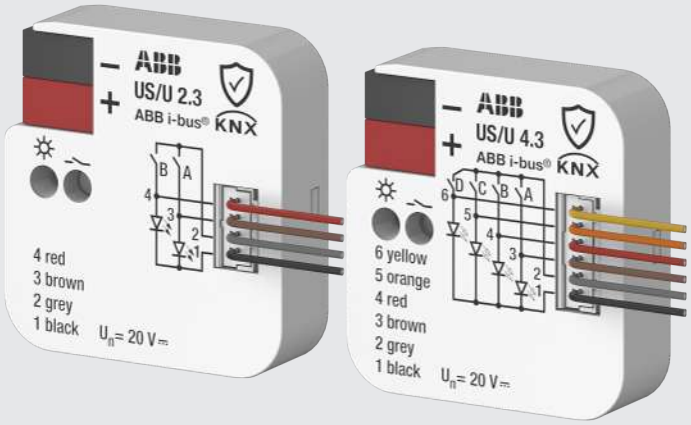
PRODUCT MANUAL

ABB i-bus® KNX

US/U x.3

Universal interface



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1 About this document

1.1 Using the product manual

This manual provides detailed technical information on the function, installation and programming of the ABB i-bus® KNX device.

1.2 Legal disclaimer

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1.3 Explanation of symbols

1. 2. ⇨	Instructions in specified sequence and result
▶	Individual actions
a)	Priorities
1)	Processes run by the device in a specific sequence
•	List level 1
–	List level 2

Tab. 1: Explanation of symbols

Notes and warnings are represented as follows in this manual:

DANGER
This symbol is a warning about electrical voltage and indicates high-risk hazards that will definitely result in death or serious injury unless avoided.

DANGER
Indicates high-risk hazards that will definitely result in death or serious injury unless avoided.

WARNING
Indicates medium-risk hazards that could result in death or serious injury unless avoided.

CAUTION
Indicates low-risk hazards that could result in slight or moderate injury unless avoided.

CAUTION
Indicates a risk of malfunctions or damage to property and equipment, but with no risk to life and limb.

Example
For use in application, installation and programming examples

Note
For use in tips on use and operation

2 Safety

2.1 General safety instructions

- Protect the device from moisture, dirt and damage during transport, storage and operation.
- Operate the device only in a closed housing.
- Operate the device only within the specified technical data.
- Mounting, installation, commissioning and maintenance must be carried out only by qualified electricians.
- Disconnect device from the supply of electrical power before mounting.

2.2 Qualification of the specialist personnel

Programming the device requires detailed specialist knowledge – particularly about the ETS commissioning software – through KNX training courses.

2.3 Proper use

The inputs of device type US/U x.3 are intended to be used for the acquisition of floating binary signals in a KNX environment.

The outputs of device type US/U x.3 are intended to be used to connect electrical loads (3.3 V DC, max. 5 mA, limited by pre-resistor) in a KNX environment.

3 Product overview

3.1 Device description

The devices are flush mounting devices (FM). They are designed for installation in flush mounting sockets with a diameter of 60 mm. The devices can be placed behind electrical equipment (e.g. pushbuttons).

The devices are KNX-certified and can be used as products in a KNX system
→ EU declaration of conformity.

The devices are powered via the bus (ABB i-bus® KNX) and require no additional auxiliary voltage.

The connection to the bus (ABB i-bus® KNX) is made via a KNX bus connection terminal on the side of the housing.

The connections at the inputs or outputs are made via plug-in connecting cables
→ designation on the housing.

The software application Engineering Tool Software (ETS) is used for physical address assignment and parameterization.

3.2 Product name description

The table below lists the product name descriptions of all devices in the product family.

Abbreviation	Description		
US	Universal interface		
/U	Flush mounting		
x.	2	=	2-fold
	4	=	4-fold
x	x	=	Version number (x = 1, 2, etc.)

Tab. 2: Product name description

3.3 Ordering details

Description	MB	Type	Order no.	Packaging unit [pcs.]	Weight (incl. packaging) [kg]
Universal interface	-	US/U 2.3	2CDG110308R0011	1	0.060
Universal interface	-	US/U 4.3	2CDG110309R0011	1	0.061

Tab. 3: Ordering details

3.4 Connections

The devices possess the following connections:

- Depending on the device type – 2 or 4 channels – each channel can be used as an input or an output
  - Binary inputs for the acquisition of floating binary signals
  - Outputs for connecting electrical loads (3.3 V DC, max. 5 mA, limited by pre-resistor)
- 1 KNX bus connection

3.4.1 Inputs

Application/function	a	b	c	d
Switch (1-button operation)	x	x	x	x
Switch (2-button operation)	x		x	
Blind/shutter (1-button operation)	x	x	x	x
Blind/shutter (2-button operation)	x		x	
Switch/dim (1-button operation)	x	x	x	x
Switch/dim (2-button operation)	x		x	
Scenes	x	x	x	x
Send value/multiple operation	x	x	x	x
Fault indicator/logic input	x	x	x	x
Switching sequence (1-button operation)	x	x	x	x
Switching sequence (2-button operation)	x		x	
Pulse counter	x	x	x	x
Logic	x	x	x	x
Block input	x	x	x	x

Tab. 4: Functions of the inputs

3.4.2 Outputs

Application/function	A	B	C	D
LED control	x	x	x	x

Tab. 5: Functions of the outputs

3.5 Product family

The product family described in this document includes the following devices:

Device type	Name	Features
US/U 2.3	Universal interface	2-fold, FM
US/U 4.3	Universal interface	4-fold, FM

Tab. 6: Product family

3.5.1 Dimension drawing

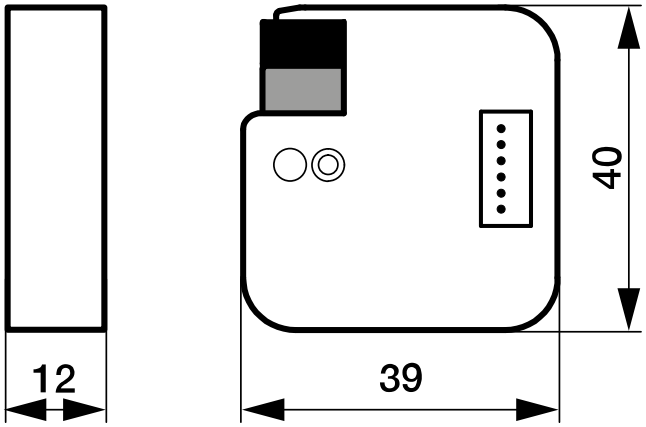

Fig. 1: Dimension drawing

3.5.2 Connection diagram

Note
The largest and most extensive device in the product family is described below as an example.

3.5.2.1 Input connection diagram

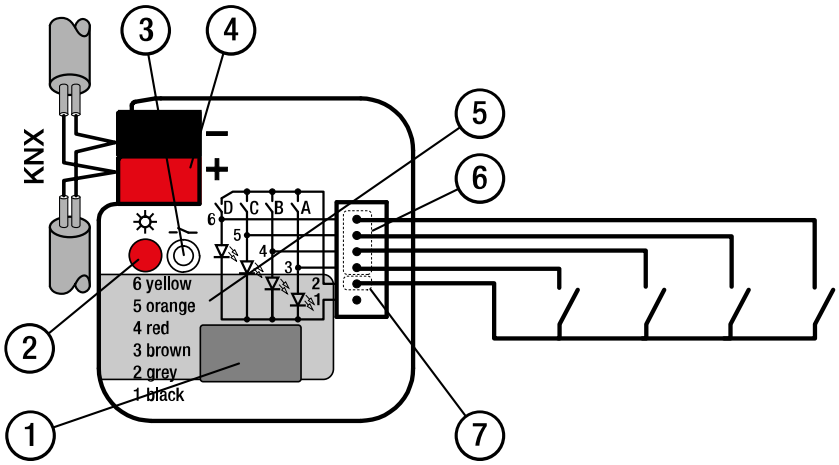

Fig. 2: US/S 4.3 input connection diagram

Legend

1 Labeling field
2 *Programming* LED
3 *Programming* button
4 KNX bus connection terminal
5 FDSK sticker
6 Binary input
7 Binary input (+)

9AKK108464A0435

3.5.2.2 Output connection diagram

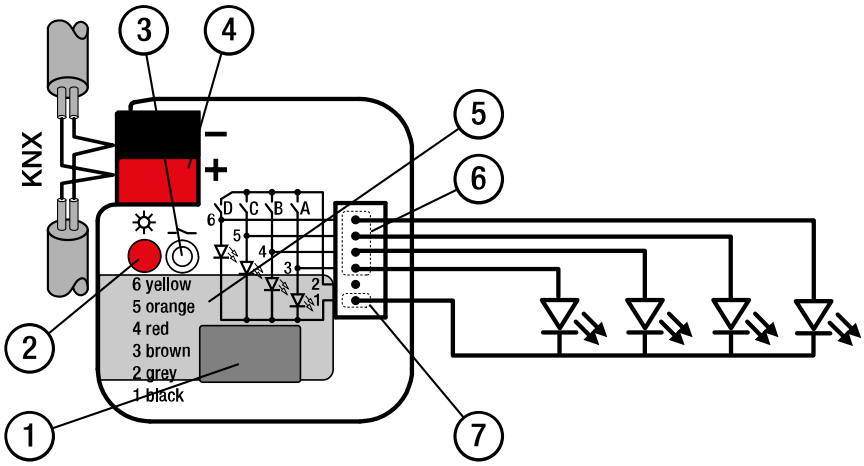

Fig. 3: US/S 4.3 output connection diagram

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Legend

1 Labeling field
2 *Programming* LED
3 *Programming* button
4 KNX bus connection terminal
5 FDSK sticker
6 Load output
7 Loud output (-)

3.5.3 Operating controls and display elements

Operating control/LED	Description/function	Display
 *Programming* LED/button	Assignment of the physical address	LED On: Device in programming mode

Tab. 7: Operating and display elements

3.5.4 Technical data

3.5.4.1 General technical data

		US/U 2.3	US/U 4.3
Device	Dimensions	39 × 12 × 40 mm (H x W x D)	39 × 12 × 40 mm (H x W x D)
	Weight	0.043	0.044
	Mounting position	Any	Any
	Design	Flush mounting	Flush mounting
	Degree of protection	IP 20	IP 20
	Protection class	III	III
	Overvoltage category	III	III
	Overload protection	Yes	Yes
	Reverse voltage protection	Yes	Yes
	Short-circuit proof	Yes	Yes
	Pollution degree	2	2
Materials	Housing	Ultramid C3U	Ultramid C3U
Material note	Fire classification	Flammability V-0	Flammability V-0
Electronics	Rated voltage, bus	30 V DC	30 V DC
	Voltage range, bus	21 … 31 V DC	21 … 31 V DC
	Current consumption, bus	< 12 mA	< 12 mA
	KNX safety extra low voltage	SELV	SELV
Connections	Connection type, KNX bus	Plug-in terminal	Plug-in terminal
	Cable diameter, KNX bus	0.6 … 0.8 mm, solid	0.6 … 0.8 mm, solid
	Conductor cross-section, flexible	1.1mm²	1.1mm²
	Length, wire end ferrule contact pin	≥ 8 mm	≥ 8 mm
	Stripping length for KNX terminal	6 mm	6 mm
	Stripping length for load terminal	8 mm	8 mm
Certificates and declarations	CE declaration of conformity	→ 9AKK108467A9662	→ 9AKK108467A9662
Ambient condition	Operation	−5 … +45 °C	−5 … +45 °C
	Transport	−25 … +70 °C	−25 … +70 °C
	Storage	−25 … +55 °C	−25 … +55 °C
	Humidity	≤ 95%	≤ 95%
	Condensation allowed	No	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

3.5.4.2 Inputs/outputs

		US/U 2.3	US/U 4.3
Rated values	Number of inputs/outputs	2	4
	Non-floating	Yes	Yes
Input	Scanning current	≤ 0.5 mA	≤ 0.5 mA
	Scanning voltage U_n	≤ 20 V DC	≤ 20 V DC
Cable length	Between sensor and device input, one-way	≤ 10 m	≤ 10 m
Output	Output voltage	3.3 V AC	3.3 V AC
	Output current	≤ 5 mA, limited by pre-resistor	≤ 5 mA, limited by pre-resistor
	Pre-resistor	390 kΩ	390 kΩ

4 Functional overview

4.1 Device functions

Each channel can be used as either an input or an output.

The inputs are used as an interface for operating KNX systems via conventional buttons/switches or for coupling floating binary signals (signal contacts).

The outputs are used to control electrical loads (3.3 V DC, max. 5 mA, limited by pre-resistor) in a KNX environment.

When the contacts connected to the device inputs are operated, the devices send telegrams on the bus (ABB i-bus® KNX) via the application-specific Group Objects.

4.1.1 Distinction between short and long operation

The devices react to the rising or falling edge that is triggered by operating one of the contacts connected to the device input. Each time an edge is triggered, the devices send telegrams to the Group Objects that are enabled for the input.

If you wish to distinguish between short and long operation (e.g. for the execution of different events), you need to specify, in the parameters, how long a connected contact must be operated for in order to be recognized as a long operation.

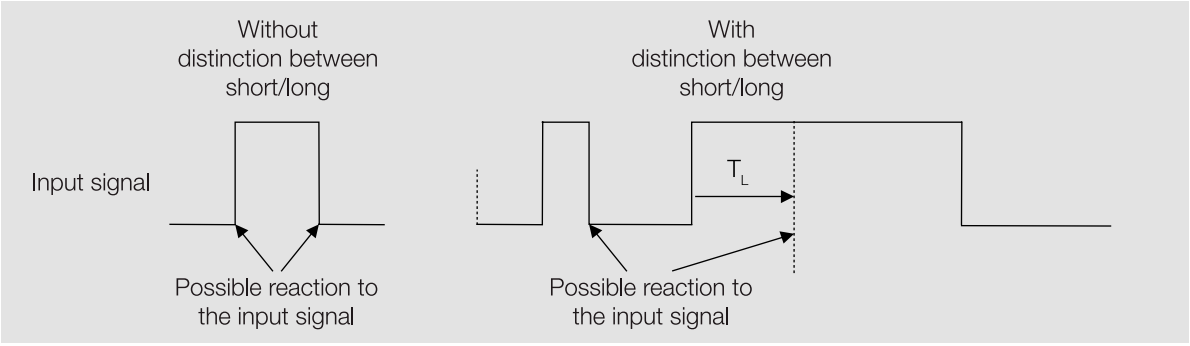

Fig. 4: Distinguishing between short/long operation

Note
T_L is the time from which a long operation is detected.

4.2 Device Applications

The following device applications are available for the devices described in this document

Device type	Device Application	Max. number of group addresses	Max. number of secure group addresses	Max. number of secure partners
US/U 2.3	Universal Interface, 2f/…	2000	2000	400
US/U 4.3	Universal Interface, 4f/…	2000	2000	400

Tab. 8: Device Applications

Note
… = current version number of the application.
Observe software information on the website, → www.abb.com/knx.

4.3 Applications

4.3.1 Overview

Each device input or output can be assigned a specific application (→ parameter *Channel X application*). Settings for this are made in the corresponding parameter window.

The following applications are available for each input:
- → Switch application (1-button operation), Page 16
- → Switch application (2-button operation), Page 16
- → Blind/shutter application (1-button operation), Page 17
- → Blind/shutter application (2-button operation), Page 17
- → Switch/dim application (1-button operation), Page 18
- → Switch/dim application (2-button operation), Page 18
- → Scenes application, Page 19
- → Send value/multiple operation application, Page 20
- → Fault indicator/logic input application, Page 21
- → Switching sequence application (1-button operation), Page 21
- → Switching sequence application (2-button operation), Page 22
- → Pulse counter application, Page 22

The following applications are available for each output:
- → LED control application, Page 24

4.3.2 Switch application (1-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Switch*

The *Switch (1-button)* application can be used to send a switch telegram on the bus (ABB i-bus® KNX) with one of the contacts connected to the input.

The following Group Objects are available:
- *Switch*

The telegram value can be specified in the following parameters:
- *Reaction on opening the contact*
- *Reaction on closing the contact*
- *Reaction on short operation*
- *Reaction on long operation*

4.3.3 Switch application (2-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Switch [2-button]*

The *Switch (2-button)* application can be used to send a switch telegram on the bus (ABB i-bus® KNX) with two of the contacts connected to the inputs.

> **Note**
> In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

The following Group Object is available:
- *Switch*

The telegram value can be specified in the following parameter:
- *Reaction on operation*

4.3.4 Blind/shutter application (1-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Blind/shutter*

The *Blind/shutter (1-button)* application can be used to operate blinds, shutters and awnings etc. with a button/switch connected to the input. If an event occurs on the input, the application-specific Group Objects send move telegrams on the bus (ABB i-bus® KNX).

The up and down movements are executed with a button/switch.

The operating mode (blind operation or shutter operation) can be set in the parameter *Operating mode*. Depending on the operating mode, the setting for the blind/shutter reaction on short and long operation is made in the following parameters:
- *Blind operation*
- *Shutter operation*

Depending on the operating mode, the following Group Objects are available to operate the blind/shutter:
- *Up/down*
- *Step/stop*
- *Stop*
- *Status Upper end position*
- *Status Lower end position*
- *Status Move*

4.3.5 Blind/shutter application (2-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*

The *Blind/shutter (2-button)* application can be used to operate blinds, shutters and awnings etc. with two buttons/switches connected to the inputs. If an event occurs on the input, the application-specific Group Objects send move telegrams on the bus (ABB i-bus® KNX).

The up and down movements are each executed with a separate button/switch.

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

The operating mode (blind operation or shutter operation) can be set in the parameter *Operating mode*. Depending on the operating mode, the setting for the blind/shutter reaction on short and long operation is made in the following parameters:
- *Blind operation*
- *Shutter operation*

Depending on the operating mode, the following Group Objects are available to operate the blind/shutter:
- *Up/down*
- *Step/stop*
- *Stop*

4.3.6 Switch/dim application (1-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Switch/dim*

The *Switch/dim (1-button)* application can be used to trigger switching and dimming operations with a button/switch connected to the input. If an event occurs on the input, the application-specific Group Objects send telegrams on the bus (ABB i-bus® KNX).

A short operation triggers switching. In 1-button operation, the reaction is set to the option *Toggle*, → parameter *On short operation* and cannot be changed.

A long operation triggers dimming. In 1-button operation, the dimming direction (brighter/darker) is the opposite direction to the last movement and is defined in the parameter *On long operation*.

The following Group Objects are available for switching and dimming operations:
- *Switch*
- *Dimming*

Note
If the parameter *Dimming process* is set to the option *Step dimming* the brightness change and the send behavior of the dim telegram can be defined in the following parameters:
- *Change per step*
- *Telegram is repeated every*

4.3.7 Switch/dim application (2-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]*

The *Switch/dim (2-button)* application can be used to trigger switching and dimming operations with two buttons/switches connected to the inputs. If an event occurs on the input, the application-specific Group Objects send telegrams on the bus (ABB i-bus® KNX).

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

A short operation triggers switching. The reaction (on/off/toggle) is defined in the parameter *On short operation*.

A long operation triggers dimming. The dimming direction (brighter/darker) is defined in the parameter *On long operation*.

The following Group Objects are available for switching and dimming operations:
- *Switch*
- *Dimming*

Note
If the parameter *Dimming process* is set to the option *Step dimming* the brightness change and the send behavior of the dim telegram can be defined in the following parameters:
- *Change per step*
- *Telegram is repeated every*

4.3.8 Scenes application

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Scenes*

The *Scenes* application can be used to recall or save one of 64 possible KNX scenes using a contact connected to the input. If an event occurs on the input, the following Group Object sends a scene telegram on the bus (ABB i-bus® KNX):
- *Scene 1 … 64*

Additional KNX devices can be incorporated in a scene. It is a prerequisite that all the KNX devices incorporated are parameterized with the same scene number and that scene recall is via the same group address.

No distinction between short and long operation

If there is no distinction between short and long operation (→ parameter *Distinction between long and short operation*), operating the contact recalls the scene (1 … 64) defined in the parameter *Scene number*.
The reaction is defined in the parameter *Scene*:
- *Send*: The recalled scene number is sent on the bus (ABB i-bus® KNX) and the corresponding scene is executed on all incorporated KNX devices.
- *Save*: The present values (e.g. input or output state, contact positions, blind position) of all incorporated KNX devices are saved in the recalled scene number. The values in the scene number are overwritten.

Distinction between short and long operation

If there is a distinction between short and long operation (→ parameter *Distinction between long and short operation*), a short operation on the contact recalls the scene (1 … 64) defined in the parameter *On short operation: Scene number*. The recalled scene number is sent on the bus (ABB i-bus® KNX) and the corresponding scene is executed on all incorporated KNX devices.
The reaction on long operation is defined in the parameter *Reaction on long operation*:
- *Save scene*: The present values (e.g. input or output state, contact positions, blind position) of all incorporated KNX devices are saved in the recalled scene number. The values in the scene number are overwritten.
- *Recall another scene*: The scene number specified in the parameter *On long operation: Scene number* is recalled. The recalled scene number is sent on the bus (ABB i-bus® KNX) and the corresponding scene is executed on all incorporated KNX devices.

4.3.8.1 Structure of 1-byte Scene telegram

A 1-byte Scene telegram contains the Scene number (1 … 64) and information about whether to recall or save the Scene.

Telegram value:
- 0 … 63 = Recall Scene x (x = 1 … 64)
- 128 … 191 = Save Scene x (x = 1 … 64)

More information: → Table of values, Group Object "Scene 1 ... 64", Page 151.

4.3.9 Send value/multiple operation application

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation*

The *send value/multiple operation* application can be used to send individual telegrams on the bus (ABB i-bus® KNX) with one of the contacts connected to the input.

The parameter *Send value on* is used to define which event on the input triggers the reaction (opening or closing the contact, short operation, long operation or multiple operation).

The parameter *Send value x on* is used to define which edge (rising or falling edge) or which operation (short operation, long operation or multiple operation) triggers sending a telegram.

Depending on the event, up to four values can be sent via separate Group Objects. The following parameters are used to define the DPT (data point type) and telegram value of the Group Objects:
- *Value x data type*
- *Value x value*

The following DPTs are available for the Group Objects:
- Switch (DPT 1.001)
- Forced operation (DPT 2.001)
- Percent (DPT 5.001)
- 1 byte (DPT 5.010)
- 1 byte signed (DPT 6.010)
- 2 bytes (DPT 7.001)
- 2 bytes signed (DPT 8.001)
- 4 bytes (DPT 12.001)
- Temperature (DPT 9.001)
- Color (DPT 232.600)
- HVAC mode (DPT 20.102)

Send value on 1-fold operation (open/close contact)

This event can trigger sending up to two values with the same DPT, e.g. value 1 = 18 °C on opening the contact, value 2 = 22 °C on closing the contact. If the parameter *Send value x on* is set to the option *Toggle*, both values are sent on each operation.

Send value on short/long operation

This event can trigger sending up to two values with the same or different DPTs, e.g. value 1 = 25 % on short operation and value 2 = 400 lux on long operation.

If the parameter *Toggle value* is set to the option *Yes*, two different values with the same DPT can be sent alternately, e.g. value 1 = 25 % on short operation and value 1 = 30 % on the next short operation.

Send value on multiple operation

This event can trigger sending up to four values with the same or different DPTs (value 1 on 1-fold operation, value 2 on 2-fold operation, etc.). The parameter *Maximum time between two operations* is used to define the delay after an operation before a value is sent. If a further operation occurs before the time defined has elapsed, the value is discarded and the time starts again.

Example
The maximum time between two operations is defined as 2 s.
1. The contact is operated (1-fold operation).
   ⇨ Before there is a reaction, there is a delay of 2 s.
2. After 1 s there is a further operation (2-fold operation).
   ⇨ The value 1 (send on 1-fold operation) is discarded, the time defined starts again.
3. After 0.5 s there is a further operation (3-fold operation).
   ⇨ The value 2 (send on 2-fold operation) is discarded, the time defined starts again.
4. There is no further operation.

⇨ 2 s after the third operation, the value 3 (send on 3-fold operation) is sent.

Note
If, in the parameter *Send values on every operation*, the option *Yes* is selected, the value is sent immediately, irrespective of whether there is a further operation.

4.3.10 Fault indicator/logic input application

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input*

The *fault indicator/logic input* application can be used to send a fault message on the bus (ABB i-bus® KNX) with one of the contacts (e.g. the fault indicator contact for a pump) connected to the input.

The following Group Object is available:
- *Status Fault*

The send behavior depends on the setting in the parameter *Send value of Group Object "Status Fault"*.

If the *fault indicator* application is active, the value of the corresponding input (state of connected contact: open = value 0, closed = value 1) can be applied to the function *Logic*, → parameter *Input x*.

4.3.11 Switching sequence application (1-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Switching sequence*

The *switching sequence* application can be used with a contact connected to an input, to call a series of individual telegrams that are sent on the bus (ABB i-bus® KNX) via Group Objects. With each event on the input (short operation), the Group Objects send the assigned telegram values on the bus (ABB i-bus® KNX).

A switching sequence can be created from up to 5 Group Objects. The function for each Group Object can be individually defined via DPT (data point types), → parameter *Function GO x*.

The following DPTs are available for the Group Objects:
- Switch (DPT 1.001)
- Percent (DPT 5.001)
- Byte (DPT 5.010)
- Scene (DPT 18.001)
- Color (DPT 232.600)
- HVAC mode (DPT 20.102)

A switching sequence is made up of no more than 6 steps (→ parameter *Enable step x*) and can consist of up to 30 (5 x 6) different telegram values. Each step is assigned a specific telegram value in the parameter *GO x*.

If an event occurs on the input (short operation), the switching sequence begins at step 1. The next step is executed if another event (short operation) occurs on the input. The parameter *Reaction after last step* is used to define the reaction of the switching sequence after executing the last step.

The parameter *Reaction on long operation* is used to define the reaction of the switching sequence on long operation.

4.3.12 Switching sequence application (2-button operation)

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]*

The *switching sequence (2-button)* application can be used with two contacts connected to the inputs, to call a series of individual telegrams that are sent on the bus (ABB i-bus® KNX) via Group Objects. With each event on the input (short operation), the Group Objects send the assigned telegram values on the bus (ABB i-bus® KNX).

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

A switching sequence can be created from up to 5 Group Objects. The function for each Group Object can be individually defined via DPT (data point types), → parameter *Function GO x*.

The following DPTs are available for the Group Objects:
- Switch (DPT 1.001)
- Percent (DPT 5.001)
- Byte (DPT 5.010)
- Scene (DPT 18.001)
- Color (DPT 232.600)
- HVAC mode (DPT 20.102)

A switching sequence is made up of no more than 6 steps (→ parameter *Enable step x*) and can consist of up to 30 (5 x 6) different telegram values. Each step is assigned a specific telegram value in the parameter *GO x*.

The parameter *Reaction on short operation* is used to assign a step direction to the two contacts connected to the inputs. One contact executes the previous step; the other contact executes the next step.

The parameter *Reaction on long operation* is used to define the reaction of the switching sequence on long operation.

4.3.13 Pulse counter application

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter window *Pulse counter 1* / *Pulse counter 2*

The *pulse counter* application can be used to count events (input pulses) on the input. The number of events (counter value) can be sent on the bus (ABB i-bus® KNX) via a Group Object. The application can also provide a limit value evaluation.

The following DPTs are available for the Group Object (→ parameter *Counter type*):
- 1 byte (DPT 5.010)
- 1 byte signed (DPT 6.010)
- 2 bytes (DPT 7.001)
- 2 bytes signed (DPT 8.001)
- 4 bytes (DPT 12.001)
- 4 bytes signed (DPT 13.001)

The parameter *Generate input pulse* is used to define which event on the input generates an input pulse. The parameter *Number of input pulses per counting pulse* is used to define how many input pulses are required before a counting pulse is generated. The parameter *Counter reading change per counting pulse* is used to define the counter reading change per counting pulse. The initial value of the counter is defined in the parameter *Initial value*.

The counter reading is sent on the bus (ABB i-bus® KNX) via one of the following Group Objects, depending on the selection in the parameter *Counter type*:
- *Counter value* (DPT 5.010)
- *Counter value* (DPT 6.010)
- *Counter value* (DPT 7.001)
- *Counter value* (DPT 8.001)
- *Counter value* (DPT 12.001)
- *Counter value* (DPT 13.001)

The send behavior is defined in the parameter *Send value of Group Object "Counter value 1"*.

The parameter *Value is sent from a change of* can be used to define that the telegram is sent on the bus (ABB i-bus® KNX) only after a deviation from the value sent previously.

Reaction on counter overflow

The DPT (→ parameter *Counter type*) sets the minimum and maximum possible counter reading. When the minimum or maximum possible counter reading is reached, the pulse counter is stopped. To start another counting operation, the pulse counter must be reset to the initial value using the following Group Object:
- *Reset counter value*

Using the limit value evaluation (→ parameter *Evaluate limit value*), a telegram can be sent on the bus (ABB i-bus® KNX) when the minimum or maximum possible counter reading is reached. The pulse counter can be reset automatically to the initial value using the option *Reset to initial value* in the parameter *Reaction on reaching limit value*.

Limit value evaluation

Using the limit value evaluation (→ parameter *Evaluate limit value*), a telegram can be sent on the bus (ABB i-bus® KNX) when an individually configurable limit value is reached.

Example
If the pulse counter is used as an operating hours counter, the limit value evaluation can provide advance notification for a lamp replacement.

The limit value is set using the parameter *Limit value*.

The parameter *Reaction on reaching limit value* is used to define how the pulse counter reacts when the limit value is reached.

Pulse counter 2

A second pulse counter can be enabled if required. Pulse counter 2 can be individually parameterized, has its own Group Objects and provides the same settings as pulse counter 1. The DPT is the same as for pulse counter 1 (→ parameter *Counter type*).

4.3.14 LED control application

Settings for this are made in the following parameter window:
- Parameter window *Channel X:* \ Parameter window *LED control*

The *LED control* application can be used to control an LED connected to the output.

The parameter *LED function* is used to define the function of the LED (on/off or flashing). The switch telegrams are received on the following Group Objects via the bus (ABB i-bus® KNX):
- *Permanent On*
- *Switch*
- *Flashing*

The Group Object *Permanent On* can be used to permanently switch on the LED. If the LED is permanently switched on, telegrams on the Group Objects *Switch* and *Flashing* are ignored.

The status of the LED can be sent on the bus (ABB i-bus® KNX) via the Group Object *Status*.

4.4 Functions

4.4.1 Function Logic

Settings for this are made in the following parameter window:
- Parameter window *Logic* \ Parameter window *Logic x-y*

The function *Logic* can be used across all devices and independently of other functions. Depending on the device variant, there are up to 16 individually parameterizable logic functions available; they are enabled in groups of four, → parameter *Enable Logic x-y*.

The following logic functions are available:
- AND
- OR
- Exclusive OR

The following inputs are available for each logic function:
- two input Group Objects (*Connection A*, *Connection B*)
- physical device inputs on which the application *Fault indicator/logic input* is active

The values of the input Group Objects (*Connection A*, *Connection B*) and the physical device inputs (state of the contacts connected to the inputs: open = value 0, closed = value 1) can be inverted before applying them to the function *Logic*.

Note
Only inputs on which the application *Fault indicator/logic input* is active can be applied to the function *Logic*, → parameter *Channel X application*.

The result of each logic function is calculated if at least one of the following events occurs:
- At least one of the input Group Objects receives a value
- The state of the contact connected to at least one of the incorporated physical device inputs changes
- Download, ETS reset or KNX voltage recovery

The result is dependent on the logic function selected.

Logic function	Result
AND	The result is 1 if each input value is 1.
OR	The result is 1 if at least one of the input values is 1.
Exclusive OR	The result is 1 if an odd number of input values is 1.

Tab. 9: Results of the logic functions

The result of the logic function is output on the Group Object *Status Result*. The result can be inverted before output.

The send behavior of the Group Object *Status Result* is defined in the parameter *Send "Status Result"*.

4.5 Special operating states

4.5.1 Reaction on KNX voltage failure

KNX voltage failure describes the failure of the KNX voltage, e.g. due to a power failure.

During KNX voltage failure, the devices do not react to events on the device inputs.

4.5.2 Reaction after KNX voltage recovery

KNX voltage recovery is the state that exists after the KNX voltage is restored. The device will restart after KNX voltage recovery.

The time set in the following parameter elapses before the device performs an action:
- *Sending delay after KNX voltage recovery*

After the sending delay elapses, the present status of the inputs (connected contacts open or closed) applies.

The reaction of the outputs after the sending delay elapses can be specified in the output parameters.

4.5.3 Reaction on ETS reset

ETS reset can be performed in ETS using the Commissioning menu item, in the function *Reset device* (from ETS version 6 *Restart device*).

The device application will restart after ETS reset.

The time set in the following parameter elapses before the device performs an action:
- *Sending delay after KNX voltage recovery*

After the sending delay elapses, the present status of the inputs (connected contacts open or closed) applies.

The reaction of the outputs after the sending delay elapses can be specified in the output parameters.

4.5.4 Reaction during download

Note
The device will no longer operate after the application is uninstalled or the download is canceled.
▸ Download again.

Downloading describes loading a modified or updated device application onto the device. The device is not ready to operate during a download. The device will restart after the update.

The time set in the following parameter elapses before the device performs an action:
- *Sending delay after KNX voltage recovery*

After the sending delay elapses, the present status of the inputs (connected contacts open or closed) applies.

The reaction of the outputs after the sending delay elapses can be specified in the output parameters.

5 Mounting and installation

5.1 Information about mounting

The device can be placed in any mounting position behind electrical equipment (e.g. buttons) in flush mounting sockets with a diameter of 60 mm.

The connection to the bus (ABB i-bus® KNX) is made using the bus connection terminal supplied.

The connections at the inputs or outputs are made via plug-in connecting cables
→ designation on the housing.

Note
The maximum permissible current consumption on a KNX line must not be exceeded.
- During planning and installation, ensure that the KNX line is correctly dimensioned. The device has a maximum current consumption of 12 mA.

5.2 Mounting in flush mounting sockets

DANGER – Severe injuries due to touch voltage
Electric feedback from different phase conductors can cause contact voltages and lead to serious injuries.
- Operate the device only in a closed housing.
- Disconnect all phases before working on the electrical connection.

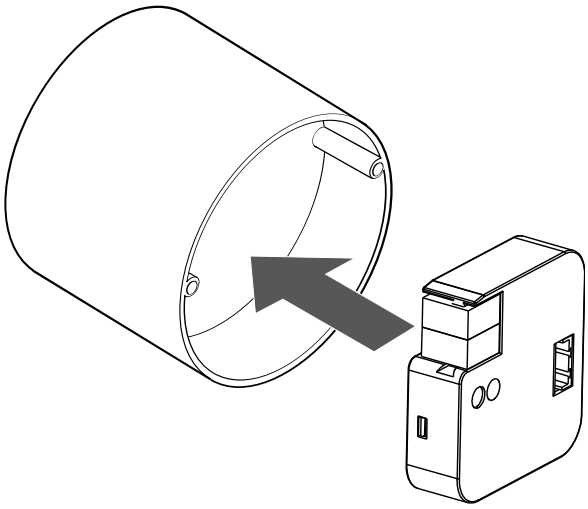

Fig. 5: Mounting in flush mounting sockets

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1. Plug in the plug-in connecting cables on the device.
2. Isolate any conductors that are not required.
3. Connect bus connection terminals.
4. Establish electrical connections.
5. Place device in flush mounting socket.

6 Commissioning

6.1 Prerequisites for commissioning

A PC with ETS and a connection to the bus (ABB i-bus® KNX), e.g. via a KNX interface, are required to commission the device.

- Required ETS version: 5.7 or higher
- Product-specific device application: installed → Device Applications, Page 15

Note
Observe software information on the website → www.abb.com/knx.

6.2 Secure commissioning with KNX DATA Secure

Note
KNX DATA Secure is supported by ETS version 5.5.0 or later. ETS version 6 or later is recommended when using KNX DATA Secure. Using older ETS versions can cause errors in project planning, problems during commissioning, or problems when diagnosing group addresses and devices.

This device meets the KNX DATA Secure standard (→ KNX DATA Secure, Page 147). To commission the device securely, note the following points:

- It is essential to assign a project password if a KNX DATA Secure device is imported into a project. This protects the project against unauthorized access and encrypts the data communication on the bus (ABB i-bus® KNX).
  - Without a password setup, none of the devices in the project can be operated as KNX DATA Secure devices. This means the security of the whole project will be that of a conventional KNX network (KNX Plain).
  - The project password must be kept in a safe place. Access to the project is not possible without it. Not even the KNX Association or ABB AG will be able to access it.
- Commissioning a KNX DATA Secure device requires a commissioning key (FDSK = Factory Default Setup Key).
  - The FDSK is attached to the device in duplicate as a removable sticker. The stickers should be removed from the device and kept in a safe place.
  - On the first download, a window opens in ETS, prompting the user to enter the FDSK. Alternatively, the FDSK can be read in with a QR scanner.
  - The FDSKs for all of the KNX DATA Secure devices incorporated in the project can be entered in advance in ETS, → Project Overview, "Security" tab.
  - After commissioning, ETS assigns new keys. The FDSK will be required again only if the device was reset to its factory settings (e.g. if the device is to be used as a KNX DATA Secure device in a different system with a different ETS project).

6.3 Commissioning overview

After the KNX voltage is activated for the first time, the following factory settings will be selected automatically:

- Physical address of the device: 15.15.255
- Device application: preloaded

The device can be programmed only using ETS.

Note
The device application can be re-downloaded if necessary. Downloads may take longer after a device application is uninstalled or when changing applications.

6.4 Putting the device into operation

1. Connect the device to the bus (ABB i-bus® KNX).
2. Switch on KNX voltage.

⇨ Device is ready for operation.

6.5 Assignment of the physical address

Note
If it is set in ETS that the device application is to be downloaded during programming, the download will begin after assignment of the physical address.

Triggering assignment of the physical address via ETS:

1. Press *Programming* button.
   ⇨ Programming mode active. *Programming* LED lights up.
2. Start programming process in ETS.

⇨ Physical address is assigned. Device restarts.

Note
The device performs an ETS reset during assignment of the physical address. All states are reset.

6.6 Software/device application

6.6.1 Download reaction

Depending on the PC, it can take up to 90 seconds for the progress bar to appear during a download.

Using an interface that supports download via "long frames" (e.g. USB/S 1.2 or IPR/S 3.5.1) can greatly shorten the download time.

6.6.2 Copying, exchanging and converting

The following functions can be performed with the ETS app *ABB Update Copy Convert*:

- *Update*: Changes the device application to a higher or lower version while retaining the current configurations
- *Convert*: Adopts a configuration from an identical or compatible source device
- *Copy channel*: Copies a channel configuration to other channels on a multichannel device
- *Channel exchange*: Exchanges configurations between two channels on a multichannel device
- *Import/export*: Saves and reads device configurations as external files

The ETS app *ABB Update Copy Convert* can be downloaded free of charge from the KNX Shop → www.KNX.org.

6.7 Resetting the device to factory settings

✓ The device must have been connected to the bus (ABB i-bus® KNX) before resetting it.

1. Disconnect the device from the bus (ABB i-bus® KNX).
2. Press and hold the *Programming* button.
   ⇨ The *Programming* LED flashes once.
3. Connect the device to the bus (ABB i-bus® KNX).
   ⇨ The *Programming* LED flashes at 1 Hz; the device executes the master reset.
4. When the *Programming* LED flashes at 5 Hz, release the *Programming* button.

⇨ The *Programming* LED is off; the factory settings have been restored (→ Commissioning overview, Page 28).

7 Parameters

7.1 General

Note
ETS (Engineering Tool Software) is used to parameterize the device.

The following sections describe the device parameters based on the parameter windows. The parameter windows have a dynamic design. Parameters are shown or hidden depending on parameterization and function.

The default values for the parameters are underlined, e.g.:
no (checkbox cleared)
yes (checkbox ticked)

Note
The default values in the device application can vary from the values stated in the product manual depending on the product variant.

Note
The largest and most extensive device in the product family is described below as an example.

7.1.1 Prerequisites for visibility

In the "Prerequisites for visibility" the ETS settings and product variants necessary to display a parameter window/parameter/Group Object are listed. If no "Prerequisites for visibility" are specified, parameter windows/parameters/Group Objects are always shown or the prerequisites are given by the higher-level parameter window.

The "Prerequisites for visibility" are structured as follows:
- Parameter window: all necessary prerequisites
- Parameters: Settings in other parameter windows, higher-level parameters, product variant required
- Group Objects: all necessary prerequisites

7.2 Parameter windows

7.2.1 Parameter window Configuration

The following settings can be made in this parameter window:

- Define application for each channel
- Enable function *Logic*

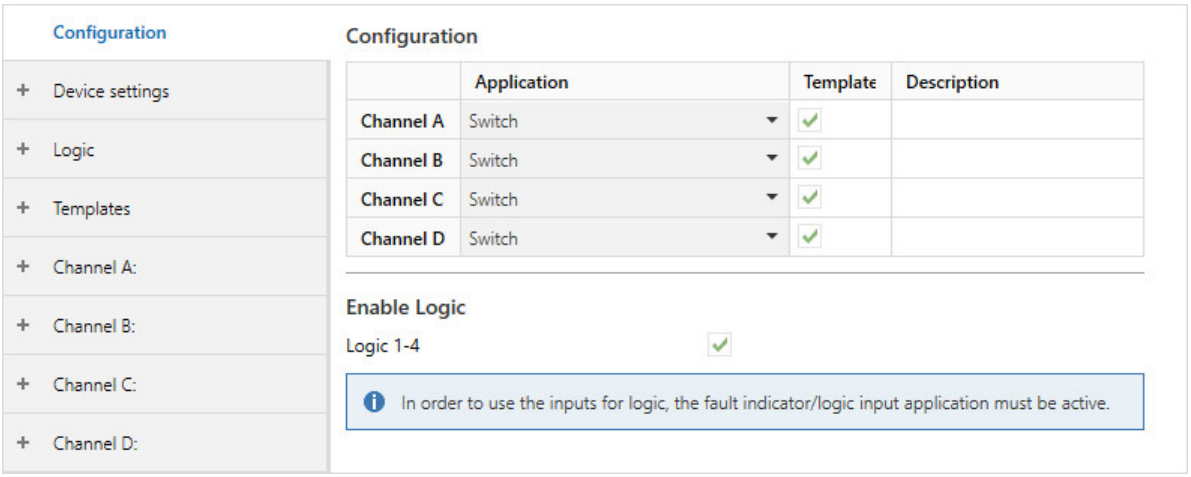


Fig. 6: Parameter window Configuration

This parameter window includes the following parameters:

→ Channel X application, Page 32
→ Channel X template, Page 34
→ Channel X description, Page 34
→ Enable Logic x-y, Page 34

7.2.1.1 Channel X application

This parameter is used to define which application is used.

Option	
Switch	The following dependent parameter windows are shown: • *Switch* The following dependent Group Objects are displayed: • *Switch*
Switch (2-button)	The following dependent parameter windows are shown: • *Switch [2-button]* The following dependent Group Objects are displayed: • *Switch*
Blind/shutter	The following dependent parameter windows are shown: • *Blind/shutter*
Blind/shutter (2-button)	The following dependent parameter windows are shown: • *Blind/shutter [2-button]*
Switch/dim	The following dependent parameter windows are shown: • *Switch/dim* The following dependent Group Objects are displayed: • *Switch* • *Dimming*
Switch/dim (2-button)	The following dependent parameter windows are shown: • *Switch/dim [2-button]* The following dependent Group Objects are displayed: • *Switch* • *Dimming*
Scenes	The following dependent parameter windows are shown: • *Scenes* The following dependent Group Objects are displayed: • *Scene 1 … 64*
Send value/multiple actuation	The following dependent parameter windows are shown: • *Send value/multiple operation*
Fault indicator/logic input	The following dependent parameter windows are shown: • *Fault indicator/logic input* The following dependent Group Objects are displayed: • *Status Fault*
Switching sequence	The following dependent parameter windows are shown: • *Switching sequence* The following dependent Group Objects are displayed: • *Number of operations* • *Next/previous step*
Switching sequence (2-button)	The following dependent parameter windows are shown: • *Switching sequence [2-button]* The following dependent Group Objects are displayed: • *Number of operations* • *Next/previous step*
Pulse counter	The following dependent parameter windows are shown: • *Counter settings* • *Pulse counter 1* The following dependent Group Objects are displayed: • *Reset counter value* • *Request counter value*
LED activation	The following dependent parameter windows are shown: • *LED control* The following dependent Group Objects are displayed: • *Permanent On*
Deactivated	The channel is deactivated.

7.2.1.2 Channel X template

This parameter is used to define whether the settings for the application are adopted from the template or each parameter is set individually.

Option	
No	The parameters can be set individually.
Yes	The settings for the parameters are adopted from the template.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X application* \ all options except *Deactivated*

7.2.1.3 Channel X description

This parameter is used to define an individual description for a channel, an input or an output. The description is displayed at the following points:

- In the name of the corresponding parameter window
- In the name of the corresponding Group Objects

Option	
Free text entry	Maximum 24 ASCII characters; the maximum number of characters may vary for other character formats.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X application* \ all options except *Deactivated*

7.2.1.4 Enable Logic x-y

This parameter enables the function *Logic* in groups of four.

More information: → Function Logic, Page 24.

Option	
No	The function *Logic* is not enabled.
Yes	The following dependent parameter windows are shown: • *Logic* • *Logic x-y*

7.2.2 Parameter window Device settings

The following settings can be made in this parameter window:

- Set sending delay
- Set telegram rate limit
- Enable central and device-specific Group Objects

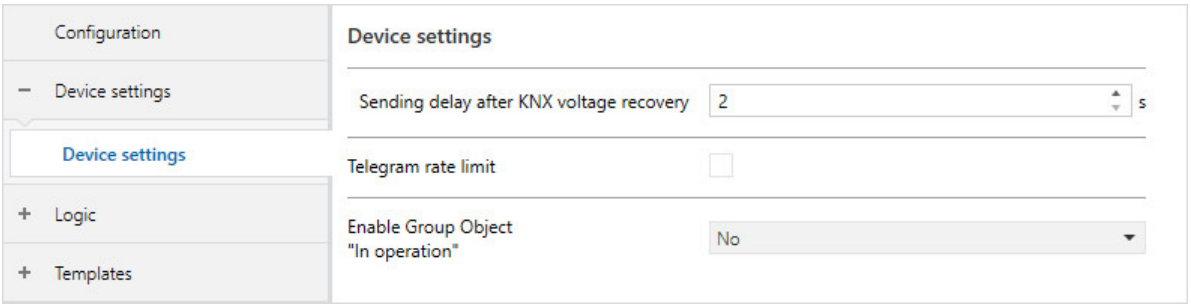


Fig. 7: Parameter window Device settings

This parameter window includes the following parameters:

→ Sending delay after KNX voltage recovery, Page 35
→ Telegram rate limit, Page 35
→ Maximum number of sent telegrams, Page 35
→ In period, Page 36
→ Enable Group Object "In operation", Page 36
→ Sending cycle, Page 36

7.2.2.1 Sending delay after KNX voltage recovery

This parameter is used to define the sending delay after KNX voltage recovery.

More information: → Sending or switching delay, Page 149.

Note
After KNX voltage recovery, the device waits for the sending delay time to elapse before sending telegrams on the bus (ABB i-bus® KNX).

Option
2 ... 60 s

7.2.2.2 Telegram rate limit

This parameter is used to define whether the number of telegrams sent by the device will be limited. The fewer telegrams sent, the lower the bus load will be.

More information: → Telegram rate limit, Page 149.

Option	
No	The number of telegrams is not limited.
Yes	The following dependent parameters are shown: • *Maximum number of sent telegrams* • *In period*

7.2.2.3 Maximum number of sent telegrams

This parameter is used to define the number of telegrams sent within a period that can be set.

The period is defined in the parameter *In period*.

More information: → Telegram rate limit, Page 149.

Option
0 … 20 … 100

Prerequisites for visibility

- Parameter window *Device settings* \ Parameter *Telegram rate limit* \ Option *Yes*

7.2.2.4 In period

This parameter is used to define the period during which the device sends telegrams. The telegrams are sent as quickly as possible at the start of a period.

More information: → Telegram rate limit, Page 149.

Note
The telegram rate limit is deactivated when the value 0 is selected.

Option
0 … 1 … 59 s

Prerequisites for visibility

- Parameter window *Device settings* \ Parameter *Telegram rate limit* \ Option *Yes*

7.2.2.5 Enable Group Object "In operation"

This parameter enables the Group Object *In operation*.

Option	
No	The Group Object is not enabled.
Yes, send value 0 cyclically	The Group Object is enabled and cyclically sends the value 0. The following dependent parameters are shown: • *Sending cycle* The following dependent Group Objects are displayed: • *In operation*
Yes, send value 1 cyclically	The Group Object is enabled and cyclically sends the value 1. The following dependent parameters are shown: • *Sending cycle* The following dependent Group Objects are displayed: • *In operation*

7.2.2.6 Sending cycle

This parameter is used to define the cycle in which the Group Object *In operation* sends a telegram.

Option
00:00:01 … 00:10:00 … 18:12:15 hh:mm:ss

Prerequisites for visibility

- Parameter window *Device settings* \ Parameter *Enable Group Object "In operation"* \ Option *Yes, send value 0 cyclically* / *Yes, send value 1 cyclically*

7.2.3 Parameter window Logic

7.2.3.1 Parameter window Logic x-y

The following settings can be made in this parameter window:

- Parameterize function *Logic*

More information: → Function Logic, Page 24.

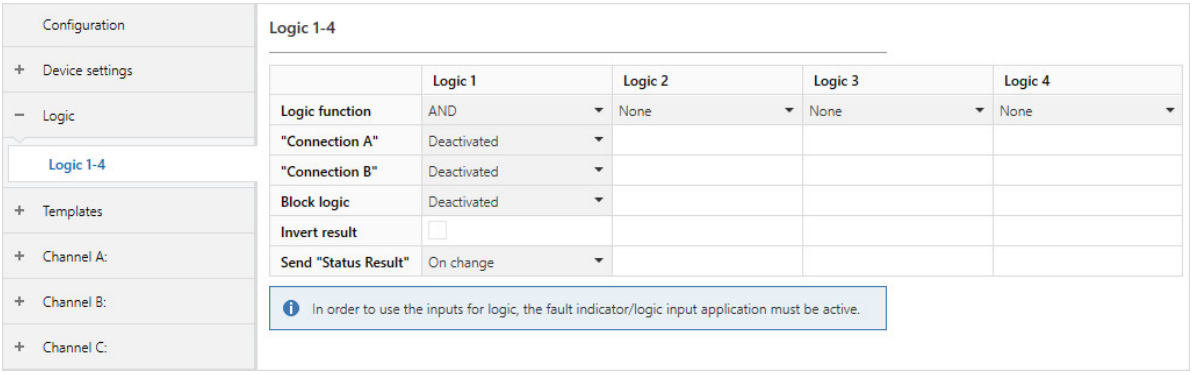


Fig. 8: Parameter window Logic x-y

This parameter window includes the following parameters:

→ Logic function, Page 38
- → "Connection A", Page 38
  - → Default setting "Connection A", Page 39
- → "Connection B", Page 39
  - → Default setting "Connection B", Page 39
- → Input x, Page 40
- → Block logic, Page 40
  - → State after ETS download or KNX voltage recovery, Page 40
- → Invert result, Page 41
- → Send "Status Result", Page 41

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Enable Logic x-y* \ Option *Yes*

7.2.3.1.1 Logic function

This parameter is used to define whether one of the logic functions is used.

Option	
None	The logic function is not used.
AND	The logic function *AND* is used. The result is 1 if each input value is 1. The following dependent parameters are shown: • *"Connection A"* • *"Connection B"* • *Input x* • *Invert result* • Send value of Group Object "Status Result" The following dependent Group Objects are displayed: • *Status Result*
OR	The logic function *OR* is used. The result is 1 if at least one of the input values is 1. The following dependent parameters are shown: • *"Connection A"* • *"Connection B"* • *Input x* • *Invert result* • Send value of Group Object "Status Result" The following dependent Group Objects are displayed: • *Status Result*
Exclusive OR	The logic function *exclusive OR* is used. The result is 1 if an odd number of input values is 1. The following dependent parameters are shown: • *"Connection A"* • *"Connection B"* • *Input x* • *Invert result* • Send value of Group Object "Status Result" The following dependent Group Objects are displayed: • *Status Result*

7.2.3.1.2 "Connection A"

This parameter is used to define how the value of the input Group Object *Connection A* is applied to the function *Logic*.

Option	
Deactivated	The value is not applied to the function *Logic*.
Apply value	The value is applied to the function *Logic*. The following dependent parameters are shown: • *Default setting "Connection A"* The following dependent Group Objects are displayed: • *Connection A*
Invert value	The value is applied inverted to the function *Logic*. The following dependent parameters are shown: • *Default setting "Connection A"* The following dependent Group Objects are displayed: • *Connection A*

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

7.2.3.1.3 Default setting "Connection A"

This parameter is used to define the value that is written to the Group Object *Connection A* after a download, ETS reset or KNX voltage recovery.

> **Note**
> The value is inverted if the parameter *"Connection A"* is set to the option *Invert value*.

Option	
Read value	Nothing is written to the Group Object. The current value is read and the result of the function *Logic* is calculated.
1	The value 1 is written to the Group Object and the result of the function *Logic* is calculated.
0	The value 0 is written to the Group Object and the result of the function *Logic* is calculated.

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *"Connection A"* \ all options except *Deactivated*

7.2.3.1.4 "Connection B"

This parameter is used to define how the value of the input Group Object *Connection B* is applied to the function *Logic*.

Option	
Deactivated	The value is not applied to the function *Logic*.
Apply value	The value is applied to the function *Logic*. The following dependent parameters are shown: • *Default setting "Connection B"* The following dependent Group Objects are displayed: • *Connection B*
Invert value	The value is applied inverted to the function *Logic*. The following dependent parameters are shown: • *Default setting "Connection B"* The following dependent Group Objects are displayed: • *Connection B*

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

7.2.3.1.5 Default setting "Connection B"

This parameter is used to define the value that is written to the Group Object *Connection B* after a download, ETS reset or KNX voltage recovery.

> **Note**
> The value is inverted if the parameter *"Connection B"* is set to the option *Invert value*.

Option	
Read value	Nothing is written to the Group Object. The current value is read and the result of the function *Logic* is calculated.
1	The value 1 is written to the Group Object and the result of the function *Logic* is calculated.
0	The value 0 is written to the Group Object and the result of the function *Logic* is calculated.

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *"Connection B"* \ all options except *Deactivated*

7.2.3.1.6 Input x

This parameter is used to determine whether the value on input x (state of contact connected to input: open = value 0, closed = value 1) is applied to the function *Logic*.

> **Note**
> Only inputs on which the application *Fault indicator/logic input* is active can be applied to the function *Logic*, → parameter *Channel X application*.

Option	
Deactivated	The value is not applied to the function *Logic*.
Apply value	The value is applied to the function *Logic*.
Invert value	The value is applied inverted to the function *Logic*.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Fault indicator/logic input*
- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

7.2.3.1.7 Block logic

This parameter enables the Group Object *Block logic* and defines which value on the Group Object *Block logic* will block the result calculation of the function *Logic*.

Option	
Deactivated	The result calculation cannot be blocked; the Group Object is not enabled.
On value 1	The result calculation is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block logic*
On value 0	The result calculation is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block logic*

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

7.2.3.1.8 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the result output after ETS download or KNX voltage recovery.

Option	
Last state	The last known state is set.
Blocked	The result output is blocked.
Enabled	The result output is enabled.

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Block logic* \ all options except *Deactivated*

7.2.3.1.9 Invert result

This parameter is used to define whether the result of the function *Logic* is output inverted.

Option
No
Yes

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

7.2.3.1.10 Send "Status Result"

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- *Status Result*

Option	
On change	The result is sent on a change.
On request	The result is sent on request.
On change or on request	The value is sent on a change or on request.
On receipt of value	The result is sent if at least one of the input Group Objects or at least one of the incorporated physical device inputs receives a value. On receipt of the value, the result is recalculated; the result does not necessarily need to change.
On receipt of value or on request	The result is sent on request, or if at least one of the input Group Objects or at least one of the incorporated physical device inputs receives a value. On receipt of the value, the result is recalculated; the result does not necessarily need to change.

Prerequisites for visibility

- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

7.2.4 Parameter window Templates

In the subordinate parameter windows, the applications can be set for all channels. The application settings from the template apply to each channel on which the corresponding application is used.

The parameter *Channel X template* is used to define whether the settings for the application are adopted from the template or each parameter is set individually.

The parameterization options in the template and in the parameter windows for the channels are identical. The following parameter windows are available in the template:

- Switch (1-button operation)
- Switch (2-button operation)
- Blind/shutter (1-button operation)
- Blind/shutter (2-button operation)
- Switch/dim (1-button operation)
- Switch/dim (2-button operation)
- Scenes
- Send value/multiple operation
- Fault indicator
- Switching sequence (1-button operation)
- Switching sequence (2-button operation)
- Pulse counter
- LED control

7.2.5 Parameter window Channel X:

Note
An individual description can be added to the name of the parameter window, → parameter *Channel X description*.

7.2.5.1 Parameter window Switch

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input as a switch sensor input in 1-button operation
- Define reaction on events on input

More information: → Switch application (1-button operation), Page 16.

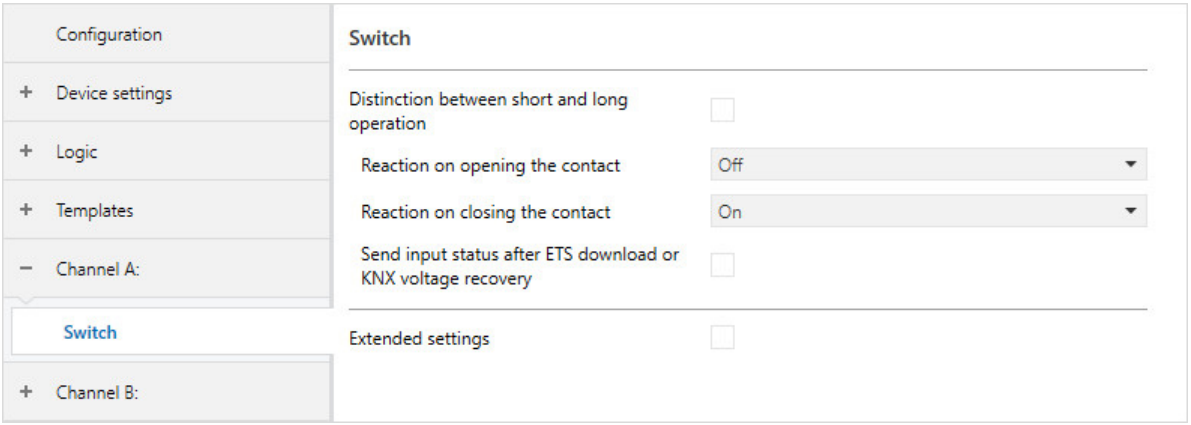


Fig. 9: Parameter window Switch (1-button operation)

This parameter window includes the following parameters:

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch*

7.2.5.1.1 Distinction between long and short operation

This parameter is used to define whether a distinction is made between short and long operation of the contact connected (e.g. button/switch).

More information: → Distinction between short and long operation, Page 15.

Option	
No	The following dependent parameters are shown: • *Reaction on opening the contact* • *Reaction on closing the contact* • *Send input status after ETS download or KNX voltage recovery*
Yes	The following dependent parameters are shown: • *Reaction on short operation* • *Reaction on long operation*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.1.2 Reaction on opening the contact

This parameter is used to define how the device reacts on opening the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Distinction between long and short operation* \ Option *No*

7.2.5.1.3 Reaction on closing the contact

This parameter is used to define how the device reacts on closing the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Distinction between long and short operation* \ Option *No*

7.2.5.1.4 Send input status after ETS download or KNX voltage recovery

This parameter is used to define whether the status of the input (connected contact open or closed) is sent on the bus (ABB i-bus® KNX) after ETS download or KNX voltage recovery.

Option
No
Yes

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Distinction between long and short operation* \ Option *No*

7.2.5.1.5 Reaction on short operation

This parameter is used to define how the device reacts on short operation of the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Distinction between long and short operation* \ Option *Yes*

7.2.5.1.6 Reaction on long operation

This parameter is used to define how the device reacts on long operation of the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Distinction between long and short operation* \ Option *Yes*

7.2.5.1.7 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.1.8 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Switch*
  - Parameter *Distinction between long and short operation* \ Option *Yes*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.1.9 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/switch) is interpreted as long operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Switch*
  - Parameter *Distinction between long and short operation* \ Option *Yes*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.1.10 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.1.11 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.1.12 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch* \ Parameter *Block input* \ Option *On value 1 / On value 0*

7.2.5.2 Parameter window Switch [2-button]

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input as a switch sensor input in 2-button operation
- Define reaction on events on input

More information: → Switch application (2-button operation), Page 16.

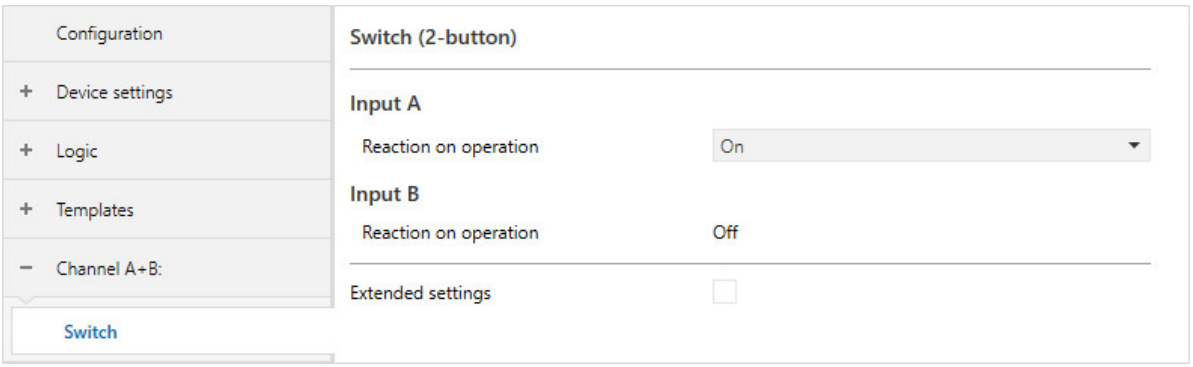


Fig. 10: Parameter window Switch (2-button operation)

This parameter window includes the following parameters:
→ Reaction on operation, Page 49
→ Extended settings, Page 50
→ Contact type, Page 50
→ Interference suppression filter, Page 50
→ Block input, Page 51
→ State after ETS download or KNX voltage recovery, Page 51

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch (2-button)*

7.2.5.2.1 Reaction on operation

This parameter is used to define how the device reacts on operation of the contact connected to the input.

Option	
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.2.2 Extended settings

This parameter is used to display the extended settings for the parameter window.

> **Note**
> The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Contact type* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.2.3 Contact type

This parameter is used to set the type of contact connected to the input.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.2.4 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.2.5 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.2.6 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch [2-button]* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.3 Parameter window Blind/shutter

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input for blind or shutter control in 1-button operation
- Define reaction on events on input

More information: → Blind/shutter application (1-button operation), Page 17.

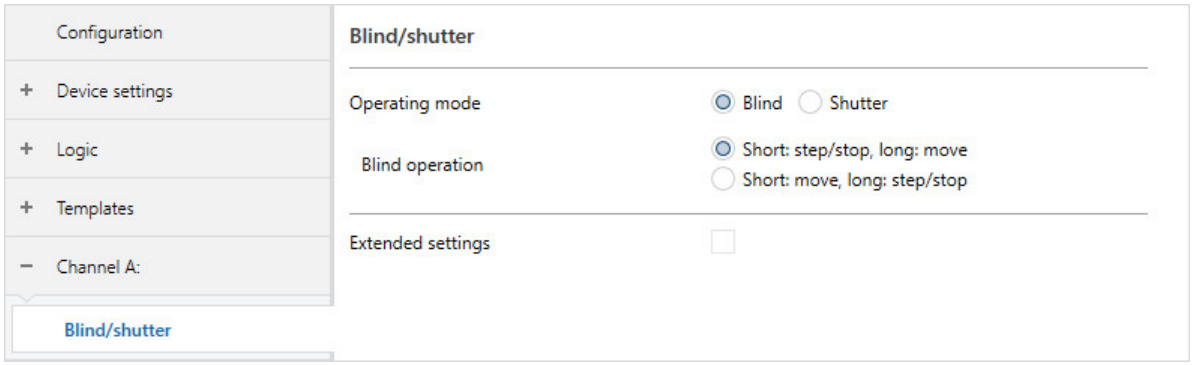


Fig. 11: Parameter window Blind/shutter (1-button operation)

This parameter window includes the following parameters:

→ Operating mode, Page 53
→ Blind operation, Page 53
→ Cycle for sending the step/stop telegram, Page 53
→ Shutter operation, Page 54
→ Stop movement, Page 54
→ Extended settings, Page 54
→ "Movement" direction change after, Page 55
→ "Slat" direction change after, Page 55
→ Contact type, Page 55
→ Long operation after, Page 56
→ Interference suppression filter, Page 56
→ Block input, Page 57
→ State after ETS download or KNX voltage recovery, Page 57

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Blind/shutter*

7.2.5.3.1 Operating mode

This parameter is used to define the operating mode.

Option	
Blind	For connecting a blind motor. The following dependent parameters are shown: • *Blind operation* The following dependent Group Objects are displayed: • *Up/down* • *Step/stop* • *Status Upper end position* • *Status Lower end position* • *Status Move*
Shutter	For connecting a shutter, ventilation flap, window drive, zipscreen or fabric awning motor. The following dependent parameters are shown: • *Shutter operation* The following dependent Group Objects are displayed: • *Up/down* • *Stop* • *Status Upper end position* • *Status Lower end position*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.3.2 Blind operation

The type of blind/shutter operation is defined using this parameter.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Short: step/stop, long: move	On long operation the blind/shutter is moved in the opposite direction to the last movement. On short operation the movement is stopped. If the blind/shutter is stationary, on short operation the slats are adjusted one step per operation. If the slats are not in an end position, the direction of the slat adjustment is dependent on the last direction of movement of the blind/shutter.
Short: move, long: step/stop	On short operation the blind/shutter is moved in the opposite direction to the last movement. On long operation the movement is stopped. If the blind/shutter is stationary, on long operation the slats are adjusted one step per operation. If the slats are not in an end position, the direction of the slat adjustment is dependent on the last direction of movement of the blind/shutter. The following dependent parameters are shown: • *Cycle for sending the step/stop telegram*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Operating mode* \ Option

7.2.5.3.3 Cycle for sending the step/stop telegram

This parameter is used to define the cycle for sending the step/stop telegram while the contact connected to the input is operated. The telegram is sent on long operation, then using the cycle defined until operation ends.

Option
00.3 … 00.5 … 10.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Blind operation* \ Option *Short: move, long: step/stop*

7.2.5.3.4 Shutter operation

The type of blind/shutter operation is defined using this parameter.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Short: stop, long: move	On long operation the blind/shutter is moved in the opposite direction to the last movement. On short operation the movement is stopped.
Only move	On operation the blind/shutter is moved in the opposite direction to the last movement. The following dependent parameters are shown: • *Stop movement*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Operating mode* \ Option

7.2.5.3.5 Stop movement

This parameter is used to define the event on the input for which the movement of the blind/shutter is stopped.

Option	
On release	The movement of the blind/shutter is stopped on release of the contact.
On next operation	The movement of the blind/shutter is stopped on the next operation of the contact. The following dependent Group Objects are displayed: • *Status Move*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Shutter operation* \ Option *Only move*

7.2.5.3.6 Extended settings

This parameter is used to display the extended settings for the parameter window.

> **Note**
> The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *"Movement" direction change after* • *"Slat" direction change after* • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.3.7 "Movement" direction change after

This parameter is used to define the time after which a direction change is possible. If, after a stop telegram, an operation occurs after the defined time has elapsed, the blind/shutter is moved in the opposite direction to the previous operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.0 … 59.9 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.3.8 "Slat" direction change after

This parameter is used to define the time after which a direction change is possible. If, after a stop telegram, an operation occurs after the defined time has elapsed, the slats are adjusted in the opposite direction to the previous operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
01.0 … 05.0 … 59.9 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter*
  - Parameter *Operating mode* \ Option *Blind*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.3.9 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.3.10 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/ switch) is interpreted as long operation.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.3.11 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.3.12 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.3.13 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.4 Parameter window Blind/shutter [2-button]

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input for blind or shutter control in 2-button operation
- Define reaction on events on input

More information: → Blind/shutter application (2-button operation), Page 17.

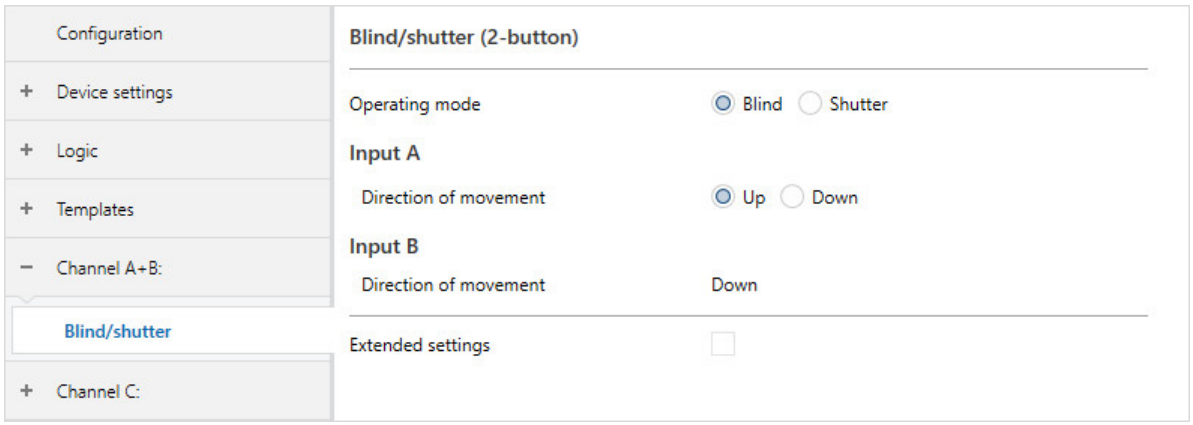


Fig. 12: Parameter window Blind/shutter (2-button operation)

This parameter window includes the following parameters:
→ Operating mode, Page 59
→ Direction of movement, Page 59
→ Extended settings, Page 59
  → Blind operation, Page 60
    → Cycle for sending the step/stop telegram, Page 60
  → Shutter operation, Page 61
    → Stop movement, Page 61
  → Contact type, Page 61
  → Long operation after, Page 62
  → Interference suppression filter, Page 62
  → Block input, Page 63
    → State after ETS download or KNX voltage recovery, Page 63

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Blind/shutter (2-button)*

7.2.5.4.1 Operating mode

This parameter is used to define the operating mode.

Option	
Blind	For connecting a blind motor. The following dependent Group Objects are displayed: • *Up/down* • *Step/stop*
Shutter	For connecting a shutter, ventilation flap, window drive, zipscreen or fabric awning motor. The following dependent Group Objects are displayed: • *Up/down* • *Stop*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.4.2 Direction of movement

This parameter is used to define the direction of movement of the blind/shutter or the adjustment direction of the slats.

Option	
Up	The blind/shutter is moved up or the slats are opened.
Down	The blind/shutter is moved down or the slats are closed.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.4.3 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Blind operation* • *Shutter operation* • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.4.4 Blind operation

The type of blind/shutter operation is defined using this parameter.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Short: step/stop, long: move	On long operation the blind/shutter is moved to an end position. On short operation the movement is stopped. If the blind/shutter is stationary, on short operation the slats are adjusted one step per operation.
Short: move, long: step/stop	On short operation the blind/shutter is moved to an end position. On long operation the movement is stopped. If the blind/shutter is stationary, on long operation the slats are adjusted one step per telegram. Telegrams are sent for as long as the operation lasts. The following dependent parameters are shown: • *Cycle for sending the step/stop telegram*
Only move	On operation the blind/shutter is moved. On release the movement is stopped.
Slat adjustment only	On operation the slats are adjusted. On release the slat adjustment is stopped. The following dependent parameters are shown: • *Cycle for sending the step/stop telegram*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*
  - Parameter *Operating mode* \ Option *Blind*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.4.5 Cycle for sending the step/stop telegram

This parameter is used to define the cycle for sending the step/stop telegram while the contact connected to the input is operated. The telegram is sent on long operation, then using the cycle defined until operation ends.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.5 … 10.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Blind operation* \ Option *Short: move, long: step/stop* / *Slat adjustment only*

7.2.5.4.6 Shutter operation

The type of blind/shutter operation is defined using this parameter.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Short: stop, long: move	On long operation the blind/shutter is moved to an end position. On short operation the movement is stopped.
Only move	On operation the blind/shutter is moved. On release the movement is stopped. The following dependent parameters are shown: • *Stop movement*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*
  - Parameter *Operating mode* \ Option *Shutter*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.4.7 Stop movement

This parameter is used to define the event on the input for which the movement of the blind/shutter is stopped.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
On release	The movement of the blind/shutter is stopped on release of the contact.
On next operation	The movement of the blind/shutter is stopped on the next operation of the contact. The following dependent Group Objects are displayed: • *Status Upper end position* • *Status Lower end position* • *Status Move*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Shutter operation* \ Option *Only move*

7.2.5.4.8 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.4.9 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/ switch) is interpreted as long operation.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.4.10 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.4.11 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.4.12 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.5 Parameter window Switch/dim

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input as a switch or dim sensor input in 1-button operation
- Define reaction on events on input
- Define dimming process

More information: → Switch/dim application (1-button operation), Page 18.

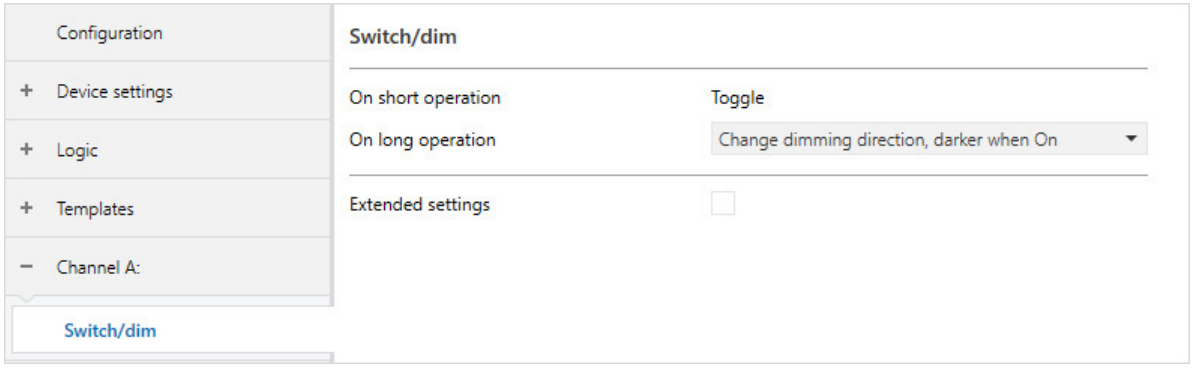


Fig. 13: Parameter window Switch/dim (1-button operation)

This parameter window includes the following parameters:
→ On short operation, Page 64
→ On long operation, Page 65
→ Extended settings, Page 65
→ Dimming process, Page 65
→ Change per step, Page 66
→ Telegram is repeated every, Page 66
→ Contact type, Page 66
→ Long operation after, Page 67
→ Interference suppression filter, Page 67
→ Block input, Page 68
→ State after ETS download or KNX voltage recovery, Page 68

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch/dim*

7.2.5.5.1 On short operation

This parameter is used to define the switching behavior on short operation of the contact connected to the input.

Note
This parameter is set to the option *Toggle* in 1-button operation and cannot be changed.

Option	
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.5.2 On long operation

This parameter is used to define the dimming direction on long operation of the contact connected to the input.

Option	
Change dimming direction	The dimming is in the opposite direction to operation previously.
Change dimming direction, brighter when On	The dimming is in the opposite direction to operation previously. When switching on, a brighter telegram is sent.
Change dimming direction, darker when On	The dimming is in the opposite direction to operation previously. When switching on, a darker telegram is sent.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.5.3 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Dimming process* • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.5.4 Dimming process

This parameter is used to define the dimming process.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Start-stop-dimming	The dimming process starts when the contact connected to the input is operated and stops when the contact is operated again.
Step dimming	The dimming process starts when the contact connected to the input is operated. The dimming reaction is specified in the dependent parameters. The following dependent parameters are shown: • *Change per step* • *Telegram is repeated every*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.5.5 Change per step

This parameter is used to define the brightness change per dim telegram sent.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
2 %
3 %
6 %
13 %
25 %
50 %
100 %

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Dimming process* \ Option *Step dimming*

7.2.5.5.6 Telegram is repeated every

This parameter is used to define the cycle for repeating the dim telegram while the contact connected to the input is operated. The dim telegram is sent on operation, then using the cycle defined until operation ends.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 ... 00.6 ... 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Dimming process* \ Option *Step dimming*

7.2.5.5.7 Contact type

This parameter is used to set the type of contact connected to the input.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.5.8 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/ switch) is interpreted as long operation.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.5.9 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.5.10 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.5.11 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.6 Parameter window Switch/dim [2-button]

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input as a switch or dim sensor input in 2-button operation
- Define reaction on events on input
- Define dimming process

More information: → Switch/dim application (2-button operation), Page 18.

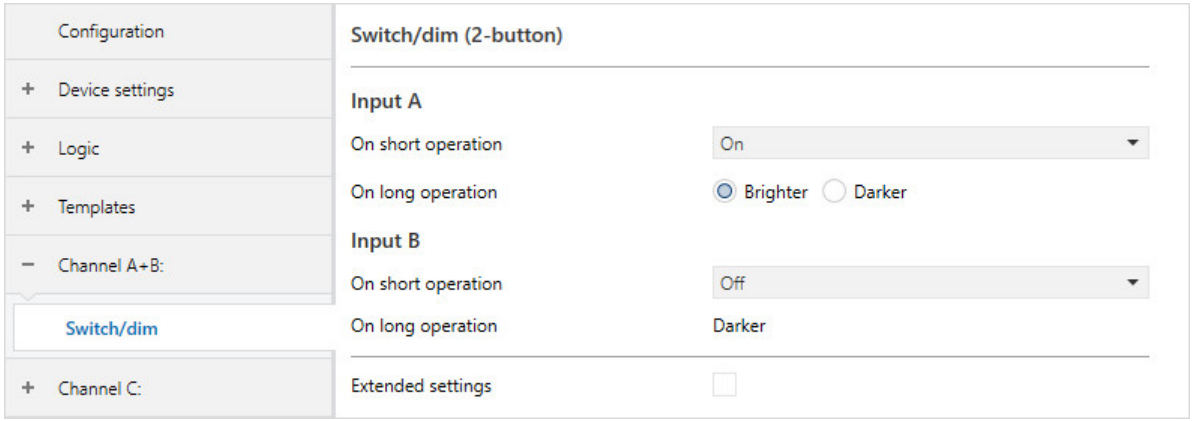


Fig. 14: Parameter window Switch/dim (2-button operation)

This parameter window includes the following parameters:

→ On short operation, Page 70
→ On long operation, Page 70
→ Extended settings, Page 70
→ Dimming process, Page 71
→ Change per step, Page 71
→ Telegram is repeated every, