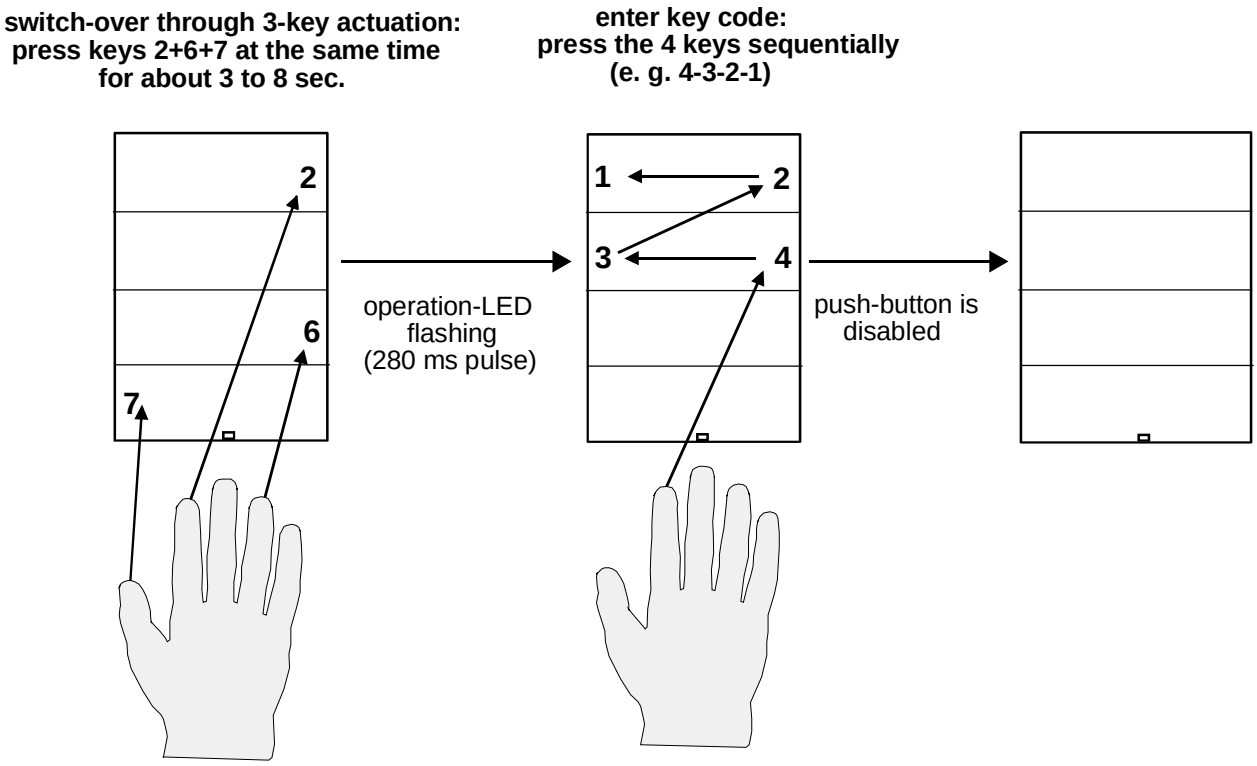


Remarks:

- The function of the operation LED (white) for an active operating level 1 is parameterized on parameter card "General", whereas the function of the operation LED for an active operating level 2 is parameterized on parameter card "Operating level".
- If the "Switch-over" parameter is set to "Temporary switch-over to level 2", the push button comfort switches back automatically to operating level 1 after the preset time.

Key-lock by code

This function requires that local disabling of the push button (4-gang only) has been enabled beforehand in the "Disabling function?" parameter.
The keys are locked by the so-called 3-key actuation (keys 2+6+7) for about 3 s and by entry of the parameterized key code. A push button (when locked) can be unlocked by means of the same key actuation and the current code. The following illustration shows the key-lock procedure.

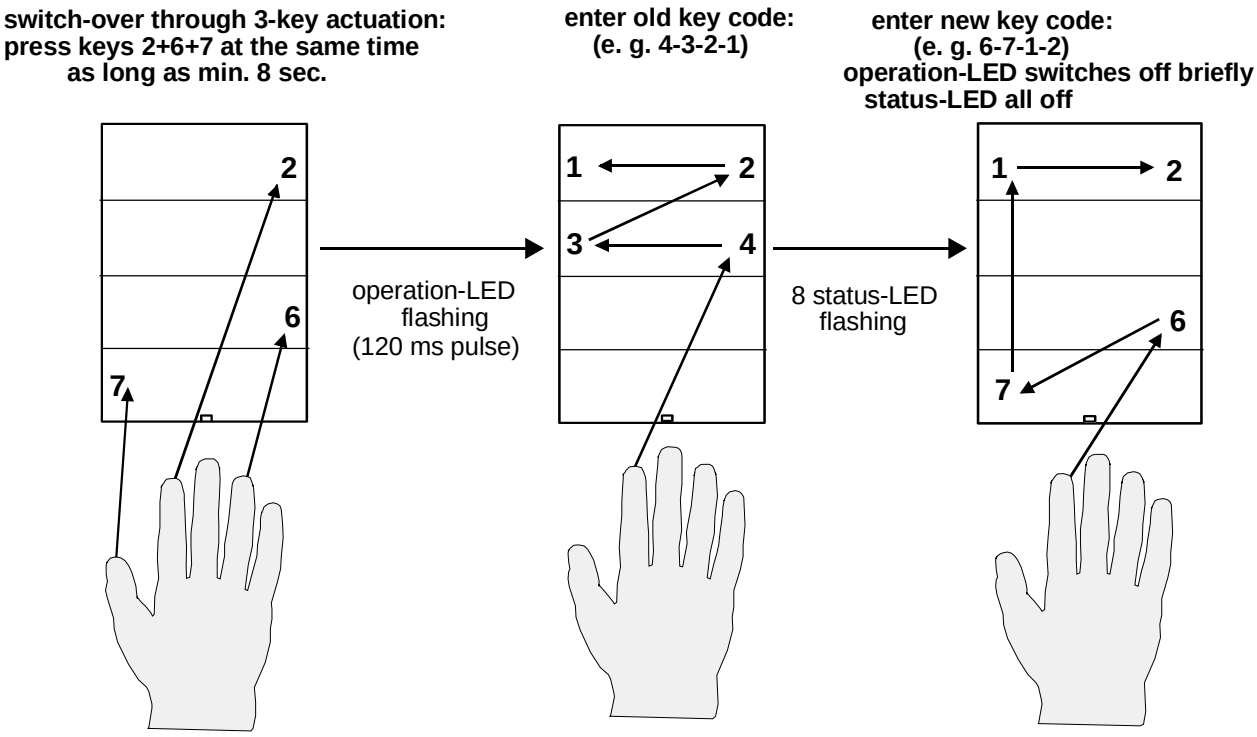


Remarks:

- The key lock function is available from operating level 1 and from operating level 2.
- The function of the operation LED with a locked push button is parameterized on the "General" parameter card.

Changing the key code

The key code is parameterized in the ETS and can be changed in the push button comfort 4-gang by local manual operation.
Key code change by local operation of the push button must have been enabled beforehand in the ETS in the "Push button code change by local operation" parameter.
The key code is changed by means of the so-called "3-key actuation, i.e. pressing 2+6+7 for at least 8 s followed by the entry of the old key code. This is confirmed by all 8 status LEDs flashing at the same time. The new code can be entered thereafter.
The following illustration shows how to change the key code:



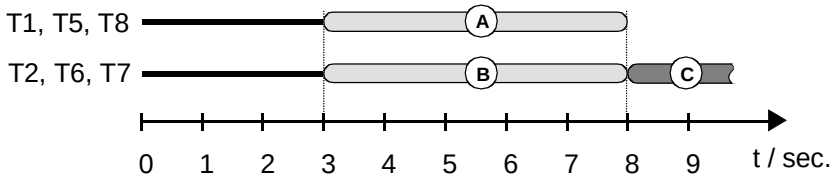
Remark:

- A key code change can be made in operating level 1, in operating level 2 and when the push button is locked.

