KNX manual

4-way flush-mounted wireless push-button interfaces TU 4 RF, TU 4 S RF

TU 4 RF – 4961604

TU 4 S RF – 4961614

Push-button module 9070806

2021-10-14

Contents

1 IMPORTANT WARNINGS!

Risk of electric shock!

- The device does not have basic insulation around the terminals and plug connection!
- The inputs carry mains voltage!
- When connecting the inputs or before any intervention at one of the inputs, interrupt the 230 V supply of the device.
- Protect against accidental contact during installation.
- Maintain a minimum distance of 3 mm from live parts or use additional insulation, e.g. separating strips/walls.
- Do not remove the insulation from the unused inputs.
- Do not cut off the conductors of the unused inputs.
- Do not connect mains voltage (230 V) or other external voltages to the inputs!
- During installation, ensure there is adequate insulation between mains voltage (230 V) and bus or inputs (min. 5.5 mm).

2 Functional characteristics

- Binary input wireless push-button interface
- 4-way push-button input or 2-way switch input
- NTC input for actual temperature measurement
- Can be installed with conventional push-buttons/switches in flush-mounted boxes
- Free allocation of functions: switch/push-button, dimming, blinds, valuator
- Colour coding of wiring pairs
- Grooves on side of housing for switch/push-button clamps
- 7-pole cable connection

ⓘ **S RF version:** optimised send/receive performance through the use of a new radio chip

3 Operation

Upon application of voltage the input is activated and the configured telegram is sent.
Conventional push-buttons, switches or any kind of sensor (thermostat, time switch, etc.) can be connected.
The input configuration is defined on the General parameter page.
3 configurations are possible:

- 4 push-buttons + temperature input
- 2 switches or window contacts
- 2 push-buttons + 1 switch + temperature input[1]

[1] No temperature input if I3=switch

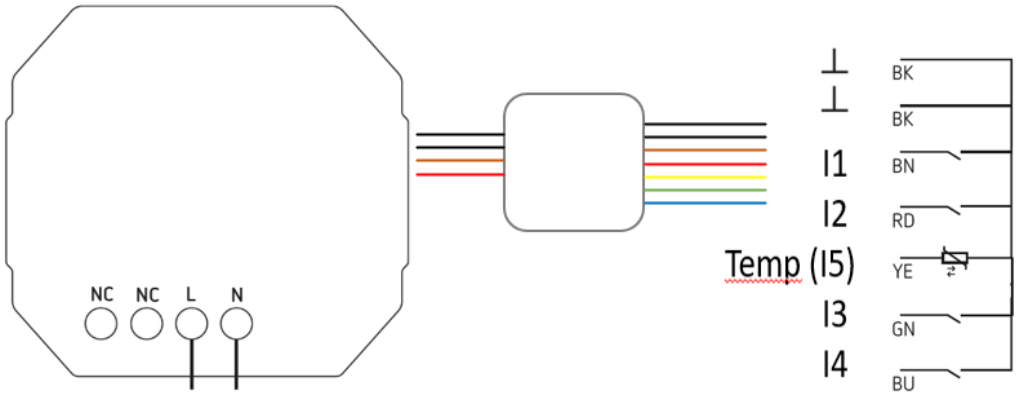
4 Technical data

4.1 Technical data

KNX operating voltage	230 – 240 V AC
Frequency	50-60 Hz
Standby output	< 0.4 W
L x W x D	TU 4 RF: 48,6 x 46,8 x 22 mm TU 4 S RF: 48,6 x 44,4 x 25 mm
KNX medium	KNX RF (wireless)
Connection type	Screw terminals
Max. cable cross-section	Solid: 0.5 mm² (Ø 0.8 mm) to 4 mm² strand with crimp terminal: 0.5 mm² to 2.5 mm²
Length of connecting wires	25 cm
Maximum cable length	30 m
Contact voltage	5 V DC
Contact current	0.5 mA (5 mA peak)
Suitable for SELV	No
Ambient temperature	– 5 °C ... + 45 °C
Type of installation	Flush-mounted installation
Protection rating	IP 20 in accordance with EN 60529
Protection class	II subject to correct installation
Pollution degree	2
Rated impulse voltage	4 kV
Radio standard	KNX
Transmission frequency	868.3 MHz
Transmission power	10 mW
Range in open space	Up to 100 m
Coding	FSK (Frequency Shift Keying)

Transceiver type	bidirectional

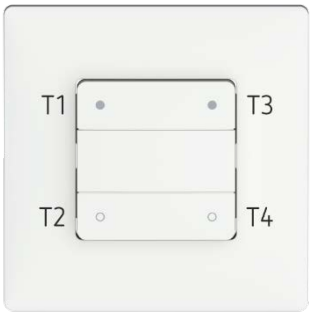
4.2 Wiring diagram



Key:
BK = black
BN = brown
RD = red
GN = green
BU = blue
YE = yellow

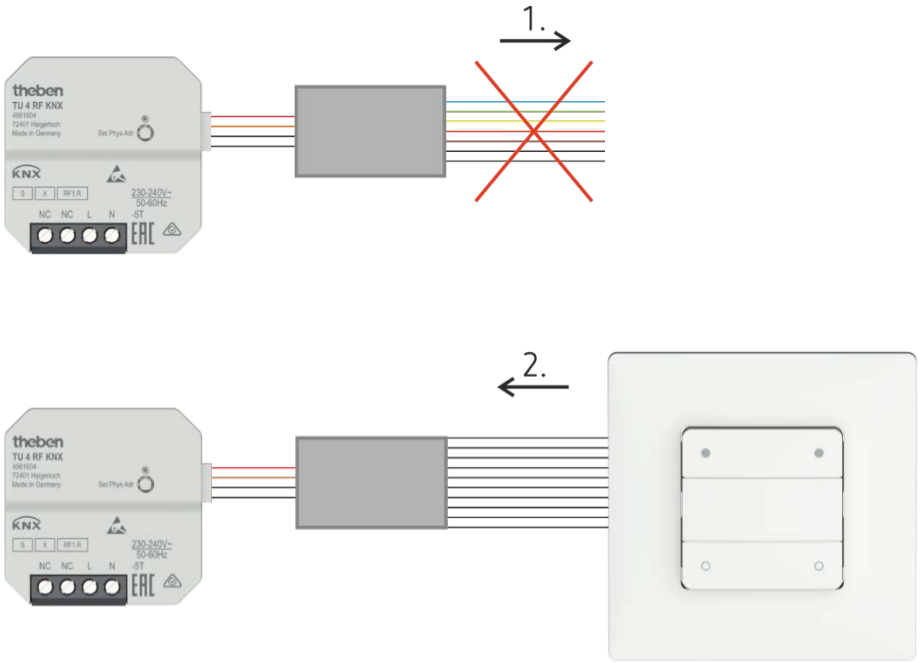
4.3 Push-button module

4.3.1 Push-button allocation



Push-button module (9070806)

