

KNX manual
2/4-way wireless push button RF
KNX
PJ 1 RF KNX



PJ 1 RF KNX 4941655

Contents

1	✈ IMPORTANT WARNINGS!	3
2	Features	4
2.1	Wiring diagram	4
3	Operation	5
3.1	Button assignment for 2-way push button	6
3.2	Button assignment for 4-way push button	6
3.3	Activating programming mode	7
3.4	Factory settings / Master reset	7
4	Technical data	8
5	General information about KNX Secure	9
5.1	Start-up with "KNX Data Secure"	10
5.2	Start-up without "KNX Data Secure"	10
6	The "PJ 1 RF KNX" application program	11
6.1	Selection in the product database	11
6.2	Overview of communication objects	12
6.3	Description of communication objects	15
6.4	Parameter pages overview	21
6.5	General parameter page	22
6.6	Parameter page F1..F4 button [position]	24
6.7	Parameters for the blinds actuator channel C1	36
7	Typical applications	54
7.1	Control blinds directly, switch light receive safety	54
7.2	Dimming two lighting groups (rocker button) and simple shading	57
8	Appendix	60
8.1	General information about KNX RF	60
8.2	Scenes	61
8.3	Conversion of percentages to decimal and hexadecimal values	63

1 ⚡ IMPORTANT WARNINGS!



Danger of death through electric shock or fire!

- Installation should only be carried out by a qualified electrician!
- Before installation/dismounting, disconnect the mains voltage!
- Protect against accidental contact during installation.

2 Features

General:

- 2/4-way wireless push button with blinds actuator
- For installation in flush-mounted boxes
- Programming mode can be activated via button combination.

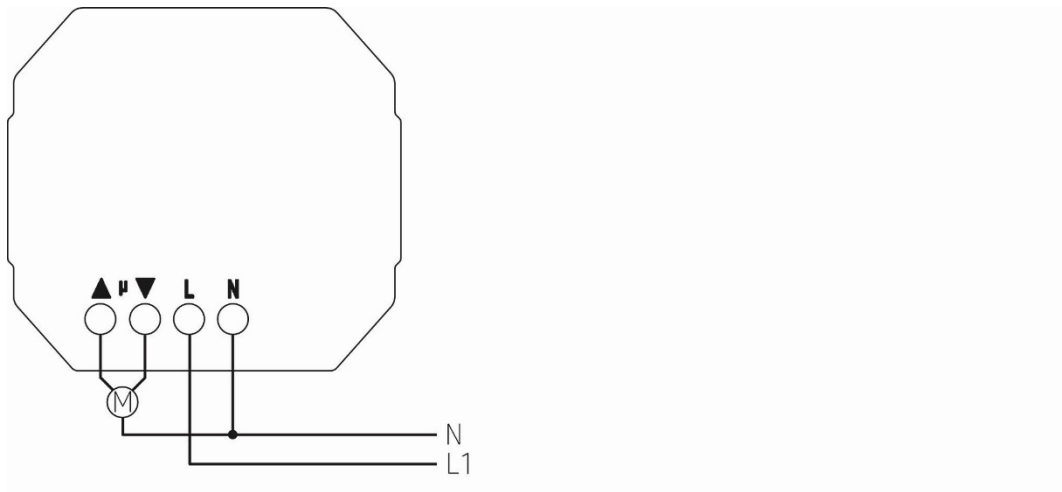
Wireless push button:

- Can be used as a 2- or 4-way push button
- Optionally for direct control of the blinds actuator as well as dimming and blinds control with one and two-button operation possible
- Free allocation of functions: switching, dimming, blinds, priority, value, percentage value

Blinds actuator:

- Participation in central commands, such as up/down and save/call up scene.
- Configurable features: e.g. type of motor, response to power failure and restoration
- 8 individual positions can be preset and called up, for example via scenes.
- 5 safety objects: 3x wind, rain and frost.

2.1 Wiring diagram



3 Operation

The wireless push button with blinds actuator PJ 1 RF KNX has four buttons (F1-F4) and a 1-channel blinds actuator.

 In the factory setting, the actuator can be operated directly with the F1/F2 or F3/F4 button.

Depending on the setting of the F1 button in the ETS, the actuator can be operated in 2 different ways:

Control via bus telegrams.

This is the classic configuration for a KNX actuator.

The actuator is controlled exclusively via bus telegrams.

 In this case, the buttons F1-F4 have no internal connection to the actuator.

Direct control (setting in the ETS)

The actuator channel can be operated with the F1 button.

 The F1 button is then used exclusively for this function and is no longer connected to the bus in this configuration, i.e. there are no communication objects.

The actuator itself retains all of its communication objects in this configuration

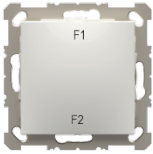
Either a single or double rocker can be fitted.

Depending on the rocker selection, the application must be configured accordingly:

- Single rocker = 2-way push button
- Double rocker = 4-way push button

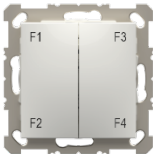
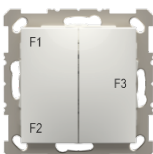
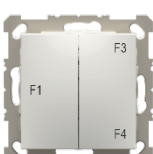
3.1 Button assignment for 2-way push button

When using a 2-way push button, either a single push button (F1/F2) or rocker (F1) can be configured.

Type of operation	Button assignment
Single push button (F1/F2)	
Rocker (F1)	

3.2 Button assignment for 4-way push button

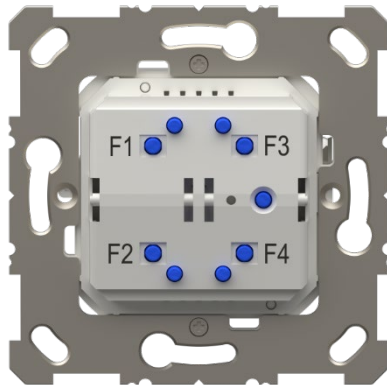
When using a 4-way push button, a distinction is made between left (F1/F2) and right (F3/F4). There is also a choice between single push button and rocker. This provides 4 configuration options.

Type of operation left	Type of operation right	Button assignment
Single push button (F1/F2)	Single push button (F3/F4)	
Rocker (F1)	Rocker (F3)	
Single push button (F1/F2)	Rocker (F3)	
Rocker (F1)	Single push button (F3/F4)	

3.3 Activating programming mode

Programming mode is activated by pressing any function button (F1-F4) six times, regardless of the application's charge status.

After successful activation, this is indicated by a red LED on the front of the device and also by a status LED on the back of the device.



Programming mode will be ended immediately by pressing any function button. After 4 minutes of inactivity, programming mode will automatically be terminated.

i The 6x click must occur within 3 seconds

i The physical address LED on the device front is only visible when the rocker switch is removed

3.4 Factory settings / Master reset

To reset the device to the factory settings using a master reset, the following button combination must be used:

- Device must be in programming mode (6x click of any function button)
- Press any button for 10 -15 s
- Release the button briefly (< 1 s)
- Press the same button for 10 - 15 s
- The successful master reset is signalled by the physical address LED flashing quickly 3 times after the button is released

i The FDSK remains valid, the physical address is set to 15.15.255

i Direct switching of the actuator is again possible via all 4 buttons

4 Technical data

Operating voltage	230 – 240 V AC
Frequency	50 – 60 Hz
Standby output	< 0.4 W
type of contact	NO contact
switching capacity	5 A (at 240 V AC, $\cos \varphi = 1$)
minimum load	230 V / 10mA
Protection rating	IP 20
Protection class	II subject to designated installation
Operating temperature	-5 °C...+45 °C
Rated impulse voltage	4 kV
Pollution degree	2
Max. cable cross-section	Solid: 0.5 mm ² (Ø 0.8 mm) to 4 mm ² Stranded wire with crimp terminal: 0.5 mm ² to 2.5 mm ²
Torque screw terminal	0.5 Nm
Type of installation	flush-mounted
Installation depth	25.6 mm
Switching different phases	no
Suitable for SELV	no
Radio standard	KNX RF1.R
Radio frequency	868.3 MHz
Transmission power	< 10 mW
Free field range	Up to 100 m
Coding	FSK (Frequency Shift Keying)
Transceiver type	bidirectional



Generally, it is not allowed to exceed the current and voltage ratings stated on the device!

5 General information about KNX Secure

From ETS5 version 5.5 (ETS version 5.7.7 or higher is recommended for the PJ 1 RF KNX), secure communication in KNX systems is supported. 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 marked. 

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 'Deactivated'.

6 The "PJ 1 RF KNX" application program

6.1 Selection in the product database

Manufacturer	Theben AG
Product family	Push button
Product type	PJ 1 RF KNX
Program names	PJ 1 RF KNX

Number of communication objects	52
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 5.7.7 or higher.