Operating combinations overview

The 4 operating combinations and the pertaining 3-key actuations and key-press durations are summarized in the table below and in the timing diagram:

Function	3-key actuation	1st entry	2nd entry
Operating level switch-over	press keys 1+5+8 for 3 s (A)	enter key code	
Key lock	press keys 2+6+7 for 3 s (B)	enter key code	
Key code change	press keys 2+6+7 for 8 s (C)	enter old code	enter new code

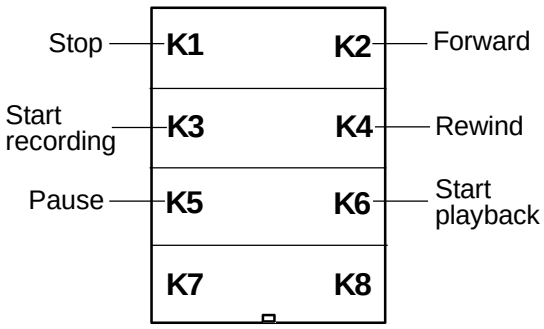


"Control" function

The "Control" communication object is coded as follows:

Command	Binary	Hexadecimal	Decimal
Stop	00000000	0	0
Pause	00000010	2	2
Start recording	00000100	4	4
Start play	00001000	8	8
Forward	00001001	9	9
Rewind	00001010	A	10

Configuration example of push button comfort 4-gang for controlling an external memory device (e.g. chip card):



"Forced guidance" function

By means of the 2-bit forced-guidance object, it is possible, for instance, to force the switching channel of a switching actuator independent of the switching object into a certain switching position.
The 2-bit telegram controls the states shown in the table below:

Bit 1	Bit 0	Forced switching	Actuator state
0	0	OFF	Value of switching object
0	1	OFF	Value of switching object
1	0	ON	OFF
1	1	ON	ON

Bit 1 of the forced guidance object enables forced switching and bit 0 determines the switching state the actuator is to adopt. When forced guidance is inactive (bit 1 = 0), bit 0 is irrelevant and the switching channel is controlled by the switching object of the actuator.

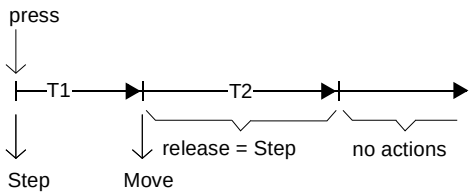
Parameters		
Description:	**Values:**	**Remarks:**
General		
Function of operating LED	**ON** OFF	The white operating LED is lit up in operating level 1 after arrival of supply voltage (ON) or always off (OFF).
Light duration of status LED at operation indication	**0.75 s** 2.25 s 3 s	Light duration of status LED for confirmation of key-press. Only active in conjunction with "Function of status LED = Operation indication".
Operating levels (HA)	**one** two	Number of usable operating levels.
Lock function? (HA)	**NO** YES	The push button can be disabled by of 3-key actaution so that none of the keys will trigger an action. With push button comfort 4-gang only.
Function of operating LED at lock function (HA)	Always OFF Always ON **Flashing**	When the light-scene push button is disabled, the operation LED is always OFF, always ON or in a flashing mode (1.6 s clock). With Push button comfort 4-gang only.

Parameters		
Description:	**Values:**	**Remarks:**
Push button 1		
Function of status LED	LED always OFF	The status LED is always off.
	LED always ON	The status LED is always on.
	Status indication default for control	The status LED is on after successful transmission or reception of an ON telegram and goes out after successful transmission or reception of an OFF telegram (inverted: opposite behaviour).
	Inverted status indication	
	Operating indication default for switching/toggle, dimming, blind/shutter, value transmitter, light-scene extension, forced guidance	The status LED is on after successful transmission or reception of an ON / OFF telegram for the time specified under " Light duration of status LED at operation indication ".
Flashing LED during (inverted) status indication?	**NO** YES	Status indication: Flashing LED during (inverted) status indication
Function	No function **Switching/toggle** Dimming Shutter control Value transm. /light scene ext. Forced guidance Control	Function selection for the push button.

Push button 1: "Switching /Toggle" function parameterized		
Command at pushing the push button	No function	No telegram triggered.
	ON	ON telegram triggered.
	OFF	OFF telegram triggered.
	TOGGLE	The internally stored switching state is reverted. If the state stored is ON (OFF), an OFF (ON) telegram is triggered.
Command at releasing the push button	No function	No telegram triggered.
	ON	ON telegram triggered.
	OFF	OFF telegram triggered.
	TOGGLE	The internally stored switching state is reverted. If the state stored is ON (OFF), an OFF (ON) telegram is triggered.
Cyclical transmission (HA)	**No cyclical transmission**	Cyclical transmission is inactive.
	Transmit when ON Transmit when OFF Transmit when ON and OFF	Cyclical transmission is active only after an ON, an OFF or after an ON and an OFF telegram.
Cyclical transmission base (1...255) x 5 s (HA)	1...255; **1**	Defines the base of the cyclical transmit time. Cyclical transmit time = base •· 5 s • factor
Cyclical transmission factor (1...255) (HA)	1...255; **1**	Defines the factor of the cyclical transmit time. Cyclical transmit time = base •· 5 s • factor
Start of cyclic transmission via the switching object? (HA)	YES **NO**	Cyclical transmission can additionally be started via the switching object.
Stop cyclic transmission via the switching object? (HA)	YES **NO**	Cyclical transmission can additionally be terminated via the switching object (only available with "Transmission when ON" or "Transmission when OFF").

Push button 1: "Dimming" function parameterized			
Function of push button	Operation with two buttons: brighter (ON)		A short key-press triggers an ON telegram, a long key-press triggers a dimming telegram (brighter).
	Operation with two buttons: darker (OFF)		A short key-press triggers an OFF telegram, a long key-press triggers a dimming telegram (darker).
	Operation with one button: brighter/darker (TOGGLE)		The internally stored is reverted with a short key-press. If the the stored state is ON (OFF), an OFF (ON) telegram is triggered. After a long key-press, a "darker" telegram is transmitted after a "brighter" telegram and vice versa.
Time between switching and dimming base (HA)	**130 ms** 260 ms 520 ms 1 s		Time after which the long key-press function (dimming) is executed. Time = base • factor
Time between switching and dimming Factor (2…127) (HA)	2...127; **3**		Time after which the long key-press function (dimming) is executed. Default: 130 ms • 3 = 390 ms
Dimming brighter by (HA)	**100 %** 50 % 25 % 12.5 %	6 % 3 % 1.5 %	With a dimming telegram, the brightness can be increased by x % max.
Dimming darker by (HA)	**100 %** 50 % 25 % 12.5 %	6 % 3 % 1.5 %	With a dimming telegram, the brightness can be reduced by x % max.
Telegram repetition (HA)	YES **NO**		Cyclical telegram repetition during key-press.
Time between two telegrams (HA)	**200 ms** 300 ms 400 ms 500 ms	750 ms 1 s 1.5 s 2 s	Time between two telegrams when telegram repetition is active. A new dimming telegram is triggered after this period.
Send stop telegram ? (HA)	**YES** NO		On release of the key a stop telegram is transmitted or not.

Push button 1: "Blind/shutter function" parameterized		
Function of push button	**UP** default: keys 1, 3, 5, 7	A short key-press triggers a STEP telegram (UP), a long key-press triggers a MOVE telegram (up).
	DOWN default: keys 2, 4, 6, 8	A short key-press triggers a STEP telegram (DOWN), a long key-press triggers a MOVE telegram (down).
	TOGGLE	With this setting, the internally stored moving direction is followed up via the bus and switched over after each long-time operation (MOVE). If a STEP telegram is transmitted by a short key-press, this STEP command always has the opposite direction of the last MOVE command. Several successive STEP telegrams always have the same direction.
Time between step and move operation base (HA)	**8 ms** 130 ms 2.1 s 33s	Time after which the move function is executed (T1 see diagram below). Time = base •· factor
Time between step and move operation factor (HA)	0 ... 255; **46**	Time after which the move function is executed (T1 see diagram below). Default: 8 ms • 46 = 368 ms
Time of lamella adjustment base (HA)	**8 ms** 130 ms 2.1 s 33s	Time during which a MOVE telegram for lamella (slat) adjustment can be terminated by releasing the key (T2 see diagram below). Time = base •· factor
Time of lamella adjustment factor (0…255) (HA)	0 ... 255; **20**	Time during which a MOVE telegram for lamella (slat) adjustment can be terminated by releasing the key (T2 see diagram below). Default: 130 ms • 20 = 2.6 s



T1 = time between Step and Move

Pressing the key sends a STEP and starts time T1. If the key is released within T1, no further telegram will be transmitted. This STEP serves the purpose of stopping a continuous run.
If the keys is held depressed for longer than T1 a MOVE is transmitted automatically after the end of T1 and time T2 is started. If the key is then released again within T2, a STEP is transmitted. This function is used for slat adjustment (T2). T2 should correspond to the time needed for a slat rotation through 180°.

Push button 1: "Value transmitter" parameterized		
Function of push button	**Value transmitter 1 byte** Recall light scene with memory function Recall light scene without memory function Brightness value transmitter Temperature value transmitter Value transmitter 2 bytes	Selection of value transmitter function to be preset
Value (0...255)	0...255; **0**	Setting of value to be transmitted with value transmitter 1 byte
Light scene (1...8)	1...8; **1**	Setting of light scene to be transmitted with light-scene recall with / without memory function
Value (0...1500 lux)	0...1500 lux; **0 lux**	Setting of brightness value to be transmitted with brightness value transmitter
Value (0...40 °C)	0...40 °C; **0 °C**	Setting of temperature value to be transmitted with temperature value transmitter
Value (0...65535)	0...65535; **0**	Setting of value to be transmitted with value transmitter 2 bytes
Variation by means of a long push (HA)	**disabled**	No adjustment with long key-press possible.
	enabled	If the key is held depressed for at least 5 s, the current value is cyclically (time between two telegrams) increased or reduced by the parameterized interval (see below) and transmitted. After releasing of the key, the value last transmitted remains stored. A new long key-press changes the direction of value adjustment (see also functional description).
Function of status LED at value adjustment?	**Indication of status**	The status LED is off if the value = 0 and otherwise on.
	Flashing during value change	The status LED flashes once per value change.
Time between two telegrams (HA)	0.5 s; **1 s**; 1.5 s; 2 s	Time between two value change telegrams.
Step width (1…10) (HA)	1...10; **1**	Interval by which the set value is reduced or increased with a long key-press and for parameterized 1-byte value transmitter.
Step width (1…1000) (HA)	1, 2, 5, 10, 20 50, 75, 100, 200, 500, 750, **1000**	Interval by which the set value is reduced or increased with a long key-press and for parameterized 2-byte value transmitter.

Push button 1: "Forced guidance" function parameterized		
Command at pushing the push button	No function 10: Forced guidance ON and actuator ON **11: Forced guidance ON and actuator OFF** 01: TOG: Forced guidance ON and actuator ON/ forced guidance OFF 00: TOG: Forced guidance ON and actuator OFF/ forced guidance OFF	2-bit forced switching command transmitted on pressing of key.
Command at releasing the push button	No function 10: Forced guidance ON and actuator ON **11: Forced guidance ON and actuator OFF** 01: TOG: Forced guidance ON and actuator ON/ forced guidance OFF 00: TOG: Forced guidance ON and actuator OFF/ forced guidance OFF	2-bit forced switching command transmitted on releasing of key.

Push button 1: "Control" function parameterized		
Transmission at pushing the push button?	**YES** NO	On press of key, a control command / no control command is transmitted (YES/ NO).
Command at pushing the push button	**Start** Record Forward Rewind Pause Stop	Defines the command transmitted on pressing of key.
Transmission at releasing the push button?	YES **NO**	On release of key, a control command / no control command is transmitted (YES/ NO).
Command at releasing the push button	**Stop** Pause	Defines the command transmitted on releasing of key.

Push button 2, Push button 3, Push button 4, Push button 5, Push button 6, Push button 7, Push button 8
See push button 1!

Operating levels (only if "Operating level = two"!) (HA)		
Function of operating LED (HA)	ON OFF **Flashing**	The white operating LED is flashing or lit up in operating level 2 after switch-over to level 2 or always off (OFF).
Push button in second level without function ?	YES **NO**	Defines wether the push buttons are blocked in the second operating level.
Function of all upper (left) push buttons like push button (1...8) (HA)	1...8; **1**	Defines the function of the left row of keys of the 2nd operating level. The function can be selected from among the key functions of the 1st operating level.
Function of all lower (right) push buttons like push button (1...8) (HA)	1...8; **2**	Defines the function of the right row of keys of the 2nd operating level. The function can be selected from among the key functions of the 1st operating level.
Behaviour of switch-over (HA)	**No time response**	Switching over from the 2nd operating level into the 1st operating level is not automatic.
	Switch-over to level 2 for a time interval	Switching over from the 2nd operating level into the 1st operating level is effected with a time function (time period).
Time interval base (HA)	300 ms, 500 ms **1 s**, 5 s 1 min, 5 min, 60 min	Time interval after which the 2nd op. level is switched back to the 1st operating level. Time = base •·factor Only if “Switch-over mode = switch temporarily to 2nd level”!
Time interval factor (3…255) (HA)	3…255; **3**	Time interval after which the 2nd operating level is switched back to the 1st operating level. Default: 1 s • 3 = 3s Only if “Switch-over mode = switch temporarily to 2nd level”!
Switch-over to operating level (HA)	**Manually**	Operating level switched over manually by means of 3-key actuation and key code.
	Via object	Operating level switched over by means of object 16 “Operating level”.
	Via object and manually	Operating lebel can be switched manually and via the operating level object. With push button comfort 1-, 2- and 3-gang, operating level switch-over can be effected via the object only.
Value for operating levels (HA)	**0 = operating level 1** **1 = operating level 2** 1 = operating level 1, 0 = operating level 2	Defines the polarity of object 16 “Operating level” for operating level switch-over.

Push button code (only with Push button comfort 4-gang!) (HA)			
1st push button (HA)	**Push button 1** Push button 2 Push button 3 Push button 4	Push button 5 Push button 6 Push button 7 Push button 8	Defines the 1st key of the key code. The key code is used for operating level switch-over and for activation of the push button disable function.
2nd push button (HA)	Push button 1 **Push button 2** Push button 3 Push button 4	Push button 5 Push button 6 Push button 7 Push button 8	Defines the 2nd key of the key code. The key code is used for operating level switch-over and for activation of the push button disable function.
3rd push button (HA)	Push button 1 Push button 2 **Push button 3** Push button 4	Push button 5 Push button 6 Push button 7 Push button 8	Defines the 3rd key of the key code. The key code is used for operating level switch-over and for activation of the push button disable function..
4th push button (HA)	Push button 1 Push button 2 Push button 3 **Push button 4**	Push button 5 Push button 6 Push button 7 Push button 8	Defines the 4th key of the key code. The key code is used for operating level switch-over and for activation of the push button disable function.
Local adjustment of push button code (HA)	**disabled** enabled		Local adjustment of push button code not possible. Push button code can be changed locally by 3-key actuation (see functional description).

Alarm (HA)		
Alarm function? (HA)	YES **NO**	If the alarm function is active, a telegram is transmitted via object 17 "User module" whenever the push button is being removed from the flush-mounted bus coupler.
Data format of alarm message (HA)	**1 bit** 1 byte	Defines the data format of the alarm object.
Value in case of alarm (HA)	**ON telegram** OFF telegram	In the event of an alarm, a switching telegram is transmitted. Only with "Data format of alarm message = 1 bit"
Value in case of alarm (1...255) (HA)	1 to 255, **1**	In the event of an alarm, a value telegram is transmitted. Only with "Data format of alarm message = 1 byte"
Transmission delay of alarm telegram base (HA)	8 ms **130 ms** 2.1 s 33 s	On removal of the user module, the alarm telegram will be transmitted at the end of the transmit delay. Transmit delay = base • factor
Transmission delay of alarm telegram factor (1...255) (HA)	1 to 255, **3**	Definition of time factor for the transmit delay. Transmit delay = base • factor Preset: 130 ms • 3 = 390 ms

Software information

- For access to all parameters, parameter editing in ETS 2 must be set to "High access"" (HA).

Switching function

- For double-key operation, the objects of combined keys must be assigned the same group address.
- If the status LED is not parameterized for "always ON" or "always OFF", cyclical transmisson is indicated by the status LED flashing 4 times every 10 s. In between these intervals, the LED performs its parametrized functions.

Dimming function

- For correct functioning of the status LED during indication opf status, the connected dimming actuator must return its status to the switching object (set T flag).
- For correct functioning of the single-key operation (brighter /darker (TOGGLE)), the connected dimming actuator must also return its status to the switching object.
- During single-key operation, only the switching object will be followed up internally and externally. The dimming object (dimming direction) is followed up only internally so that the dimming direction is not toggled with each press of a key when extensions are used (2 or more push buttons dimming one lamp).
- For double-key operation, the objects of combined keys must be assigned the same group address.

Blind/shutter function

- For double-key operation, the short-time objects (Step) and the long-time objects (Move) of combined keys must be assigned the same group address.

Bus voltage failure

- An active disable function and the current key code are not lost during bus voltage failure and recovery.
- Value transmitter function: In the event of value change by long key-press, the newly set values are saved only in the RAM, so that these values will be replaced after bus voltage failure or after a bus reset by the predefined values parameterized in the ETS.
- In the event of bus voltage failure, operating level 2 – if activated – will be set back to operating level 1.