4.3.2 Connection



1. Disconnect connecting wires.
2. Plug in push-button module (9070806).

5 General information about KNX Secure

ETS5 Version 5.5 and higher support secure communication in KNX systems. A distinction is made between secure communication via the IP medium using KNX IP Secure and secure communication via the TP and RF media using KNX Data Secure. The following information refers to KNX Data Secure.

In the ETS catalogue, KNX products supporting "KNX-Secure" are clearly identified. 

As soon as a "KNX-Secure" device is included in the project, the ETS requests a project password. If no password is entered, the device is included with Secure Mode deactivated. However, the password can also be entered or changed later in the project overview.

5.1 Start-up with "KNX Data Secure"

For secure communication, the FDSK (Factory Device Setup Key) is required. If a KNX product supporting "KNX Data Secure" is included in a line, the ETS requires the input of the FDSK. This device-specific key is printed on the device label and can either be entered by keyboard or read by using a code scanner or notebook camera.

Example of FDSK on device label:

After entering the FDSK, the ETS generates a device-specific tool key. The ETS sends the tool key to the device to be configured via the bus. The transmission is encrypted and authenticated with the original and previously entered FDSK key. Neither the tool key nor the FDSK key are sent in plain text via the bus.
After the previous action, the device only accepts the tool key for further communication with the ETS.
The FDSK key is no longer used for further communication, unless the device is reset to the factory setting: In this case, all set safety-related data will be deleted.
The ETS generates as many runtime keys as needed for the group communication you want to protect. The ETS sends the runtime keys to the device to be configured via the bus.
Transmission takes place by encrypting and authenticating them via the tool key. The runtime keys are never sent in plain text via the bus.

The FDSK is saved in the project and can be viewed in the project overview.
All keys for this project can also be exported (backup).

During project planning, it can be defined subsequently which functions / objects are to communicate securely. All objects with encrypted communication are identified by the "Secure" icon in the ETS.

5.2 Start-up without "KNX Data Secure"

Alternatively, the device can also be put into operation without KNX Data Secure. In this case, the device is unsecured and behaves like any other KNX device without KNX Data Secure function.
To start up the device without KNX Data Secure, select the device in the 'Topology' or 'Devices' section and set the 'Secure start up' option in the 'Properties' area of the 'Settings' tab to 'Disabled'.

6 The TU 4 RF, TU 4 (S) RF application programs

6.1 Selection in the product database

Manufacturer	Theben AG
Product family	Inputs
Product type	TU 4 RF, TU 4 S RF
Program names	TU 4 RF[2] TU 4 (S) RF[3]

Number of communication objects	Max. 22
Number of group addresses	255
Number of associations	255

The ETS database can be found on our website: www.theben.de/downloads

Recommended ETS version: ETS 5.7.4 or higher.

[2] V1.0, V1.1
[3] V2.0…

6.2 Overview of communication objects

6.2.1 Switch function

No.	Object name	Function	Length	R	W	C	T	DPT
11	*I2.1*	*Switching*	1 bit	-	W	C	T	1.001
		Priority	2 bit	-	-	C	T	2.001
		Send percentage value	1 byte	-	-	C	T	5.001
		Send value	1 byte	-	-	C	T	5.010
12	*I2.2*	*Switching*	1 bit	-	W	C	T	1.001
		Priority	2 bit	-	-	C	T	2.001
		Send percentage value	1 byte	-	-	C	T	5.001
		Send value	1 byte	-	-	C	T	5.010
15	*I2*	*Block = 1*	1 bit	-	W	C	-	1.001
		Block = 0	1 bit	-	W	C	-	1.003
21-25	Channel I3 (details: see channel I2)							

6.2.2 Push-button function

No.	Object name	Function	Length	R	W	C	T	DPT
1	*I1.1*	*Switching*	1 bit	-	W[4]	C	T	1.001
		Priority	2 bit	-	-	C	T	2.001
		Send percentage value	1 byte	-	-	C	T	5.001
		Send value	1 byte	-	-	C	T	5.010
2	*I1.2*	*Switching*	1 bit	-	W[5]	C	T	1.001
		Priority	2 bit	-	-	C	T	2.001
		Send percentage value	1 byte	-	-	C	T	5.001
		Send value	1 byte	-	-	C	T	5.010
5	*I1*	*Block = 1*	1 bit	-	W	C	-	1.001
		Block = 0	1 bit	-	W	C	-	1.003
11-35	Channels 2 to 4 (details: see channel 1)							

[4] Only for the *change over* function
[5] Only for the *change over* function

6.2.3 Dimming function

No.	Object name	Function	Length	R	W	C	T	DPT
1	*I1*	*Switching*	1 bit	-	W	C	T	1.001
2	*I1*	*Brighter/darker*	4 bit	-	-	C	T	3.007
		Brighter	4 bit	-	-	C	T	3.007
		Darker	4 bit	-	-	C	T	3.007
3	*I1.1*	*Switching*	1 bit	-	W	C	T	1.001
		Priority	2 bit	-	-	C	T	2.001
		Send percentage value	1 byte	-	-	C	T	5.001
		Send value	1 byte	-	-	C	T	5.010
5	*I1*	*Block = 1*	1 bit	-	W	C	-	1.001
		Block = 0	1 bit	-	W	C	-	1.003
11-35	Channels 2 to 4 (details: see channel 1)							