6.2 Overview of communication objects

6.2.1 blinds actuator

No.	Object name	Function	Length	R	W	C	T	DPT
1	C1 – Blinds – Receive	Up/down	1 bit	-	W	C	-	1.008
2	C1 – Blinds – Receive	Step/stop	1 bit	-	W	C	-	1.007
3	C1 – Blinds – Receive	% height	1 byte	-	W	C	-	5.001
4	C1 – Blinds – Receive	% slat	1 byte	-	W	C	-	5.001
5	C1 – Blinds – Receive	Block comfort/automatic	1 bit	-	W	C	-	1.001
6	C1 – Blinds – Receive	1 = block	1 bit	-	W	C	-	1.001
	C1 – Blinds – Receive	1 = enable	1 bit	-	W	C	-	1.003
7	C1 – Blinds – Receive	Call up/save scenes	1 byte	-	W	C	-	18.001
8	C1 – Blinds – Receive	Enable scenes = 1	1 bit	-	W	C	-	1.003
	C1 – Blinds – Receive	Block scenes = 1	1 bit	-	W	C	-	1.001
9	C1 – Blinds – Receive	Priority on safety	2 bit	-	W	C	-	2.001
10	C1 – Blinds – Receive	Position A	1 bit	-	W	C	-	1.003
11	C1 – Blinds – Receive	Position B	1 bit	-	W	C	-	1.003
12	C1 – Blinds – Receive	Position C	1 bit	-	W	C	-	1.003
14	C1 – Blinds – Receive	Presence	1 bit	-	W	C	-	1.001
15	C1 – Blinds – Receive	Heating support	1 bit	-	W	C	-	1.001
16	C1 – Blinds – Receive	Cooling support	1 bit	-	W	C	-	1.001
17	C1 – Blinds – Receive	room temperature	2 bytes	-	W	C	-	9.001
18	C1 – Blinds – Send	Height feedback 1 bit	1 bit	R	-	C	T	1.009
19	C1 – Blinds – Send	Height feedback %	1 byte	R	-	C	T	5.001
20	C1 – Blinds – Send	Slat feedback %	1 byte	R	-	C	T	5.001
21	C1 – Blinds – Send	Feedback comfort/automatic	1 bit	R	-	C	T	1.011
22	C1 – Blinds – Receive	Start-up mode	1 bit	-	W	C	-	1.001
23	C1 – Blinds – Send	Send runtime	2 bytes	R	-	C	T	7.005
		Receive runtime	2 bytes	-	W	C	-	7.005
24	C1 – Blinds – Receive	Window contact 1	1 bit	-	W	C	-	1.009
25	C1 – Blinds – Receive	Window contact 2	1 bit	-	W	C	-	1.009
26	C1 – Blinds – Receive	Block ventilation function = 1	1 bit	-	W	C	-	1.001
	C1 – Blinds – Receive	Enable ventilation function = 1	1 bit	-	W	C	-	1.001
40	Alarm - send	Excess temperature	1 bit	R	-	C	T	1.005

6.2.2 Wireless push button: Switching function, priority, percentage value, value

No.	Object name	Function	Length	R	W	C	T	DPT
41	<i>F1.1 – Send/Receive</i>	<i>Switching</i>	1 bit	R	W	C	T	1.001
		<i>Priority</i>	2 bit	R	-	C	T	2.001
		<i>Percentage value</i>	1 byte	R	-	C	T	5.001
		<i>Value</i>	1 byte	R	-	C	T	5.010
42	<i>F1.2 – Send/Receive</i>	<i>Switching</i>	1 bit	R	W	C	T	1.001
		<i>Priority</i>	2 bit	R	-	C	T	2.001
		<i>Percentage value</i>	1 byte	R	-	C	T	5.001
		<i>Value</i>	1 byte	R	-	C	T	5.010
45	<i>F1 - Receive</i>	<i>Block = 1</i>	1 bit	-	W	C	-	1.001
		<i>Block = 0</i>	1 bit	-	W	C	-	1.003
51-75	Channels 2 to 4 (details: see channel 1)							

6.2.3 Wireless push button: Dimming function

No.	Object name	Function	Length	R	W	C	T	DPT
41	<i>F1 – Send/Receive</i>	<i>Switching</i>	1 bit	R	W	C	T	1.001
42	<i>F1 - Send</i>	<i>Brighter/darker</i>	4 bit	R	-	C	T	3.007
		<i>Brighter</i>	4 bit	R	-	C	T	3.007
		<i>Darker</i>	4 bit	R	-	C	T	3.007
43	<i>F1.1 – Send/Receive</i>	<i>Switching</i>	1 bit	R	W	C	T	1.001
		<i>Priority</i>	2 bit	R	-	C	T	2.001
		<i>Percentage value</i>	1 byte	R	-	C	T	5.001
		<i>Value</i>	1 byte	R	-	C	T	5.010
45	<i>F1 - Receive</i>	<i>Block = 1</i>	1 bit	-	W	C	-	1.001
		<i>Block = 0</i>	1 bit	-	W	C	-	1.003
51-75	Channels 2 to 4 (details: see channel 1)							

6.2.4 Radio push button: Blinds function

No.	Object name	Function	Length	R	W	C	T	DPT
41	F1 - Send	Step/stop	1 bit	R	-	C	T	1.010
42	F1 - Send/Receive	Up/down	1 bit	R	W	C	T	1.008
		Up	1 bit	R	W	C	T	1.008
		Down	1 bit	R	W	C	T	1.008
43	F1.1 - Send/Receive	Switching	1 bit	R	W	C	T	1.001
		Priority	2 bit	R	-	C	T	2.001
		Send percentage value	1 byte	R	-	C	T	5.001
		Height % ¹	1 byte	R	-	C	T	5.001
		Send value	1 byte	R	-	C	T	5.010
44	F1.2 - Send	Slat % ¹	1 byte	R	-	C	T	5.001
45	F1 - Receive	Block = 1	1 bit	-	W	C	-	1.001
		Block = 0	1 bit	-	W	C	-	1.003
51-75	Channels 2 to 4 (details: see channel 1)							

6.2.4 General objects

No.	Object name	Function	Length	R	W	C	T	DPT
104	Central scenes - Receive	Call up/save	1 byte	-	W	C	-	18.001
105	Central safety - Receive	Wind 1	1 bit	-	W	C	-	1.001
106	Central safety - Receive	Wind 2	1 bit	-	W	C	-	1.001
107	Central safety - Receive	Wind 3	1 bit	-	W	C	-	1.001
108	Central - Receive	Up/down	1 bit	-	W	C	-	1.008
109	Central safety - Receive	Rain	1 bit	-	W	C	-	1.001
110	Central safety - Receive	Frost	1 bit	-	W	C	-	1.001

¹ Upon double-click with object type = Height % + slat %

6.3 Description of communication objects

6.3.1 Objects for the blinds actuator

Object 1: UP/DOWN

Raise the roller blinds/blinds with "0" and lower with "1".

Object 2: Step/Stop

If the drive moves, it will be stopped when a Step/Stop telegram is received.

If the drive is stationary at this moment, then a short slat turn (step) is performed on blinds.

With the other drive types, the current position is adjusted up or down depending on the specified step direction.

The direction of the step is determined from whether a 0 or 1 is sent to the object.

No step is performed if the configured number of steps for a complete turn has already been reached.

Object 3: % Height

This raises/lowers the roller blinds/blinds to a certain height.

The setpoint value is expressed in%

0% ... 3% = upper end position

100% = lower end position

This function can be blocked by the *comfort automatic* object (see below)

Object 4: % Slat

Specification of a particular slat turn in %

This function can be blocked by the *comfort automatic* object (see below)

Object 5: Block Comfort/Automatic

A 1 on this object locks the functions Drive Height and Drive Slat.

This function is used to prevent the blinds from being adjusted due to external influences, and to thus maintain a preferred slat position of the blinds.

The Up/Down function is maintained (object *Up/Down*).

Object 6: Block/enable

Blocks the channel function.

Response to the block being set and cancelled can be configured if the block function has been activated (*Configuration options* parameter page).

Object 7: Call up/save scenes

Only available if the scene function has been activated (*Configuration options* parameter page).

This object can be used to save and subsequently call up scenes.

Saving stores the channel status. It does not matter how this status is produced (whether via switch commands, central objects or the buttons on the device). The saved status is restored when it is called up.

All scene numbers from 1 to 63 are supported.

Each channel can participate in up to 8 scenes.

The scene that is currently active can be ended with the value 63 (= scene 64).

See appendix: [Scenes](#)

Object 8: Block scenes / enable scenes

Blocks the scene function with a 1 or a 0 depending on the configuration.
As long as it is blocked, scenes cannot be saved or called up.

Object 9: Priority on safety

Priority on safety will be used when the roller blinds or sun protection devices must remain stationary in an end position for a certain time, e.g. for window cleaning.

This operating mode has the highest priority level.

While priority on safety is active, all operating commands (*UP/DOWN*, *% Height*, *Step/Stop*, *Slat %*), the other safety objects and the manual operation will be ignored.

object value	Priority on safety
0	not active
1	
2	UP
3	DOWN

Priority on safety is ended with a 1 or a 0.

Object 10: Position A

With a 1, the drive is brought to the predefined position A (preset or end position).
See parameter page **Positions via 1 bit**.

Object 11: Position B

With a 1, the drive is brought to the predefined position B (preset or end position).
See parameter page **Positions via 1 bit**.

Object 12: Position C

With a 1, the drive is brought to the predefined position C (preset or end position).
See parameter page **Positions via 1 bit**.

Object 13 n.a.

Object 14: Presence

Presence status for the heating or cooling support.
See parameter page **Sun protection**.

Object 15: Heating support

Activate heating support, see parameter page **Sun protection**

Object 16: Cooling support

Activate cooling support, see parameter page **Sun protection**

Object 17: Room temperature

Receives the current room temperature in °C for the **sun protection** function

Object 18: Height feedback 1 bit

Current drive height feedback in as DPT1.009.

Object 19: Height feedback %

Current drive height feedback in %.

Object 20: Slat feedback %

Current slat position feedback in %.

Object 21: Feedback comfort/automatic

0 = Automatic operation: drive position is controlled e.g. by the weather station.

1 = Comfort active: The channel is currently in comfort mode, telegrams on the objects height % and slat % are not executed.

Object 22: Start-up mode

0 = Normal mode (no start-up)

1 = Activate start-up mode

Object 23: Send runtime, receive runtime

The function of the object is dependent on the selected *Drive runtime setting*:

Setting the drive runtime	Function	Use
<i>Teach-in in start-up mode (send)</i>	Only in start-up mode: Sends the runtime that is determined for the channel to all channels that are also in start-up mode.	With the first Down command after selection of the start-up mode, the teaching-in of the runtime begins by measuring the time to the next Stop command. As soon as the Stop command takes place, the measured runtime will be saved, the value sent and start-up ended.
<i>via object in start-up mode (receive)</i>	Only in start-up mode: Receives the determined runtime of the sending channel	Runtime will be received, saved, and start-up ended.
<i>via ETS</i>	not used.	

Object 24: Window contact 1

Input object for the first or only window contact of the ventilation function.

Object 25: Window contact 2

Input object for the second window contact of the ventilation function.

This is required to distinguish between window open and window tilted.

Object 26: Block ventilation function

Blocks the ventilation function with a 1 or a 0 depending on the configuration.

As long the block is in place, the window contacts are not analysed and therefore there is no movement to any ventilation positions.

6.3.2 Objects for the radio push button

6.3.2.1 Switching function, priority, send percentage value, send value

Object 41: F1.1 - send/receive switching, priority, percentage value...

First output object of the channel (first telegram).

Telegram format: Send/receive switching, send priority, send percentage value, send value.

Object 42: F1.2 - send/receive switching, priority, percentage value...

Second output object of the channel (second telegram, optional).

Telegram format: Send/receive switching, send priority, send percentage value, send value.

Objects 43-44

Not used.

Object 45: F1 - receive block = 1, or block = 0

The channel is blocked via this object.

The direction of action of the block object can be configured.

Objects 51-75

Objects for channels 2-4

6.3.2.2 Dimming function

Object 41: F1 - send/receive switching

Switches the dimming actuator on and off.

Object 42: F1 - send brighter, darker, brighter/darker

Sends 4-bit dimming commands to the dimming actuator.

Object 43: F1.1 - send/receive switching, priority, percentage value...

Output object for the additional function on double-click.

4 telegram formats can be set:

- Send/receive switching
- Send priority
- Send percentage value
- Send value 0-255

Object 45: F1 - receive block = 1, or block = 0

The channel is blocked via this object.

The direction of action of the block object can be configured.

Objects 51-75

Objects for channels 2-4

6.3.2.3 Blinds function

Object 41: F1 - send step/stop

Sends step/stop commands to the blinds actuator.

Object 42: F1 - send/receive up, down, up/down

Sends operating commands to the blinds actuator.

Object 43: F1.1 - send/receive switching, hight % + slat %, priority...

Output object for the additional function on double-click.

5 telegram formats can be set:

- Send/receive switching
- Send priority, send percentage value
- Send value 0-255
- Send height %.

Object 44: F1.2 - send slat %

Slat telegram for positioning the blinds upon double-click (together with object 43, with *object type = height + slat*).

Object 45: F1 - receive block = 1, or block = 0

The channel is blocked via this object.

The direction of action of the block object can be configured.

Objects 51-75

Objects for channels 2-4

6.3.3 General objects

Object 40: Alarm – excess temperature

Reports when the device has reached too high a temperature, e.g. because the maximum current has been exceeded, and has switched the output off.

Object 104: Call up/save central scenes

Central object for using scenes.

This object can be used to save and subsequently call up scenes.

See appendix: [Scenes](#)

Objects 105, 106, 107: Central safety Wind 1, Wind 2, Wind 3

The safety objects allow a specific response of the drives to a particular situation with a high priority. These objects can, for example, be linked with 3 differently placed wind sensors (weather stations).

Example: A safety object is connected to a wind sensor, a drive to which a textile sun protection device is connected is configured to react to this safety object.

As long as 0 is applied, the normal operating condition applies; in the event of a storm, the wind sensor sends a 1 to the safety object and the sun protection is immediately moved to the configured safety position.



A safety object must only be actuated by **one** device, as otherwise conflicting commands could cancel each other out.



With a request for safety objects e.g. via the ETS function "Read value": If the *Safety On* status arises through cyclical monitoring, the object value remains at 0.



The safety statuses must be reinitialized after download.

Object 108: Central Up/Down

This object can be used to centrally control the drives.

For example, all of the roller blinds on one facade can be raised or lowered at the same time with one push button

0 = raise, 1 = lower

Object 109: Central safety rain

This object can be used to move all drives which are configured for it into a defined position when there is a central rain alarm.

Object 110: Central safety frost

This object can be used to move all drives which are configured for it into a defined position when there is a central frost alarm.

6.4 Parameter pages overview

6.4.1 Wireless push button:

Parameter page	Description
<i>General</i>	Basic settings such as 2-way or 4-way push button and single push button or rocker, direction of action of the block telegram
<i>F1..F4 button [position]²</i>	Description, function of the input, number of telegrams.
<i>F1 Control directly</i>	Setting to stop the movement
<i>F1..F4 Object 1</i>	Object type [<i>switching, priority, value, percentage value</i>] as well as transmission behaviour and block function can be set individually for each channel.
<i>F1..F4 Object 2³</i>	
<i>F1..F4 Dimming</i>	Type of control and block function
<i>F1..F4 Blinds</i>	Type of control, stop behaviour and block function
<i>F1..F4 Double-click</i>	Additional telegrams for <i>Dimming</i> and <i>Blinds</i> . ⁴

6.4.1 Blinds actuator C1

Parameter page	Description
Blinds actuator channel C1	
<i>Configuration options</i>	Characteristics of channel and activation of additional functions (scenes, sun protection, block, etc.).
<i>Drive settings</i>	Direction of movement, runtimes, etc.
<i>sun protection</i>	Heating and cooling support settings.
<i>Positions via 1 bit</i>	Behaviour when calling up or leaving the 1-bit positions
<i>Ventilation</i>	Automatic positioning of blinds or roller blinds when opening the window.
<i>Safety wind / rain / frost</i>	Priority and participation in the safety objects for wind, rain and frost.
<i>Presets</i>	8 preset heights and slat positions that can be called up via scenes or 1-bit objects.
<i>Restoration of power</i>	Response after download or mains restoration
<i>Block function</i>	Type of block telegram and response to blocking.
<i>Scenes</i>	Selection of scene numbers relevant to the channel.

² [Position] describes the position of the push button, e.g. top left button

³ Optionally adjustable

⁴ With direct control F1 only height and slat in % without communication object

6.5 General parameter page

Designation	Values	Description
<i>Use</i>	<i>2-way push button</i> <i>4-way push button</i>	A single rocker must be mounted on the device There are 2 button points available A double rocker must be mounted on the device There are 4 button points available
<i>Operation left</i> (only available if 4-way push button is selected, for 2-way push button left and right are combined)	<i>Single push button</i> <i>Rocker</i>	The two push buttons at the top left and bottom left are used as single push button. Different functions can be assigned via F1 and F2. The rocker function combines the two push buttons on the top left and bottom left into one rocker. This combines the functions F1 and F2 into one function.
<i>Operation right</i> (only available if 4-way push button is selected)	<i>Single push button</i> <i>Rocker</i>	The two push buttons at the top left and bottom left are used as single push button. Different functions can be assigned via F3 and F4. The rocker function combines the two push buttons on the top left and bottom left into one rocker. This combines the functions F3 and F4 into one function.
<i>Control actuator directly</i>	<i>No</i> <i>Yes</i>	The F1 button is used purely as a momentary-contact sensor, there is no internal connection to the blinds actuator. The F1 button is used exclusively as an input for blinds actuator channel C1. F1 is connected to C1 internally and has no communication objects
<i>Time for double-click</i>	<i>300 ms, 400 ms</i> <i>500 ms, 600 ms</i> <i>700 ms, 800 ms</i> <i>900 ms, 1 s</i>	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.
<i>Long button push starting at</i>	<i>300 ms, 400 ms</i> <i>500 ms, 600 ms</i> <i>700 ms, 800 ms</i> <i>900 ms, 1 s</i>	Serves to 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.

Designation	Values	Description
Block telegram (direction of action applies to all channels)	Block with 1 (standard) Block with 0	0 = cancel block 1 = block 0 = block 1 = cancel block
Excess temperature alarm	Always Only in the event of malfunction	The status of the object is always sent with the selected cycle time, regardless of the status The status of the object is only sent in the event of an alarm and with the selected cycle time
Cycle time	every min every 2 min every 3 min ... every 30 min every 45 min every 60 min	Cycle time for the alarm excess temperature object

i First of all, the *Use* parameter should be used to define whether the device is to be used as a 2-way or a 4-way push button.

6.6 Parameter page F1..F4 button [position]⁵

Designation	Values	Description
Button F1		
<i>Description</i>	<i>Text field</i>	User-defined text for use as a function name.
<i>Function</i>	Switching (1 bit) <i>Dimming</i> <i>Blinds</i> <i>Priority (2 bit)</i> <i>Value 0-255 (1 byte)</i> <i>Percentage value (1 byte)</i>	Further parameter pages appear depending on the selected function
<i>Double-click additional function⁶</i>	no	No double-click function
	yes	The Double-click parameter page is displayed.
<i>How many telegrams are to be sent⁷</i>	One telegram <i>Two telegrams</i>	Each function has 2 output objects and can thus send up to 2 different telegrams.
The F2-F4 button, see the F1 button		

i The content of parameter pages F1 to F4 is identical, unless *Control actuator directly* is used, in which case F1 is internally connected to C1

6.6.1 Control directly parameter page

This parameter page appears if the *Control actuator directly* parameter has been selected on the *General* page.

Designation	Values	Description
<i>Response after short operation</i>	<i>No response</i> Switching	Determines how to respond to a short button push
<i>switching status</i>	Change over <i>On</i> <i>Off</i>	Invert current state (ON-OFF-ON etc.) Blinds actuator C1 = On Blinds actuator C1 = Off
<i>Response after long operation</i>	No response <i>Switching</i>	Determines how to respond to a short button push
<i>switching status</i>	See above: Same object type as with short operation.	
<i>Response after double-click</i>	No response <i>Switching</i>	Determines how to respond to a short button push
<i>switching status</i>	See above: Same object type as with short operation.	

⁵ (Position) describes the position of the push button, e.g. top left button

⁶ Only available with the dimming and blinds function

⁷ Only available with the switching, priority, value and percentage value functions

6.6.2 Parameter page objects 1, 2 (operation = single push button)

Each of the two objects can be configured individually on its own parameter page, whereby the object type of object 1 is specified via the function of the button.

Designation	Values	Description
Object type (for object 2 if used)	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	
	Change over	Invert current state (ON-OFF-ON etc.)
	On	Send switch-on command
	Off	Send switch-off command
	With object type = priority 2 bit	
	No priority	Function: Priority not active (no control) Value: 0 (00 _{bin})
	Priority On	Function: Priority ON (control: enable, on) Value: 3 (11 _{bin})
	Priority Off	Function: Priority OFF (control: disable, off) Value: 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.	
Use block function	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.



If a channel object is blocked, no telegrams are sent from this object. The second channel object can continue to send or can also be blocked.

6.6.3 Parameter page objects 1, 2 (operation = rocker)

Each of the two objects can be configured individually on its own parameter page, whereby the object type of object 1 is specified via the function of the button.

Designation	Values	Description
Object type (for object 2 if used)	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	
	Top On / bottom Off	Top button switch-on command Bottom button switch off command
	<i>top change over / bottom change over</i>	Top button change over command Bottom button change over command
	<i>top Off / bottom On</i>	Top button switch off command Bottom button switch on command
	<i>top Off / bottom Off</i>	Top button switch off command Bottom button switch off command
	<i>top On / bottom On</i>	Top button switch-on command Bottom button switch on command
	With object type = priority 2 bit	
	Telegram top button	Function
	No priority	Priority not active (no control)
	Priority On	Priority ON (control: enable, on)
	Priority Off	Priority OFF (control: disable, off)
	Telegram bottom button	Function
	No priority	Priority not active (no control)
	Priority On	Priority ON (control: enable, on)
	Priority Off	Priority OFF (control: disable, off)
	With object type = value 0-255	
	Telegram top button	
	0-255	Any value between 0 and 255 can be sent.
	Telegram bottom button	
	0-255	Any value between 0 and 255 can be sent.

Designation	Values	Description
	<i>With object type = percentage value 1 byte</i>	
	Telegram top button	
	0-100%	Any percentage value between 0 and 100% can be sent.
	Telegram bottom button	
	0-100%	Any percentage value between 0 and 100% can be sent.
<i>Send after long operation</i>	do not send <i>Send telegram</i>	Respond to long button push?
<i>Telegram</i>	See above: Same object type as with short operation.	
<i>Send after double-click</i>	do not send <i>Send telegram</i>	Respond to double-click?
<i>Telegram</i>	See above: Same object type as with short operation.	
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.

i If a channel object is blocked, no telegrams are sent from this object. The second channel object can continue to send or can also be blocked.

6.6.4 Dimming parameter page (operation = single push button)

i This function is available for channels F1-F4 if the function has been selected on the *button* or *rocker* parameter page. The respective channel object 2 is then omitted

Designation	Values	Description
<i>Response to long/short</i>	One button operation The input distinguishes between a long and a short button push, and can thus carry out 2 functions. The dimmer is operated with a single push button. Short = On/Off Long = brighter/darker Release = stop With the following variants, the dimmer is operated using 2 buttons (rocker). <i>Brighter / On</i> Short button push = On Long button push = brighter Release = stop <i>Brighter / change over</i> Short = On / Off Long button push = brighter Release = stop <i>Darker / Off</i> Short button push = Off Long button push = darker Release = stop <i>Darker / change over</i> Short = On / Off Long = darker Release = stop	
<i>Increment for dimming</i>	100% 50% 25% 12.5% 6% 3% 1.5%	With a long button push, the dimming value is: Increased (or decreased) until the button is released. Increased by the selected value (or reduced)
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.

i If a channel object is blocked, no telegrams are sent from this object. The second channel object (double-click) can continue to send or can also be blocked.

6.6.5 Double-click parameter page (operation = single push button)

Designation	Values	Description
<i>Object type</i>	Switching (1 bit) <i>Priority (2 bit)</i> <i>Value 0-255</i> <i>Percentage value (1 byte)</i>	Telegram type for this object.
<i>Telegram</i>	With object type = switching 1 bit	
	Change over	Invert current state (ON- OFF-ON etc.)
	<i>On</i>	Send switch-on command
	<i>Off</i>	Send switch-off command
	With object type = priority 2 bit	
	<i>No priority</i>	Function Priority not active (no control)
	Priority On	Value Priority On (control: enable, on)
	<i>Priority Off</i>	Priority Off (control: disable, off)
	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.
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.

i If a channel object is blocked, no telegrams are sent from this object. The second channel object (double-click) can continue to send or can also be blocked.

6.6.6 Dimming parameter page (*operation = rocker*)

Designation	Values	Description
<i>Response to long/short</i>	<i>Top brighter / On, Bottom darker / Off</i> <i>Top brighter / change over, Bottom darker / change over</i>	The input distinguishes between a long and a short button push, and can thus carry out 2 functions. Top button: Short button push = On Long button push = brighter Release = stop Bottom button: Short button push = Off Long button push = darker Release = stop Top button: Short button push = On / Off Long button push = brighter Release = stop Bottom button: Short button push = On / Off Long button push = darker Release = stop
<i>Increment for dimming</i>	100% 50% 25% 12.5% 6% 3% 1.5%	With a long button push, the dimming value is: Increased (or decreased) until the button is released. Increased by the selected value (or reduced)
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.



If a channel object is blocked, no telegrams are sent from this object. The second channel object (double-click) can continue to send or can also be blocked.

6.6.7 Double-click parameter page (*operation = rocker*)

Designation	Values	Description
<i>Object type</i>	Switching (1 bit) <i>Priority (2 bit)</i> <i>Value 0-255</i> <i>Percentage value (1 byte)</i>	Telegram type for this object.
<i>Telegram</i>	With object type = switching 1 bit	
	Top On / bottom Off	Top button switch-on command Bottom button switch off command
	<i>Top change over / bottom change over</i>	Top button change over command Bottom button change over command
	<i>Top Off / bottom On</i>	Top button switch off command Bottom button switch on command
	<i>Top Off / bottom Off</i>	Top button switch off command Bottom button switch off command
	<i>Top On / bottom On</i>	Top button switch-on command Bottom button switch on command
	With object type = priority 2 bit	
	Telegram top button	Function
	<i>no priority</i>	Priority not active (no control)
	Priority On	Priority On (control: enable, on)
	<i>Priority Off</i>	Priority Off (control: disable, off)
	Telegram bottom button	Function
	<i>no priority</i>	Priority not active (no control)
	Priority On	Priority On (control: enable, on)
	<i>Priority Off</i>	Priority Off (control: disable, off)
	With object type = value 0-255	
	Telegram top button	
	0-255	Any value between 0 and 255 can be sent.
	Telegram bottom button	
	0-255	Any value between 0 and 255 can be sent.
	With object type = percentage value 1 byte	
	Telegram top button	
	0-100%	Any percentage value between 0 and 100% can be sent.
	Telegram bottom button	
	0-100%	Any percentage value between 0 and 100% can be sent.
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.

6.6.8 Blinds parameter page (operation = single push button)

i This function is available for channels F1-F4 if the function has been selected on the *button* or *rocker* parameter page. The respective channel object 2 is then omitted

Designation	Values	Description
<i>Operation</i>	One button operation <i>Down</i> <i>Up</i>	The input distinguishes between a long and a short button push, and can thus carry out 2 functions. The blinds are operated with a single push button. Short button push = step. Long button push = move. Short button push = step. Long button push = lower. Short button push = step. Long button push = raise.
<i>Movement is stopped by</i>	<i>Releasing the button</i> Short operation	Defines how the stop command is to be triggered.
<i>Use block function</i>	No <i>Yes</i>	Block object for the respective channel is displayed, use can be configured individually for each object.

6.6.9 Double-click parameter page (operation = single push button)

Designation	Values	Description
<i>Object type</i>	Switching (1 bit) <i>Priority (2 bit)</i> <i>Value 0-255</i> <i>Percentage value (1 byte)</i> <i>Height % + slat %</i>	Telegram type for this object.
<i>Telegram</i>	With object type = switching 1 bit	
	Change over	Invert current state (ON- OFF- ON etc.)
	<i>On</i>	Send switch-on command
	<i>Off</i>	Send switch-off command
	With object type = priority 2 bit	
	<i>no priority</i>	Function Priority not active (no control)
	<i>Priority On</i>	Value Priority ON (control: enable, on)
	<i>Priority Off</i>	Value Priority OFF (control: disable, off)
	With object type = value 0-255	
	<i>0-255</i>	Any value between 0 and 255 can be sent.
	With object type = percentage value 1 byte	
	<i>0-100%</i>	Any percentage value between 0 and 100% can be sent.
	With object type = height % + slat %	
		Upon double-click two telegrams are sent simultaneously:
	<i>Height</i>	Desired height of blinds in per cent
	<i>Slat</i>	Desired slat position in per cent
<i>Use block function</i>	No <i>Yes</i>	Block object for the respective channel is displayed, use can be configured individually for each object.

6.6.10 Blinds parameter page (operation = rocker)

Designation	Values	Description
<i>Operation</i>	Top button Up Bottom button Down (This value is fixed and cannot be changed)	The input distinguishes between a long and a short button push, and can thus carry out 2 functions. Top button: Short button push = step. Long button push = raise. Bottom button: Short button push = step. Long button push = lower.
<i>Movement is stopped by</i>	<i>Releasing the button</i> Short operation	Defines how the stop command is to be triggered.
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.

6.6.11 Double-click parameter page (operation = rocker)

Designation	Values	Description
<i>Object type</i>	Switching (1 bit) <i>Priority (2 bit)</i> <i>Value 0-255</i> <i>Percentage value (1 byte)</i> <i>Height % + slat %</i>	Telegram type for this object.
<i>Telegram</i>	With object type = switching 1 bit	
	Top On / bottom Off	Top button switch-on command Bottom button switch off command
	<i>Top change over / bottom change over</i>	Top button change over command Bottom button change over command
	<i>Top Off / bottom On</i>	Top button switch off command Bottom button switch on command
	<i>Top Off / bottom Off</i>	Top button switch off command Bottom button switch off command
	<i>Top On / bottom On</i>	Top button switch-on command Bottom button switch on command
	With object type = priority 2 bit	
	Telegram top button	Function Value

Designation	Values	Description
	<i>No priority</i>	Priority not active (no control) 0 (00 _{bin})
	Priority On	Priority ON (control: enable, on) 3 (11 _{bin})
	<i>Priority Off</i>	Priority OFF (control: disable, off) 2 (10 _{bin})
	Telegram bottom button	Function Value
	<i>No priority</i>	Priority not active (no control) 0 (00 _{bin})
	Priority On	Priority ON (control: enable, on) 3 (11 _{bin})
	<i>Priority Off</i>	Priority OFF (control: disable, off) 2 (10 _{bin})
	With object type = value 0-255	
	Telegram top button	
	0-255	Any value between 0 and 255 can be sent.
	Telegram bottom button	
	0-255	Any value between 0 and 255 can be sent.
	With object type = percentage value 1 byte	
	Telegram top button	
	0-100%	Any percentage value between 0 and 100% can be sent.
	Telegram bottom button	
	0-100%	Any percentage value between 0 and 100% can be sent.
	With object type = height % + slat %	
	Telegram top button	Upon double-click two telegrams are sent simultaneously:
	<i>Height</i>	Desired height of blinds in per cent
	<i>Slat</i>	Desired slat position in per cent
	Telegram bottom button	Upon double-click two telegrams are sent simultaneously:
	<i>Height</i>	Desired height of blinds in per cent
	<i>Slat</i>	Desired slat position in per cent
<i>Use block function</i>	No Yes	Block object for the respective channel is displayed, use can be configured individually for each object.

6.7 Parameters for the blinds actuator channel C1

6.7.1 Channel C1: Configuration options

Designation	Values	Description
<i>Description</i>	Text field	User-defined text for use as a function name.
<i>Type of hanging</i>	Blinds <i>Shutter / awning / general drive</i>	The type of hanging which is to be actuated
<i>Setting the drive runtime</i>	via ETS <i>Teach-in in start-up mode (send)</i> <i>via object in start-up mode (receive)</i>	Runtime is set on the parameter page Drive settings . In start-up mode, this channel should send the taught-in runtime to the other channels. In start-up mode, this channel should receive and apply the taught-in runtime from another channel.
<i>Response after download</i>	maintain runtime <i>delete runtime</i>	Not available with <i>Drive runtime setting = via ETS</i> . Download has no influence on the taught-in runtime Taught-in runtime is deleted during download.
<i>Activate sun protection</i>	Yes No	Activate sun protection function with heating or cooling support. No sun protection function.
<i>Activate ventilation function</i>	Yes No	When opening the window, the blinds or roller blinds move automatically to a defined position. No ventilation function.
<i>Activate block function</i>	Yes No	Should the block function be used?
<i>Activate scenes</i>	Yes No	Should scenes be used?
<i>Direction of drive run</i>	Normal <i>inverted</i>	Standard setting: Hanging moves from top to bottom. For special applications or quick fix for wrongly wired devices (up/down directions mixed up).
<i>Block Comfort/Auto on UP/Down/Stop command</i>		Suppression of the Comfort/Auto function with manual positioning via On, Off or Stop telegrams.

Designation	Values	Description
	No, only via object Comfort/Automatic <i>Yes, and via object Comfort/Automatic Off</i> <i>yes, and after 0.5 h Off</i> <i>yes, and after 1 h Off</i> ... <i>yes, and after 2 h Off</i> ... <i>yes, and after 48 h Off</i>	No suppression: <i>Comfort/Auto</i> remains active after manual positioning. <i>Comfort/Auto</i> can be ended both by manual positioning and via the object <i>Comfort/Automatic</i> The <i>Comfort/Auto</i> function is blocked for the set time via manual positioning. Once this time has lapsed, <i>Comfort/Auto</i> is active once again and the drive reacts to height telegrams. The block can be ended at any time via the object <i>Comfort / Automatic (=0)</i> .
<i>Response after return to automatic operation</i>	No response <i>update height % / slat %</i>	Response after the Block <i>Comfort/Auto</i> object has been reset to 0.

6.7.2 Drive settings

Designation	Values	Description
Complete runtime Down	manual input 5 .. 500 s	Only available when Drive runtime setting = via ETS. Enter the measured runtime for descending (in seconds).
Drive start-up time	0..1000 ms	Time until the drive motor has reached its full output. This time is usually determined empirically.
Runtime adjustment for ascent	manual input -15 .. +15 s	Enter difference in seconds between runtime when ascending and runtime when descending. Correction value = $t_{up} - t_{down}$
Step duration of Step/Stop object ⁸	No steps 250 ms 500 ms 1 s 2 s 3 s 4 s 5 s 6 s 7 s 10 s	Only for roller blinds/awning/general drive. This specifies whether or not it should be possible to adjust the drive in small steps, and it also specifies the duration of a single step.
Tighten fabric (awning)	Yes No	Only for roller blinds/awning/general drive. At values above 70%, the hanging, awning or roller blinds will be retightened by moving back briefly. On roller blinds it is guaranteed that the vent slots will remain open. no tightening.
Complete slat turn 4 ... 250	4 .. 250	Enter the measured turn time of the slats in increments of 100 ms. 10 = 10 x 100 ms = 1s
No. of steps for a complete turn ⁹	3 steps 4 steps 7 Steps ... 12 steps	This specifies the number of individual steps a complete slat turn is to be divided into (3 to 12).
On receiving a step/stop command	process immediately (recommended)	Every received step command is carried out immediately.

⁸ For type of hanging = Roller blinds / awning / general drive

⁹ For type of hanging = Blinds

Designation	Values	Description
	<i>Wait 0.3 s to see if an UP/DOWN command follows</i> <i>wait 0.4 s to see if an UP/DOWN command follows</i> <i>wait 0.5 s to see if an UP/DOWN command follows</i>	Step commands are only executed if no operating command is received within the set time. These settings apply to push buttons which, when pressed and held, first send a step command and then an operating command.
<i>Pause time before reversal of direction</i>	0.5 s 1 s 2 s 3 s	Pause introduced to protect the drive motor against conflicting commands (e.g. if a descend command is received while ascending). This setting depends on the information supplied by the manufacturer of the drive
<i>Automatic execution of the slat object value [%] after object Height [%]</i>	yes no	Selection whether or not the slat position (according to the slat object %) is to be resumed after the height adjustment via the height object %.
<i>Assignment of the 0% position to the slat objects [%]</i>	0% corresponds to slat position on lowering 0% corresponds to slat position on ascending	Input of the starting position for the calculation of the slat turn.
<i>Transmission of feedback</i>	only at change cyclically and at change	When should feedback (feedback slat and feedback height objects) be sent?
<i>Time for cyclical transmission of feedback</i>	2 minutes, 3 minutes, 5 minutes, 10 minutes, 15 minutes , 20 minutes, 30 minutes, 45 minutes, 60 minutes	If cyclically, at what interval?

6.7.3 sun protection



As soon as a room is not occupied, the sun protection function can be used to save energy costs.

For this purpose, the sunlight is deliberately let in during the winter, while protection is provided in summer by moving down the blinds or roller blinds, if required.

Designation	Values	Description
<i>Desired room temperature during sun protection mode</i>	15 °C – 30 °C Default = 21 °C	Setpoint for heating or cooling support (see below).
<i>Response to presence in sun protection mode (presence object = 1)</i>	<i>Preset 1, Preset 2 Preset 3, Preset 4 Preset 5, Preset 6 Preset 7, Preset 8</i>	Approach a preset position. See Presets parameter page.
	<i>Top end position Lower end position</i>	Approach an end position.
	<i>no reaction, unchanged</i>	Do not respond.
	<i>update (height / slat)</i>	Approach last received position.
<i>Response to heating support</i>		If the conditions for heating support are fulfilled, i.e.: - Heating support obj. = 1 - Presence obj. = 0 (room not occupied) And the room temperature < desired room temperature during sun protection mode, heating due to solar radiation should be favoured with the following setting.
	<i>Preset 1, Preset 2 Preset 3, Preset 4 Preset 5, Preset 6 Preset 7, Preset 8</i>	Approach a preset position. Recommended for blinds, as height and slat turn can be set. See Presets parameter page.
	<i>Top end position</i>	Recommended.
	<i>Lower end position</i>	only for special applications.
<i>Response when heating support is no longer needed</i>	<i>Preset 1, Preset 2 Preset 3, Preset 4 Preset 5, Preset 6 Preset 7, Preset 8</i>	Approach a preset position. See Presets parameter page.
	<i>Top end position Lower end position</i>	Approach an end position.
	<i>no reaction, unchanged</i>	Do not respond.
	<i>update (height / slat)</i>	Approach last received position.

Designation	Values	Description
<i>Response to cooling support</i>		If the conditions for cooling support are fulfilled, i.e.: - Cooling support obj. = 1 And the room temperature > desired room temperature during sun protection mode, heating due to solar radiation should be prevented with the following setting.
	<i>Preset 1, Preset 2</i> <i>Preset 3, Preset 4</i> <i>Preset 5, Preset 6</i> <i>Preset 7, Preset 8</i>	Approach a preset position. Recommended for blinds, as height and slat turn can be set. See Presets parameter page.
	<i>Top end position</i>	only for special applications.
	<i>Lower end position</i>	Recommended for roller blinds and textile sun protection.
<i>Response when cooling support is no longer needed</i>	<i>Preset 1, Preset 2</i> <i>Preset 3, Preset 4</i> <i>Preset 5, Preset 6</i> <i>Preset 7, Preset 8</i>	Approach a preset position. See Presets parameter page.
	<i>Top end position</i> <i>Lower end position</i>	Approach an end position.
	<i>no reaction, unchanged</i>	Do not respond.
	<i>update</i> <i>(height / slat)</i>	Approach last received position.

i Ventilation function and heating/cooling support¹⁰ are mutually exclusive. If ventilation is active¹¹, no movements due to the heating/cooling support are executed, but only after completion¹² of the ventilation function¹³. Vice versa, if ventilation is active at the end of heating/cooling support, the configured action¹⁴ will not be executed.

¹⁰ Parameter page **Sun protection**

¹¹ Window open or tilted

¹² Termination by closing the window or blocking.

¹³ The parameter *Position after end of ventilation* is not taken into account.

¹⁴ Parameter page **Sun protection**: Parameter *Behaviour when heating support is not required any longer* or *Behaviour when cooling support is not required any longer*.

6.7.4 Positions via 1 bit

- i** 3 individually preallocated positions can be called up using 1-bit objects (objects position A, B and C).

Designation	Values	Description
Position A		
Response when receiving a 1	Preset 1 preset 2 preset 3 preset 4 preset 5 preset 6 preset 7 preset 8 Top end position Lower end position	Approach a preset position. See Presets parameter page. Approach an end position.
Response when receiving a 0	Preset 1 preset 2 preset 3 preset 4 preset 5 preset 6 preset 7 preset 8 Top end position Lower end position no response update (height / slat)	Approach a preset position. See Presets parameter page. Approach an end position. Do not respond. Approach last received position.
Position B		
Response when receiving a 1	See above	Desired drive height or slat position for position B
Response when receiving a 0	See above	
Position C		
Response when receiving a 1	See above	Desired drive height or slat position for position C
Response when receiving a 0	See above	

6.7.5 Ventilation

i With the ventilation function, the blinds or roller blinds are automatically moved to a defined position when opening or tilting the window.

Designation	Values	Description
<i>When the window is tilted</i>		
<i>Approach ventilation position</i>	<i>Never</i> <i>Always</i> <i>Only when below</i>	No change of position. Always approach the preset position. Do not take the current drive position into account. Only approach the new position if the blinds or roller blinds position is lower than the desired ventilation position (preset).
<i>position</i>	<i>Preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Lower end position</i>	Desired ventilation position. See <i>Presets</i> parameter page. Approach an end position.
<i>When the window is open</i>		
<i>Approach ventilation position</i>	<i>Never</i> <i>Always</i> <i>Only when below</i>	No change of position. Always approach the preset position, do not take the current drive position into account Only approach the new position if the blinds or roller blinds position is lower than the desired ventilation position (preset).
<i>position</i>	<i>Preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Lower end position</i>	Desired ventilation position. See <i>Presets</i> parameter page. Approach an end position.
<i>When the window is closed</i>		

Designation	Values	Description
<i>Position after end of ventilation</i>	As before ventilation Preset 1 preset 2 preset 3 preset 4 preset 5 preset 6 preset 7 preset 8 Top end position Lower end position	Desired drive position when the window is closed again. See Presets parameter page.
<i>Block comfort/auto during ventilation</i>	No Yes	The drive can also be controlled via the <i>height</i> and <i>slat</i> objects in ventilation mode. Movement based on the <i>height</i> and <i>slat</i> objects remains blocked, until the window is closed again. If <i>Position after end of ventilation = Update height and slat</i> is configured, the previously received values will be approached after the end of ventilation.¹⁵

 If the window is open/tilted while ventilation is blocked, the ventilation function will not be started.

If a block is set while the ventilation function is active, it will be abandoned.¹⁶

 Ventilation function and heating/cooling support¹⁷ are mutually exclusive. If ventilation is active¹⁸, no movements due to the heating/cooling support are executed, but only after completion¹⁹ of the ventilation function²⁰. Vice versa, if ventilation is active at the end of heating/cooling support, the configured action²¹ will not be executed.

¹⁵ Here, the parameter *Response after return to automatic operation* is not taken into account.

¹⁶ The parameter *Position after end of ventilation* is not taken into account any longer.

¹⁷ Parameter page *Sun protection*

¹⁸ Window open or tilted

¹⁹ Termination by closing the window or blocking.

²⁰ The parameter *Position after end of ventilation* is not taken into account.

²¹ Parameter page **Sun protection**: Parameter *Behaviour when heating support is not required any longer* or *Behaviour when cooling support is not required any longer*.

6.7.5.1 Window contacts

The current window status is received via the objects *Window contact 1* and *Window contact 2*. From the combination of both telegrams, the device can detect, whether the window is closed, tilted, or open.



The status of the window contacts is exclusively received via the bus.

Designation	Values	Description
Number of window contacts for this window	1 contact 2 contacts (open/tilted)	Here, only 2 states are detected: window open / window closed. The device can distinguish 3 states: closed – tilted – open. The corresponding switching statuses are defined below.
When the window is tilted		
Status object window contact 1	Off On	Combination at which the window is detected as "tilted".
Status object window contact 2	Off On	
When the window is open		
Status object window contact 1	Off On	Combination at which the window is detected as "open".
Status object window contact 2	Off On	
Acting direction object window contact 1 ²²	0 = window open or tilted 0 = window closed	0 = open / 1 = closed ²³ 0 = closed / 1 = open ²³
Block telegram	Block with 1 (standard) Block with 0	0 = cancel block 1 = block 0 = block 1 = cancel block

²²Only available if number of window contacts = 1.

²³No differentiation between *open* and *tilted* possible.

6.7.6 Safety wind / rain / frost

Designation	Values	Description
Priority of safety objects	1. Wind 2. Rain 3. Frost 1. Wind 2. Frost 3. Rain 1. Rain 2. Wind 3. Frost 1. Rain 2. Frost 3. Wind 1. Frost 2. Wind 3. Rain 1. Frost 2. Rain 3. Wind	If wind, rain and frost alarm occur together, the parameters of the object with the highest priority will be implemented. Example: 1. Rain, 2. Frost, 3. Wind The parameters with priority 1 apply, i.e. start and end of rain safety. If the rain alarm (priority 1) is cancelled, the parameters for the object with priority 2 apply, here frost - start. If the object with priority 2 is also cancelled, the one with priority 3 applies.
Monitor safety objects cyclically	No Every 10 min Every 20 min Every 60 min	No monitoring. After mains failure, the safety object will be reset to 0. Safety objects that do not receive any telegrams within the time set here will be handled as if they had received an ON telegram and trigger an alarm. The sender of the safety telegrams (e.g. weather station) must transmit them cyclically. Max. cycle time = monitoring time / 2 Example: Monitoring time = every 20 minutes, cyclical transmission time = 10 min or less.
Participation in safety WIND	No Yes	Should the channel react to wind alarm?
Source(s)	Safety object 1 wind Safety object 2 wind Safety object 3 wind Safety object 1 + 2 (OR linked) Safety object 1 + 3 (OR linked) Safety object 2 + 3 (OR linked) Safety object 1 + 2 + 3 (OR linked)	Which safety objects are used for wind alarm?
Begin	preset 1 preset 2 preset 3 preset 4 preset 5 preset 6 preset 7 preset 8 Top end position Bottom end position	Start on wind alarm: Approach a preset position. See Presets parameter page. Approach an end position.

Designation	Values	Description
	<i>Unchanged (stopped upon operating command)</i>	Do not respond. The drive should stop upon safety start during a movement.
<i>End</i>	Same as before safety <i>preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Bottom end position</i> <i>Update (height / slat)</i> <i>No response</i> <i>Same as before safety or update if new value (height / slat) received</i>	End on wind alarm: move back to the previous position. Approach a preset position. See Presets parameter page. Approach an end position. Approach last received position. Do not respond. move back to the previous position. However, if a new position was received during safety, this new position will be moved to.
<i>Participation in safety RAIN</i>	No Yes	Should the channel react to rain alarm?
<i>Begin</i>	See <i>Start</i> wind parameter above	
<i>End</i>	See <i>End</i> wind parameter above	
<i>Participation in safety FROST</i>	No Yes	Should the channel react to frost alarm?
<i>Begin</i>	See <i>Start</i> wind parameter above	
<i>End</i>	See <i>End</i> wind parameter above	
<i>Response after priority on safety</i>	<i>preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Bottom end position</i> No reaction, unchanged <i>Update (height / slat)</i>	Priority on safety will be used when the roller blinds or sun protection devices must remain stationary in an end position for a certain time, e.g. for window cleaning. See object <i>Priority on safety</i> . This operating mode has the highest priority level. Approach a preset position. See Presets parameter page . Approach an end position. Do not respond. Approach last received position.

6.7.7 Presets

i The presets are a predefined position settings, which can be called up if required, e.g. on safety (wind, rain, frost), on mains restoration, during ventilation, etc.

Designation	Values	Description
Preset 1		
Height	0%, 10%, 20% 30%, 40%, 50% 60%, 70%, 80% 90%, 100%, No change	Desired drive height and slat position for preset 1
Slat	0%, 10%, 20% 30%, 40%, 50% 60%, 70%, 80% 90%, 100% , No change	
preset 2		
Height	See above, default = 40%	Desired drive height and slat position for preset 2
Slat	See above	
preset 3		
Height	See above, default = 50%	Desired drive height and slat position for preset 3
Slat	See above	
preset 4		
Height	See above, default = 60%	Desired drive height and slat position for preset 4
Slat	See above	
preset 5		
Height	See above, default = 70%	Desired drive height and slat position for preset 5
Slat	See above	
preset 6		
Height	See above, default = 80%	Desired drive height and slat position for preset 6
Slat	See above	
Preset7		
Height	See above, default = 90%	Desired drive height and slat position for preset 7
Slat	See above	
preset 8		
Height	See above, default = 100%	Desired drive height and slat position for preset 8
Slat	See above	

6.7.8 Restoration of power

Designation	Values	Description
<i>Response after download or mains restoration</i>	<i>Preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Bottom end position</i> No response	After download or restoration of the mains voltage: Approach a preset position. See Presets parameter page. Approach an end position. Do not respond.

6.7.9 Block function

Designation	Values	Description
<i>Block telegram</i>	Block with 1 (standard) <i>Block with 0</i>	0 = cancel block 1 = block 0 = Block 1 = cancel block Note: The block is always deactivated after reset.
<i>Response when setting the block</i>	<i>Preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Bottom end position</i> Unchanged (stopped upon operating command)	Approach a preset position. See Presets parameter page. Approach an end position. Do not respond. The drive should stop when a block command is received during a movement.
<i>Response when the block is cancelled</i>	<i>Preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Bottom end position</i> <i>Unchanged (stopped upon operating command)</i> Update (height / slat)	Approach a preset position. See Presets parameter page. Approach an end position. Do not respond. The drive should stop when a block command is received during a movement. Approach last received position.

6.7.10 *Scenes*

Designation	Values	Description
<i>Block telegram for scenes</i>	Block with 1 (standard) <i>Block with 0</i>	0 = cancel block 1 = block 0 = Block 1 = cancel block Note: With this setting, the scenes are always blocked immediately after reset or download.
<i>All channel scene statuses</i>	Overwrite on download <i>Unchanged after download</i>	A download deletes all scene memories of a channel, i.e. all previously taught-in scenes. When a scene number is called up, the channel assumes the configured status after download (see below and in the appendix Teaching in <i>scenes</i> without telegrams). All previously taught-in scenes are saved. However, the scene numbers to which the channel should react can be changed (see below: Channel reacts to).
<i>Response when cancelling the scene (with scene 64)</i>	<i>Preset 1</i> <i>preset 2</i> <i>preset 3</i> <i>preset 4</i> <i>preset 5</i> <i>preset 6</i> <i>preset 7</i> <i>preset 8</i> <i>Top end position</i> <i>Bottom end position</i> No response <i>Update (height / slat)</i>	Behaviour when the object <i>Call up/save scenes</i> receives value 63 (\$3F) and thus the current scene is cancelled. Approach a preset position. See Presets parameter page. Approach an end position. Do not respond. Approach last received position.
1st scene – Preallocated preset 1		
<i>Channel reacts to</i>	<i>No scene number</i> Scene number 1 ... <i>Scene number 63</i>	First of the 8 possible scene numbers to which the channel is to react.
<i>Comment for this scene number</i>	<i>(Enter name)</i>	Designation or comment for this scene number.
<i>Block comfort/automatic during this scene</i>	No	During this scene, the channel continues to react to height and slat telegrams

Designation	Values	Description
	Yes	During this scene, the channel no longer reacts to height and slat telegrams. The Up/Down function is maintained.
Permit teach-in	No	Scenes can only be called up.
	Yes	The user can both call up and teach in or amend scenes.
2nd scene – Preallocated preset 2		
Channel reacts to	See above, default = Scene number 2	Second of the 8 possible scene numbers
Comment for this scene number	(Enter name)	See above.
Block comfort/automatic during this scene	No Yes	See above.
Permit teach-in	No Yes	See above.
3rd scene – Preallocated preset 3		
Channel reacts to	See above, default = Scene number 3	Third of the 8 possible scene numbers
Comment for this scene number	(Enter name)	See above.
Block comfort/automatic during this scene	No Yes	See above.
Permit teach-in	No Yes	See above.
4th scene – Preallocated preset 4		
Channel reacts to	See above, default = Scene number 4	Fourth of the 8 possible scene numbers
Comment for this scene number	(Enter name)	See above.
Block comfort/automatic during this scene	No Yes	See above.
Permit teach-in	No Yes	See above.
5th scene – Preallocated preset 5		
Channel reacts to	See above, default = Scene number 5	Fifth of the 8 possible scene numbers
Comment for this scene number	(Enter name)	See above.
Block comfort/automatic during this scene	No Yes	See above.
Permit teach-in	No Yes	See above.
6th scene – Preallocated preset 6		
Channel reacts to	See above, default = Scene number 6	Sixth of the 8 possible scene numbers
Comment for this scene number	(Enter name)	See above.
Block comfort/automatic during this scene	No Yes	See above.
Permit teach-in	No Yes	See above.
7th scene – Preallocated preset 7		

Designation	Values	Description
<i>Channel reacts to</i>	<i>See above, default = Scene number 7</i>	Seventh of the 8 possible scene numbers
<i>Comment for this scene number</i>	<i>(Enter name)</i>	See above.
<i>Block comfort/automatic during this scene</i>	No Yes	See above.
<i>Permit teach-in</i>	No Yes	See above.
8th scene – Preallocated preset 8		
<i>Channel reacts to</i>	<i>See above, default = Scene number 8</i>	Last of the 8 possible scene numbers
<i>Comment for this scene number</i>	<i>(Enter name)</i>	See above.
<i>Block comfort/automatic during this scene</i>	No Yes	See above.
<i>Permit teach-in</i>	No Yes	See above.

7 Typical applications

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

7.1 Control blinds directly, switch light receive safety

In this configuration, the blinds actuator channel C1 of the wireless push button PJ 1 RF KNX is operated directly with the F1 button (rocker):

- Top button = Up
- Bottom button = Down

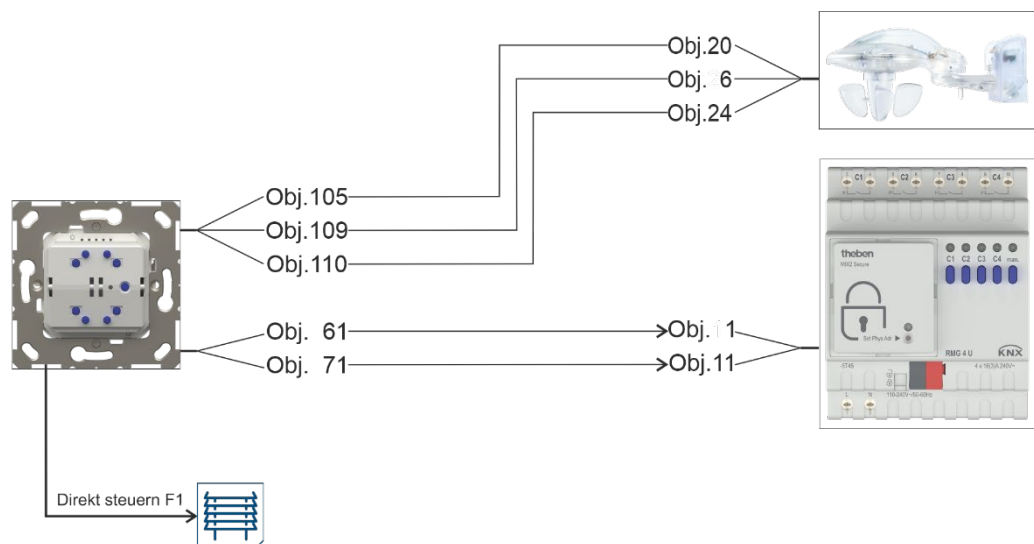
A weather station should control the wind, rain and frost safety objects.

The F3 and F4 buttons should each control one channel of a switch actuator RMG 4 U.

7.1.1 Devices

- PJ 1 RF KNX (4941655)
- Meteodata 140 S (1409207)
- RMG 4 U (4930223) with application version 2.1

7.1.2 Overview



7.1.3 Objects and links

Links:

No.	PJ 1 RF KNX Object name	No.	RMG 4 U Object name	Comment
61	<i>F3.1 switching</i>	1	<i>RMG 4 U C1</i>	PJ 1 RF KNX sends switch commands to RMG 4 U
71	<i>F4.1 switching</i>	11	<i>RMG 4 U C2</i>	

No.	Meteodata 140 Object name	No.	PJ 1 RF KNX Object name	Comment
20	<i>C1.1 Universal channel</i>	105	<i>Central safety wind 1</i>	PJ 1 RF KNX receives wind, rain and frost alarm from the Meteodata 140
6	<i>Rain sensor</i>		<i>Central safety rain</i>	
24	<i>C2.1 Universal channel</i>		<i>Central safety frost</i>	

7.1.4 Important parameter settings

PJ 1 RF KNX:

Parameter page	Parameters	Setting
General	<i>Use</i>	<i>4-way push button</i>
	<i>Operation left</i>	<i>Rocker</i>
	<i>Operation right</i>	<i>Single push button</i>
	<i>Control actuator directly</i>	<i>Yes</i>
F3 button top right	<i>Function</i>	<i>Switching</i>
Object1 - switching	<i>Send after short operation</i>	<i>Send telegram</i>
	<i>Telegram</i>	<i>Change over</i>
F4 button bottom right	<i>Function</i>	<i>Switching</i>
Object1 - switching	<i>Send after short operation</i>	<i>Send telegram</i>
	<i>Telegram</i>	<i>Change over</i>
C1 Safety blinds wind/rain/frost	<i>Monitor safety objects cyclically</i>	<i>Every 10 min</i>
	<i>Participation in wind</i>	<i>Yes</i>
	<i>Participation in rain</i>	<i>Yes</i>
	<i>Participation in frost</i>	<i>Yes</i>

RMG 4 U:

Parameter page	Parameters	Setting
<i>RMG 4 U channel C1... C2:</i>	<i>Channel function</i>	<i>Switching On/Off</i>
<i>Configuration options</i>	<i>Activation of function via</i>	<i>Switch object</i>

Meteodata 140:

Parameter page	Parameters	Setting
<i>General</i>	<i>Activate universal channel C1</i>	<i>Yes</i>
	<i>Activate universal channel C2</i>	<i>Yes</i>
<i>Measurement values</i>	<i>Send rain cyclically</i>	<i>Every 5 min</i>
<i>Universal channel C1:</i>	<i>Channel function</i>	<i>wind sensor</i>
	<i>Wind speed</i>	<i>Select desired speed</i>
<i>Objects</i>	<i>If condition is met</i>	<i>Send cyclically</i>
	<i>Cycle time</i>	<i>5 min</i>
<i>Universal channel C2:</i>	<i>Channel function</i>	<i>temperature sensor</i>
	<i>temperature threshold</i>	<i>Select desired threshold e.g. below 5 °C</i>
<i>Objects</i>	<i>If condition is met</i>	<i>Send cyclically</i>
	<i>Cycle time</i>	<i>5 min</i>

7.2 Dimming two lighting groups (rocker button) and simple shading

The wireless push button PJ 1 RF KNX controls both channels of the 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 always send the telegrams to the dimming actuator via **one** common group address.

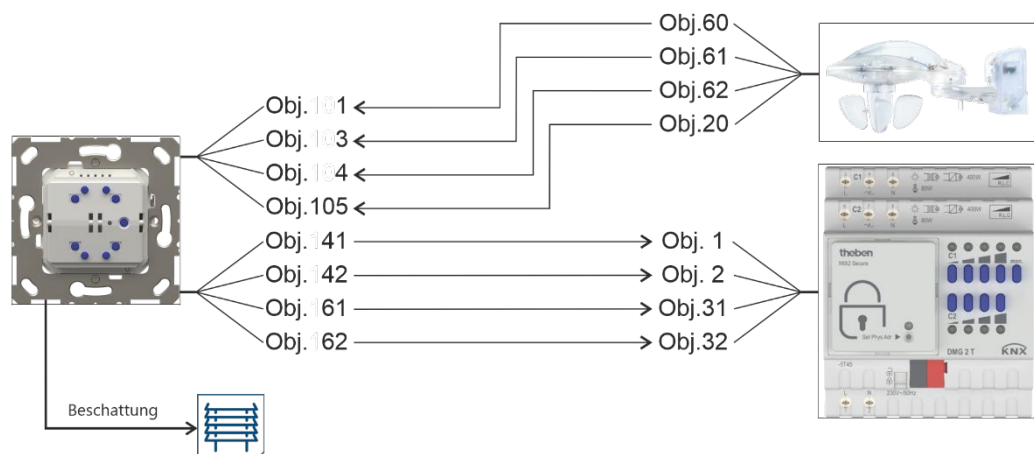
A blind should be controlled by the Meteodata 140 S with the following functions:

- Raise at dawn (if lowered manually).
- Lower blinds and set slats to configured position when the preset brightness threshold is reached.
- Raise all blinds at dusk as well.
- A safety telegram is sent to the actuator in the event of potential storms. This raises the blinds and prevents unintentional movement as long as the safety hazard applies.
- Cyclical monitoring of the safety object in the blinds actuator.

7.2.1 Devices

- PSU 1 RF KNX (4941625)
- DMG 2 T (4930270) with application version 2.1
- Meteodata 140 S (1409207)

7.2.2 Overview



7.2.3 Objects and links

Links:

No.	PSU 1 RF KNX Object name	No.	DMG 2 T Object name	Comment
41	<i>F1 Switching</i>	1	<i>DMG 2 T C1 Switching On/Off</i>	First lighting group: Sends at short button push On/Off commands to the dimming actuator.
42	<i>F1 Brighter/darker</i>	2	<i>DMG 2 T C1 Brighter/darker</i>	Sends brighter/darker commands to the dimming actuator with a long button push.
61	<i>F3 Switching</i>	31	<i>DMG 2 T C2 Switching On/Off</i>	Second lighting group: Sends at short button push On/Off commands to the dimming actuator.
62	<i>F3 Brighter/darker</i>	32	<i>DMG 2 T C2 Brighter/darker</i>	Sends brighter/darker commands to the dimming actuator with a long button push.

No.	Meteodata 140 Object name	No.	PSU 1 RF KNX Object name	Comment
60	<i>C11 Drives up/down</i>	1	<i>C1 Blinds Up/down</i>	The blinds actuator receives position telegrams from the Meteodata 140 S
61	<i>C11 Blinds height</i>	3	<i>C1 Blinds % height</i>	
62	<i>C11 Blinds slats</i>	4	<i>C1 Blinds % slat</i>	
20	<i>C1.1 universal channel</i>	105	<i>Central safety wind 1</i>	PJ 1 RF KNX receives wind alarm from the Meteodata 140 S

7.2.4 Important parameter settings

PSU 1 RF KNX

Parameter page	Parameters	Setting
General	Use	4-way push button
	Operation left	Rocker
	Operation right	Rocker
	Control actuator directly	No
F1 rocker left	Function	Dimming
F1 Dimming	Response to long/short	Top brighter/On, Bottom darker/Off
F3 rocker right	Function	Dimming
F3 Dimming	Response to long/short	Top brighter/On, Bottom darker/Off
C1 Safety blinds wind/rain/frost	Monitor safety objects cyclically	Every 10 min
	Participation in wind	Yes

DMG 2 T

Parameter page	Parameters	Setting
Dimming response (C1 and C2)	Switching on/off with a 4 bit Telegram	no

Meteodata 140:

Parameter page	Parameters	Setting
General	Activate universal channel C1	Yes
	Activate sun protection channel C11	Yes
Universal channel C1:	Channel function	wind sensor
	Wind speed	Select desired speed
Objects	If condition is met	Send cyclically
	Cycle time	5 min
Sun protection channel C11	Channel controls	Blinds
	Sun position adjustment	no
	Source for brightness measurement	Sensor front
Automatic sun function	Activation of automatic sun function	via dimming threshold
	Reaction to dawn	Raise & automatic sun function ON
	Reaction to dusk	Automatic sun function OFF and raise
Safety	Safety check triggered by	condition: C1
	Reaction to safety beginning	Start drive
	Reaction to safety end	Update position

8 Appendix

8.1 General information about KNX RF

As with KNX TP, KNX RF also distinguishes between Standard and Easy mode. The standard mode is called "KNX RF1.R S mode". The carrier frequency is 868.3 MHz. This relatively low frequency offers excellent signal propagation compared to higher frequencies (Bluetooth: 2.4 GHz or WLAN: 2.4/5 GHz) and a good balance between power consumption and range. The range in the free field is up to 100 m. Inside buildings, the range depends on structural factors and conditions.

The structural conditions and distances between the radio products must already be taken into account when planning the electrical installation. The radio signals are mainly dampened by e.g. concrete components with steel reinforcement or metal components. The more dampening components between transmitter and receiver and the greater the distance, the more critical for the radio communication. For a system with TP and RF lines, the placement of the media coupler must be planned as much in the centre as possible.

Furthermore, the frequency range used by KNX RF is not exclusively available to KNX. This means other radio systems might also be in a building and influence the KNX RF communication (e.g. garage door drives, alarm systems, weather stations, etc.).

Other devices, such as ballasts and lamps, can also be potential sources of interference for KNX RF systems due to the emission of electromagnetic waves.

The ETS app *KNX RF Field Strength Analyzer* from Tapko Technologies GmbH shows the receiving field strength of selected KNX RF products and can support start-up and troubleshooting.

In ETS 5, the "RF" transmission medium can be selected for a line. The KNX RF products are included in this line. For each line with "RF" medium, the ETS generates a unique domain address. The KNX RF products added in the RF line are assigned to this domain address. This ensures that pieces of information from neighbouring KNX RF lines will not influence each other. Only devices with the same domain address communicate with each other. The domain address is automatically transmitted by the ETS when programming the KNX RF products. An RF line can have a maximum of 256 devices (addresses 0...255). If the system consists of several RF lines or a combination of TP and RF media, the first device in the RF line is always a media coupler with the physical address x.x.0 (e.g. 1.2.0). The media coupler transmits the information across all lines via the TP medium. KNX-RF products can be easily recognised in the ETS product catalogue thanks to the specific wireless symbol. 

8.2 Scenes

8.2.1 Principle

The current status of a channel, or of a complete device, can be stored and retrieved later at any time via the scene function.

Each channel can participate simultaneously in up to 8 scenes.
Scene numbers 1 to 64 are permitted.

Permission to participate in scenes must be granted for the relevant channel via parameter.
See Activate scenes parameter and Scenes parameter page.

The current status is allocated to the appropriate scene number when a scene is saved.

The previously saved status is restored when a scene number is called up.

This allows a device to be easily and conveniently integrated into any user scene.

The scenes are permanently stored and can be retained even after the application has been downloaded again. See *All channel scene statuses* parameter on the Scenes parameter page.

8.2.1 Calling up or saving scenes:

To call up or save a scene, the relevant code is sent to the corresponding scene object.

Scene	Call up		Save	
	Hex.	Dec.	Hex.	Dec.
1	\$00	0	\$80	128
2	\$01	1	\$81	129
3	\$02	2	\$82	130
4	\$03	3	\$83	131
5	\$04	4	\$84	132
6	\$05	5	\$85	133
7	\$06	6	\$86	134
8	\$07	7	\$87	135
9	\$08	8	\$88	136
10	\$09	9	\$89	137
11	\$0A	10	\$8A	138
12	\$0B	11	\$8B	139
13	\$0C	12	\$8C	140
14	\$0D	13	\$8D	141
15	\$0E	14	\$8E	142
16	\$0F	15	\$8F	143
17	\$10	16	\$90	144
18	\$11	17	\$91	145
19	\$12	18	\$92	146
20	\$13	19	\$93	147
21	\$14	20	\$94	148
22	\$15	21	\$95	149
23	\$16	22	\$96	150
24	\$17	23	\$97	151
25	\$18	24	\$98	152

Scene	Call up		Save	
	Hex.	Dec.	Hex.	Dec.
26	\$19	25	\$99	153
27	\$1A	26	\$9A	154
28	\$1B	27	\$9B	155
29	\$1C	28	\$9C	156
30	\$1D	29	\$9D	157
31	\$1E	30	\$9E	158
32	\$1F	31	\$9F	159
33	\$20	32	\$A0	160
34	\$21	33	\$A1	161
35	\$22	34	\$A2	162
36	\$23	35	\$A3	163
37	\$24	36	\$A4	164
38	\$25	37	\$A5	165
39	\$26	38	\$A6	166
40	\$27	39	\$A7	167
41	\$28	40	\$A8	168
42	\$29	41	\$A9	169
43	\$2A	42	\$AA	170
44	\$2B	43	\$AB	171
45	\$2C	44	\$AC	172
46	\$2D	45	\$AD	173
47	\$2E	46	\$AE	174
48	\$2F	47	\$AF	175
49	\$30	48	\$B0	176
50	\$31	49	\$B1	177
51	\$32	50	\$B2	178
52	\$33	51	\$B3	179
53	\$34	52	\$B4	180
54	\$35	53	\$B5	181
55	\$36	54	\$B6	182
56	\$37	55	\$B7	183
57	\$38	56	\$B8	184
58	\$39	57	\$B9	185
59	\$3A	58	\$BA	186
60	\$3B	59	\$BB	187
61	\$3C	60	\$BC	188
62	\$3D	61	\$BD	189
63	\$3E	62	\$BE	190
64	\$3F	63	\$BF	191

Examples (central or channel-related):

Call up status of scene 5:

→ Send \$04 to the relevant scene object.

Save current status with scene 5:

→ Send \$84 to the relevant scene object.

8.2.2 Teaching in scenes without telegrams

Instead of defining scenes individually by telegram, this can be done in advance in the ETS. This merely requires the *All channel scene statuses* parameter (*Scenes* parameter page) to be set to *Overwrite on download*.

The required status can then be selected for each of the 8 possible scene numbers of a channel (= *Status after download* parameter).

After the download, the scenes are already programmed into the device.

Later changes via teach-in telegrams are possible if required and can be permitted or blocked via a parameter.

8.3 Conversion of percentages to decimal and hexadecimal values

Percentage value	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Hexadecimal	00	1A	33	4D	66	80	99	B3	CC	E6	FF
Decimal	00	26	51	77	102	128	153	179	204	230	255

All values from 00 to FF hex. (0 to 255 dec.) are valid.