Blinds function

No.	Object name	Function	Length	R	W	C	T	DPT
1	*I1*	*Step/stop*	1 bit	-	-	C	T	1.010
2	*I1*	*UP/DOWN*	1 bit	-	W	C	T	1.008
		UP	1 bit	-	-	C	T	1.008
		DOWN	1 bit	-	-	C	T	1.008
3	*I1.1*	*Switching*	1 bit	-	W	C	T	1.001
		Priority	2 bit	-	-	C	T	2.001
		Send percentage value	1 byte	-	-	C	T	5.001
		Height % [6]	1 byte	-	-	C	T	5.001
		Send value	1 byte	-	-	C	T	5.010
4	*I1.2*	*Slat %* [7]	1 byte	-	-	C	T	5.001
5	*I1*	*Block = 1*	1 bit	-	W	C	-	1.001
		Block = 0	1 bit	-	W	C	-	1.003
11-35	Channels 2 to 4 (details: see channel 1)							

6.2.4 Temperature input

No.	Object name	Function	Length	R	W	C	T	DPT
51	*I5*	*Actual value for temperature*	2 byte	R	-	C	T	9.001

[6] Upon double-click with object type = *height % + slat %*
[7] Upon double-click with object type = *height % + slat %*

6.3 Description of communication objects

6.3.1 Switch function (I2, I3)

Object 11: I2.1
First output object of the channel (first telegram).
4 telegram formats can be set:
Switching ON/OFF, priority, send percentage value, send value.

Object 12: I2.2
Second output object of the channel (second telegram).
4 telegram formats can be set:
Switching ON/OFF, priority, send percentage value, send value.

Object 15: I2 block = 1, or block = 0
The channel is blocked via this object.
The acting direction of the block object and behaviour when the block is set or cancelled can be configured.

6.3.2 Push-button function

Object 1: I1.1
First output object of the channel (first telegram).
4 telegram formats can be set:
Switching ON/OFF, priority, send percentage value, send value.

Object 2: I1.2
Second output object of the channel (second telegram).
4 telegram formats can be set:
Switching ON/OFF, priority, send percentage value, send value.

Object 5: I1 block = 1, or block = 0
The channel is blocked via this object.
The acting direction of the block object and behaviour when the block is set or cancelled can be configured.

6.3.3 Dimming function

Object 1: I1.1 switching
Switches the dimmer on and off.

Object 2: I1.1 brighter, darker, brighter/darker
4-bit dimming commands.

Object 3: I1.1 – switching, priority, percentage value..
Output object for the additional function with double-click.
4 telegram formats can be set:
Switching ON/OFF, priority, send percentage value, send value.

Object 5: I1 block = 1, or block = 0
The channel is blocked via this object.
The acting direction of the block object and behaviour when the block is set or cancelled can be configured.

6.3.4 Blinds function

Object 1: I1 step/stop
Sends step/stop commands to the blind actuator.

Object 2: I1 UP/DOWN, UP, DOWN
Sends operating commands to the blind actuator.

Object 3: I1.1 – switching, priority, percentage value.., height % + slat %
Output object for the additional function with double-click.
5 telegram formats can be set:
Switching ON/OFF, priority, send percentage value, send value, height %.

Object 4: I1.1 – slat %
Slat telegram for positioning the blinds upon double-click (together with object 3, with *object type = height + slat*).

Object 5: I1 block = 1, or block = 0
The channel is blocked via this object.
The acting direction of the block object and behaviour when the block is set or cancelled can be configured.

Objects 11-35
Objects for channels I2-I4

6.3.5 Temperature input I5

Object 51: I5 – actual value for temperature
Sends the temperature measured at input I5 (remote sensor or floor temperature sensor).

6.4 Parameter pages overview

Parameter page	Description
General information	Definition of inputs as push-buttons or switches. Excess temperature alarm
I1..I4	Function of the input, debounce time, number of telegrams, block function, etc.
Switch object 1	Object type, transmission behaviour, etc. can be set for each object individually.
Switch object 2	
Button object 1	Object type, transmission behaviour, etc. can be set for each object individually.
Button object 2	
I5 temperature	Temperature calibration etc.
Dimming	Type of control.
Blinds	Type of control.
Double-click	Additional telegrams for *Dimming* and *Blinds*.

6.4.1 General parameter page

ⓘ First of all, the *Input configuration* parameter must be used to determine whether switches or push-buttons are connected.

ⓘ If channel I3 is used as a **switch**, temperature input I5 is not available (see *Input configuration* parameter, ***General*** parameter page).

Designation	Values	Description
Input configuration	*4 push-buttons I1, I2, I3, I4 + I5 temperature*	Only use push-buttons. Temperature input I5 is available.
	Push-button module + I5 temperature	Use with the Theben push-button module. Temperature input I5 is available.
	1 switch I2 / 2 push-buttons I3, I4 + I5 temperature	1 switch and 2 push-buttons. Temperature input I5 is available.
	2 push-buttons I1, I2 / 1 switch I3	2 push-buttons and 1 switch. Temperature input I5 is not available.
	2 switches I2, I3	2 switches. Temperature input I5 is not available.
Send excess temperature alarm[8] cyclically	*always cyclically*	The alarm info object always sends the current status cyclically and in the event of a change:
	only send cyclically in case of an error	Only sends in case of an error, cyclically and in the event of a change.
Cycle time	*every min* *every 2 min* *every 3 min* ... ***every 30 min*** *every 45 min* *every 60 min*	Cycle time for the alarm info object

ⓘ [8] When the temperature in the device increases too much due to overloading, the output is switched off and an alarm telegram is sent.
Normal operation cannot be resumed until the temperature has dropped by around 40 K.

6.4.2 Switch function

This function is available for I2 or I3 if the channel has been configured as a switch (see *Input configuration* parameter, ***General*** parameter page).

Designation	Values	Description
Function	***Switch..*** *Window contact..*	Desired use.
Debounce time	*30 ms,* ***50 ms,*** *80 ms* *100 ms, 200 ms,* *1 s, 5 s, 10 s*	In order to avoid disruptive switching due to bouncing of the contact connected to the input, the new status of the input is only accepted after a delay time. Larger values (≥ 1 s) can be used as a switch-on delay
Cycle time for sending cyclically	*every min* *every 2 min* *every 3 min* ... ***every 30 min*** *every 45 min* *every 60 min*	Common cycle time for all output objects of the channel.
How many telegrams are to be sent	***one telegram*** *two telegrams*	Each channel has 2 output objects and can thus send up to 2 different telegrams.
Activate block function	***no*** *yes*	No block function. Show parameters for the block function.
Block telegram	***Block with 1 (standard)*** *Block with 0*	0 = cancel block 1 = block 0 = block 1 = cancel block

6.4.2.1 Switch objects 1, 2

Each of the 2 objects can be configured individually on its own parameter page.

Designation	Values	Description	
Object type	***Switching (1 bit)*** *Priority (2 bit)* *Value 0-255* *Percentage value (1 byte)*	Telegram type for this object.	
Send if input = 1	*no* ***yes***	Send if voltage is present at the input?	
Telegram	*With object type = switching 1 bit*		
	ON *OFF* *INVERT*	Send switch-on command Send switch-off command Invert current state (ON-OFF-ON etc.)	
	With object type = priority 2 bit		
		Function	Value
	inactive	Priority inactive (no control)	0 (00_{bin})
	ON	Priority ON (control: enable, on)	3 (11_{bin})
	OFF	Priority OFF (control: disable, off)	2 (10_{bin})
	With object type = value 0-255		
	*0-**255***	Any value between 0 and 255 can be sent.	
	With object type = percentage value 1 byte		
	*0-**100%***	Any percentage value between 0 and 100% can be sent.	
Send if input = 0	*no* ***yes***	Send if no voltage is present at the input?	
Telegram	See above: Same object type as *Send if input = 1*		
Send cyclically	***no*** *yes, always* *only if input = 1* *only if input = 0*	When should cyclical sending take place? The cycle time is set on the main parameter page of the channel.	
Response after restoration of the mains supply	***none*** *update (immediately)* *update (after 5 s)* *update (after 10 s)* *update (after 15 s)*	Do not send. Send update telegram immediately or with delay.	
Response when the block is set	***Ignore block*** *no response* *as with input = 1* *as with input = 0*	The block function is ineffective with this telegram. Do not respond when the block is set. Respond as with rising edge. Respond as with falling edge.	
Response when cancelling the block	***no response*** *update*	Do not respond when the block is cancelled. Send update telegram.	

If a channel is blocked, no telegrams will be sent cyclically.

6.4.3 Window contact function

ⓘ This function is available for I2 or I3 if the channel has been configured as a switch (see *Input configuration* parameter, ***General*** parameter page).

Designation	Values	Description
Function	*Switch..* ***Window contact..***	Desired use.
Debounce time	*30 ms,* ***50 ms,*** *80 ms* *100 ms, 200 ms,* *1 s, 5 s, 10 s*	In order to avoid disruptive switching due to bouncing of the contact connected to the input, the new status of the input is only accepted after a delay time. Larger values (≥ 1 s) can be used as a switch-on delay
Cycle time for sending cyclically	*every min* *every 2 min* *every 3 min* *...* ***every 30 min*** *every 45 min* *every 60 min*	Common cycle time for all output objects of the channel.
Activate block function	***no***	No block function.
	yes	Show parameters for the block function.
Block telegram	***Block with 1 (standard)***	0 = cancel block 1 = block
	Block with 0	0 = block 1 = cancel block

6.4.3.1 Window contact

Designation	Values	Description
Telegram when contact closed	***ON*** OFF	Set switching status.
Telegram when contact open	*ON* OFF	Is set automatically.
Send cyclically	***no*** *yes, always* *only if input = 1* *only if input = 0*	When should cyclical sending take place? The cycle time is set on the main parameter page of the channel.
Response after restoration of the mains supply	***none*** *update (immediately)* *update (after 5 s)* *update (after 10 s)* *update (after 15 s)*	Do not send. Send update telegram immediately or with delay.
Response when the block is set	***Ignore block*** *no response* *as with input = 1* *as with input = 0*	The block function is ineffective with this telegram. Do not respond when the block is set. Respond as with rising edge. Respond as with falling edge.
Response when cancelling the block	***no response*** *update*	Do not respond when the block is cancelled. Send update telegram.

6.4.4 *Push-button function*

This function is available for I1-I4 if the channel has been configured as a push-button, or if the push-button module has been selected (see *Input configuration* parameter, ***General*** parameter page).

Designation	Values	Description
Function	*Push-button..* *Dimming..* *Blinds..*	Desired use.
Debounce time	*30 ms,* ***50 ms,*** *80 ms* *100 ms, 200 ms,* *1 s, 5 s, 10 s*	In order to avoid disruptive switching due to bouncing of the contact connected to the input, the new status of the input is only accepted after a delay time. Larger values (≥ 1s) can be used as a switch-on delay
Connected button	***NO contact*** *NC contact*	Set the type of connected contact.
Long button push starting at	***300 ms****, 400 ms* *500 ms, 600 ms* *700 ms, 800 ms* *900 ms, 1 s*	Serves to clearly differentiate between long and short button push. If the button is pressed for at least as long as the set time, then a long button push will be registered.
Time for double-click	***300 ms****, 400 ms* *500 ms, 600 ms* *700 ms, 800 ms* *900 ms, 1 s*	Serves to differentiate between a double-click and 2 single clicks. Time period in which the second click must begin, in order to recognise a double-click.
Cycle time for sending cyclically	*every min* *every 2 min* *every 3 min* *…* ***every 30 min*** *every 45 min* *every 60 min*	Common cycle time for all 2 output objects of the channel.
How many telegrams are to be sent	***one telegram*** *two telegrams*	Each channel has 2 output objects and can thus send up to 2 different telegrams.
Activate block function	***no*** *yes*	No block function. Show parameters for the block function.
Block telegram	***Block with 1 (standard)*** *Block with 0*	0 = cancel block 1 = block 0 = block 1 = cancel block

6.4.4.1 Button objects 1, 2

Designation	Values	Description
Object type	***Switching (1 bit)*** *Priority (2 bit)* *Value 0-255* *Percentage value (1 byte)*	Telegram type for this object.
Send after short operation	***do not send*** *Send telegram*	Respond to short button push?
Telegram	*With object type = switching 1 bit*	
	ON *OFF* *INVERT*	Send switch-on command Send switch-off command Invert current state (ON-OFF-ON etc.)
	With object type = priority 2 bit	
		Function: Value
	inactive	Priority inactive (no control): 0 (00_{bin})
	ON	Priority ON (control: enable, on): 3 (11_{bin})
	OFF	Priority OFF (control: disable, off): 2 (10_{bin})
	With object type = value 0-255	
	*0-**255***	Any value between 0 and 255 can be sent.
	With object type = percentage value 1 byte	
	*0-**100%***	Any percentage value between 0 and 100% can be sent.
Send after long operation	***do not send*** *Send telegram*	Respond to long button push?
Telegram	See above: Same object type as with short operation.	
Send after double-click	***do not send*** *Send telegram*	Respond to double-click?
Telegram	See above: Same object type as with short operation.	
Send cyclically	***no*** *yes*	The cycle time is set on the main parameter page of the channel.
Response after restoration of the mains supply	***none*** *As with short (immediately)* *As with short (after 5 s)* *As with short (after 10 s)* *As with short (after 15 s)* *As with long (immediately)* *As with long (after 5 s)* *As with long (after 10 s)* *As with long (after 15 s)* *As with double-click (immediately)* *As with double-click (after 5 s)* *As with double-click (after 10 s)* *As with double-click (after 15 s)*	Do not send. Send update telegram immediately or with delay. The value to be sent depends on the value configured for long button push, short button push or double-click.

Designation	Values	Description
Response when the block is set	***Ignore block***	The block function is ineffective with this telegram.
	no response	Do not respond when the block is set.
	as with short	Respond as with a short button push.
	as with long	Respond as with a long button push.
	as with double-click	Respond as with a double-click.
Response when cancelling the block	***no response***	Do not respond when the block is cancelled.
	as with short	Respond as with a short button push.
	as with long	Respond as with a long button push.
	as with double-click	Respond as with a double-click.

6.4.5 *Dimming function*

ⓘ This function is available for I1-I4 if the channel has been configured as a push-button, or if the push-button module has been selected (see *Input configuration* parameter, ***General*** parameter page).

Designation	Values	Description
Channel function	*Push-button..* ***Dimming..*** *Blinds..*	The input controls a dimming actuator,
Debounce time	*30 ms,* ***50 ms,*** *80 ms* *100 ms, 200 ms,* *1 s, 5 s, 10 s*	In order to avoid disruptive switching due to bouncing of the contact connected to the input, the new status of the input is only accepted after a delay time. Larger values (≥ 1s) can be used as a switch-on delay
Activate block function	***no*** *yes*	No block function. Show block function parameter page.
Block telegram	***Block with 1 (standard)*** *Block with 0*	0 = cancel block 1 = block 0 = block 1 = cancel block
Long button push starting at	***300 ms****, 400 ms* *500 ms, 600 ms* *700 ms, 800 ms* *900 ms, 1 s*	Serves to clearly differentiate between long and short button push. If the button is pressed for at least as long as the set time, then a long button push will be registered.
Double-click additional function	***no*** *yes*	No double-click function The ***double-click*** parameter page is shown.
Time for double-click	***300 ms****, 400 ms* *500 ms, 600 ms* *700 ms, 800 ms* *900 ms, 1 s*	Serves to differentiate between a double-click and 2 single clicks. Time period in which the second click must begin, in order to recognise a double-click.

6.4.5.1 Dimming parameter page

Designation	Values	Description
Response to long/short		The input distinguishes between a long and a short button push, and can thus carry out 2 functions.
	One button operation	The dimmer is operated with a single button. Short button push = ON/OFF Long button push = brighter/darker release = stop With the other variants, the dimmer is operated using 2 buttons (rocker).
	brighter / ON	Short button push = ON Long button push = brighter Release = stop
	brighter / change over	Short button push = ON / OFF Long button push = brighter Release = stop
	darker / OFF	Short button push = OFF Long button push = darker Release = stop
	darker / change over	Short button push = ON / OFF Long button push = darker Release = stop
Increment for dimming		With a long button push, the dimming value is:
	100%	Increased (or decreased) until the button is released.
	50% *25%* *12.5%* *6%* *3%* *1.5%*	Increased by the selected value (or reduced)
Response after restoration of the mains supply	***none***	Do not respond.
	ON	Switch on dimmer
	OFF	Switch off dimmer

Designation	Values	Description
	ON after 5 s *ON after 10 s* *ON after 15 s* *OFF after 5 s* *OFF after 10 s* *OFF after 15 s*	Switch on dimmer with delay Switch off dimmer with delay
Response when the block is set	***Ignore block***	The block function is ineffective with this telegram.
	no response	Do not respond when the block is set.
	ON	Switch on dimmer
	OFF	Switch off dimmer
Response when cancelling the block	***no response***	Do not respond when the block is cancelled.
	ON	Switch on dimmer
	OFF	Switch off dimmer

6.4.5.2 Double-click parameter page

Designation	Values	Description	
Object type	***Switching (1 bit)*** *Priority (2 bit)* *Value 0-255* *Percentage value (1 byte)*	Telegram type for this object.	
Telegram	*With object type = switching 1 bit*		
	ON *OFF* *INVERT*	Send switch-on command Send switch-off command Invert current state (ON-OFF-ON etc.)	
	With object type = priority 2 bit		
		Function	Value
	inactive	Priority inactive (no control)	0 (00_{bin})
	ON	Priority ON (control: enable, on)	3 (11_{bin})
	OFF	Priority OFF (control: disable, off)	2 (10_{bin})
	With object type = value 0-255		
	*0-**255***	Any value between 0 and 255 can be sent.	
	With *object type = percentage value 1 byte*		
	*0-**100%***	Any percentage value between 0 and 100% can be sent.	
Send cyclically	***do not send cyclically*** *every min* *every 2 min* *every 3 min* … *every 45 min* *every 60 min*	How often should it be resent?	
Response after restoration of the mains supply	***none*** *As with double-click (immediately)* *As with double-click (after 5 s)* *As with double-click (after 10 s)* *As with double-click (after 15 s)*	Do not send. Send update telegram immediately or with delay. The value to be sent depends on the value configured for double-click.	
Response when the block is set	***Ignore block*** *no response* *as with double-click*	The block function is ineffective with this telegram. Do not respond when the block is set. Respond as with a double-click.	
Response when cancelling the block	***no response*** *as with double-click*	Do not respond when the block is cancelled. Respond as with a double-click.	

6.4.6 Blinds function

This function is available for I1-I4 if the channel has been configured as a push-button, or if the push-button module has been selected (see *Input configuration* parameter, ***General*** parameter page).

Designation	Values	Description
Channel function	*Push-button..* *Dimming..* ***Blinds..***	The input controls a blind actuator.
Debounce time	*30 ms,* ***50 ms,*** *80 ms* *100 ms, 200 ms,* *1 s, 5 s, 10 s*	In order to avoid disruptive switching due to bouncing of the contact connected to the input, the new status of the input is only accepted after a delay time. Larger values (≥ 1 s) can be used as a switch-on delay.
Activate block function	***no*** *yes*	No block function. Show ***block function*** parameter page.
Block telegram	***Block with 1 (standard)*** *Block with 0*	0 = cancel block 1 = block 0 = block 1 = cancel block
Long button push starting at	***300 ms****, 400 ms* *500 ms, 600 ms* *700 ms, 800 ms* *900 ms, 1 s*	Serves to clearly differentiate between long and short button push. If the button is pressed for at least as long as the set time, then a long button push will be registered.
Double-click additional function	*no* ***yes***	No double-click function The ***double-click*** parameter page is shown.
Time for double-click	***300 ms****, 400 ms* *500 ms, 600 ms* *700 ms, 800 ms* *900 ms, 1 s*	Serves to differentiate between a double-click and 2 single clicks. Time period in which the second click must begin, in order to recognise a double-click.

6.4.6.1 Blinds parameter page

Designation	Values	Description
Operation		The input distinguishes between a long and a short button push, and can thus carry out 2 functions.
	One button operation	The blinds are operated with a single button. Short button push = step. Long button push = move.
	DOWN	Short button push = step. Long button push = lower.
	UP	Short button push = step. Long button push = raise.
Movement is stopped by	*Releasing the button* ***Short operation***	How is the stop command to be triggered?
Response after restoration of the mains supply	***none***	Do not respond.
	UP	Raise blinds
	DOWN	Lower blinds
	UP after 5 s *UP after 10 s* *UP after 15 s*	Raise blinds with delay
	DOWN after 5 s *DOWN after 10 s* *DOWN after 15 s*	Lower blinds with delay
Response when the block is set	***Ignore block***	The block function is ineffective with this telegram.
	no response	Do not respond when the block is set.
	UP	Raise blinds
	DOWN	Lower blinds
Response when cancelling the block	***no response***	Do not respond when the block is cancelled.
	ON	Raise blinds
	OFF	Lower blinds

6.4.6.2 Double-click parameter page

Designation	Values	Description	
Object type	***Switching (1 bit)*** *Priority (2 bit)* *Value 0-255* *Percentage value (1 byte)* *Height % + slat %*	Telegram type for this object.	
Telegram	*With object type = switching 1 bit*		
	ON *OFF* *INVERT*	Send switch-on command Send switch-off command Invert current state (ON-OFF-ON etc.)	
	With object type = priority 2 bit		
		Function	Value
	inactive	Priority inactive (no control)	0 (00_{bin})
	ON	Priority ON (control: enable, on)	3 (11_{bin})
	OFF	Priority OFF (control: disable, off)	2 (10_{bin})
	With object type = value 0-255		
	*0-**255***	Any value between 0 and 255 can be sent.	
	With object type = percentage value *1 byte*		
	*0-**100%***	Any percentage value between 0 and 100% can be sent.	
	With object type = height % + slat %		
	Height	Upon double-click 2 telegrams are sent simultaneously: Required blind height	
	Slat	Required slat position.	
Send cyclically	***do not send cyclically*** *every min* *every 2 min* *every 3 min* *...* *every 45 min* *every 60 min*	How often should it be resent?	
Response after restoration of the mains supply	***none*** *As with double-click (immediately)* *As with double-click (after 5 s)* *As with double-click (after 10 s)* *As with double-click (after 15 s)*	Do not send. Send update telegram immediately or with delay. The value to be sent depends on the value configured for double-click.	
Response when the block is set	***Ignore block***	The block function is ineffective with this telegram.	

Designation	Values	Description
	no response *as with double-click*	Do not respond when the block is set. Respond as with a double-click.
Response when cancelling the block	***no response*** *as with double-click*	Do not respond when the block is cancelled. Respond as with a double-click.

6.4.7 I5 temperature

Designation	Values	Description
Temperature calibration	*-64..+64* (x 0.1 K)	Correction value for temperature measurement if sent temperature deviates from the actual ambient temperature. **Example:** temperature = 20 °C sent temperature = 21 °C Correction value = 10 (i.e. 10 x 0.1°C)
Send temperature in the event of change of	*not due to a change*	Only send cyclically (if enabled)
	0.2 K *0.3 K* ***0.5 K*** *0.7 K* *1 K* *1.5 K* *2 K*	Send if the value has changed by the selected amount since the last transmission.
Send temperature cyclically	***do not send cyclically*** *every min,* *every 2 min* *every 3 min* ... *every 45 min* *every 60 min*	How often should the current measured value be resent?

Applicable sensor types:
temperature sensor UP (9070496)
remote sensor IP65 (9070459)
floor sensor (9070321)

If channel I3 is used as a **switch** (see *Input configuration* parameter), temperature input I5 is not available.
This applies to the following settings:
- 2 push buttons I1, I2 / 1 switch I3
- 2 switches I2, I3

7 Typical applications

These application examples are designed to aid planning and are not to be considered an exhaustive list. They can be extended and updated as required.
Standard or customer-defined parameter settings apply for the parameters not listed here.

For all applications requiring 4 push-buttons, 4 individual push-buttons as well as push-button module 9070806 can be used.

7.1 Switching light

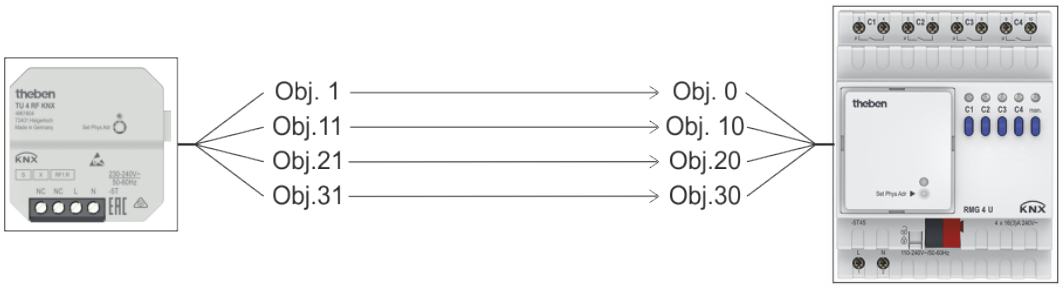
The wireless push-button interface is connected to a 4-way push-button and controls the switch actuator RMG 4 U.

All 4 channels are used.

7.1.1 Devices

- TU 4 RF (4961604)
- RMG 4 U (4930223)
- Option: Push-button module (9070806)

7.1.2 Overview



7.1.3 Objects and links

Links

No.	TU 4 RF Object name	No.	RMG 4 U Object name	Comment
1	*I1 switching*	0	*RMG 4 U channel C1*	TU 4 RF sends switch commands to RMG 4 U
11	*I2 switching*	10	*RMG 4 U channel C2*	
21	*I3 switching*	20	*RMG 4 U channel C3*	
31	*I4 switching*	30	*RMG 4 U channel C4*	

7.1.4 Important parameter settings

TU 4 RF

Parameter page	Parameters	Setting
General information	*Input configuration*	*Push-button module + I5 temperature* or: *4 push-buttons I1, I2, I3, I4 + I5 temperature*
I1 (2,3,4)	*Channel function*	*Push-button*
Switch object	*Object type*	*Switching*
	Send if input = 1	*yes*
	Telegram	*INVERT*
	Send if input = 0	*no*

RMG 4 U

Parameter page	Parameters	Setting
RMG 4 U channel C1... C4: Configuration options	*Channel function*	*Switching On/Off*
	Activation of function via	*Switch object*

7.2 2 lighting groups dimming (one button operation)

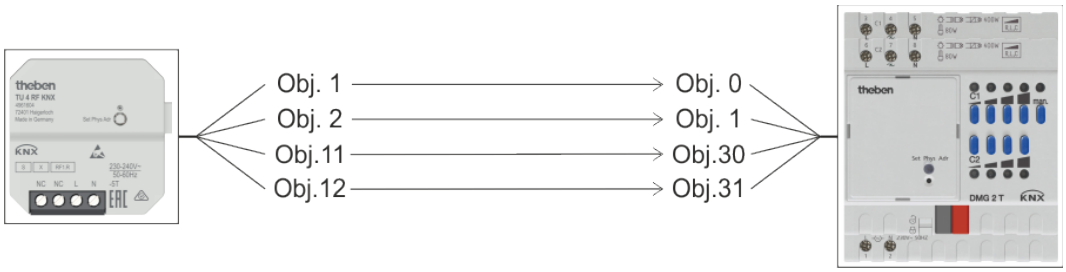
The wireless push-button interface TU 4 RF controls both channels of dimming actuator DMG 2 T.
One single push-button is used per lighting group (dimming actuator channel).

One short button push switches the light on or off.
With a long button push the brightness changes.
When pressed again, the dimming direction changes (brighter/darker).

7.2.1 Devices

- TU 4 RF (4961604)
- DMG 2 T (4930270)
- Option: Push-button module (9070806)

7.2.2 Overview



7.2.3 Objects and links

Table 15: Links

No.	TA 2 S Object name	No.	DMG 2 T Object name	Comment
1	*I1* *Switching*	0	*DMG 2 T channel 1* *Switching On/Off*	Long button push for brighter/darker dimming commands. Short button push for On/Off commands.
2	*I1* *Brighter/darker*	1	*DMG 2 T channel 1* *Brighter/darker*	
11	*I2* *Switching*	30	*DMG 2 T channel 2* *Switching On/Off*	
12	*I2* *Brighter/darker*	31	*DMG 2 T channel 2* *Brighter/darker*	

7.2.4 Important parameter settings

TU 4 RF

Parameter page	Parameters	Setting
General information	*Input configuration*	*Push-button module + I5 temperature* or: *4 push-buttons I1, I2, I3, I4 + I5 temperature*
I1 (2,3,4)	*Channel function*	*Dimming*
Dimming	*Response to long/short*	One button operation

DMG 2 T

Parameter page	Parameters	Setting
Dimming response	*Switching on/off with a 4-bit Telegram*	*no*

7.3 2 lighting groups dimming (2 rocker buttons)

The wireless push-button interface TU 4 RF controls both channels of dimming actuator DMG 2 T.
One rocker button is used per lighting group (dimming actuator channel).

One short button push switches the light on or off.
With a long button push the brightness changes.

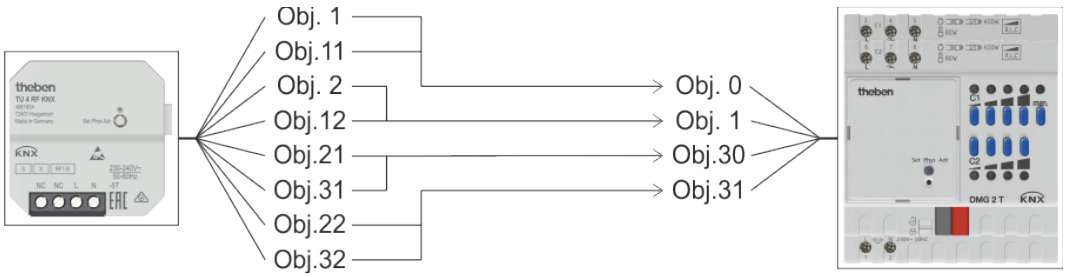
- top button → brighter
- bottom button → darker

> One rocker button, i.e. 2 inputs are used for each lighting group.
> The top and bottom buttons of a rocker button always send the telegrams to the dimming actuator via a common group address.

7.3.1 Devices

- TU 4 RF (4961604)
- DMG 2 T (4930270)

7.3.2 Overview



7.3.3 Objects and links

Links

No.	TU 4 RF Object name	No.	DMG 2 T Object name	Comment
1	*I1* *Switching*	0	*DMG 2 T* *Channel C1* *Switching* *On/Off*	First lighting group: Sends On/Off commands to the dimming actuator with a short button push,
11	*I2* *Switching*			
2	*I1* *Brighter*	1	*DMG 2 T* *Channel C1* *Brighter/darker*	Sends brighter/darker commands to the dimming actuator with a long button push.
12	*I2* *Darker*			
21	*I3* *Switching*	30	*DMG 2 T* *Channel C2* *Switching* *On/Off*	Second lighting group: Sends On/Off commands to the dimming actuator with a short button push,
31	*I4* *Switching*			
22	*I3* *Brighter*	31	*DMG 2 T* *Channel C2* *Brighter/darker*	Sends brighter/darker commands to the dimming actuator with a long button push.
32	*I4* *Darker*			

7.3.4 Important parameter settings

TU 4 RF

Parameter page	Parameters	Setting
General information	*Input configuration*	*4 push-buttons I1, I2, I3, I4 + I5 temperature*
I1 (2,3,4)	*Channel function*	*Dimming*
(I1) ***dimming***	*Response to long/short*	Brighter/On[9]
(I2) ***dimming***	*Response to long/short*	Darker/Off[10]
(I3) ***dimming***	*Response to long/short*	Brighter/On[11]
(I4) ***dimming***	*Response to long/short*	Darker/Off[12]

DMG 2 T

Parameter page	Parameters	Setting
Dimming response	*Switching on/off with a 4-bit Telegram*	*no*

[9] Brighter/change over is also possible.
[10] Darker/change over is also possible.
[11] Brighter/change over is also possible.
[12] Darker/change over is also possible.

7.4 Controlling 4 blinds or blind groups

The wireless push-button interface TU 4 RF controls blind actuator JMG 4 T.

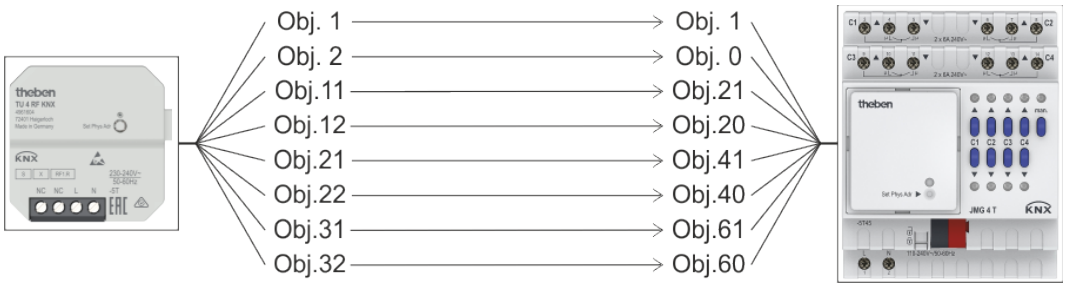
A push-button is connected to each input.

As an option, the push-button module can also be connected.
A long button push raises or lowers the blinds.
A short button push triggers the step/stop function.

7.4.1 Devices

- TU 4 RF (4961604)
- JMG 4 T (4930250)
- Option: Push-button module (9070806)

7.4.2 Overview



7.4.3 Objects and links

Links

No.	TU 4 RF Object name	No.	JMG 4 T Object name	Comment
1	*I1* *Step/stop*	1	*JMG 4 T C1* *Step/stop*	Long button push for Up/down operating commands. Short button push for Step/stop commands.
2	*I1* *Up/down*	0	*JMG 4 T C1* *Up/down*	
11	*I2* *Step/stop*	21	*JMG 4 T C2* *Step/stop*	
12	*Channel 2* *Up/down*	20	*JMG 4 T C2* *Up/down*	
21	*I3* *Step/stop*	41	*JMG 4 T C3* *Step/stop*	
22	*I3* *Up/down*	40	*JMG 4 T C3* *Up/down*	
31	*I4* *Step/stop*	61	*JMG 4 T C4* *Step/stop*	
32	*I4* *Up/down*	60	*JMG 4 T C4* *Up/down*	

7.4.4 Important parameter settings

TU 4 RF

Parameter page	Parameters	Setting
General information	*Input configuration*	*Push-button module + I5 temperature* or: *4 push-buttons I1, I2, I3, I4 + I5 temperature*
I1 (2,3,4)	*Channel function*	*Blinds*
Blinds	*Operation*	One button operation

JMG 4 T

Parameter page	Parameters	Setting
JMG 4 JMG 4 T	*Type of hanging*	*Blinds*

8 Appendix

8.1 Conversion of percentages to decimal and hexadecimal values

%	Dec.	Hex.	%	Dec.	Hex.	%	Dec.	Hex.
0%	0	$00	34%	87	$56	68%	173	$AD
1%	3	$02	35%	89	$59	69%	176	$AF
2%	5	$05	36%	92	$5B	70%	179	$B2
3%	8	$07	37%	94	$5E	71%	181	$B5
4%	10	$0A	38%	97	$60	72%	184	$B7
5%	13	$0C	39%	99	$63	73%	186	$BA
6%	15	$0F	40%	102	$66	74%	189	$BC
7%	18	$11	41%	105	$68	75%	191	$BF
8%	20	$14	42%	107	$6B	76%	194	$C1
9%	23	$16	43%	110	$6D	77%	196	$C4
10%	26	$19	44%	112	$70	78%	199	$C6
11%	28	$1C	45%	115	$72	79%	201	$C9
12%	31	$1E	46%	117	$75	80%	204	$CC
13%	33	$21	47%	120	$77	81%	207	$CE
14%	36	$23	48%	122	$7A	82%	209	$D1
15%	38	$26	49%	125	$7C	83%	212	$D3
16%	41	$28	50%	128	$7F	84%	214	$D6
17%	43	$2B	51%	130	$82	85%	217	$D8
18%	46	$2D	52%	133	$84	86%	219	$DB
19%	48	$30	53%	135	$87	87%	222	$DD
20%	51	$33	54%	138	$89	88%	224	$E0
21%	54	$35	55%	140	$8C	89%	227	$E2
22%	56	$38	56%	143	$8E	90%	230	$E5
23%	59	$3A	57%	145	$91	91%	232	$E8
24%	61	$3D	58%	148	$93	92%	235	$EA
25%	64	$3F	59%	150	$96	93%	237	$ED
26%	66	$42	60%	153	$99	94%	240	$EF
27%	69	$44	61%	156	$9B	95%	242	$F2
28%	71	$47	62%	158	$9E	96%	245	$F4
29%	74	$49	63%	161	$A0	97%	247	$F7
30%	77	$4C	64%	163	$A3	98%	250	$F9
31%	79	$4F	65%	166	$A5	99%	252	$FC
32%	82	$51	66%	168	$A8	100%	255	$FF
33%	84	$54	67%	171	$AA			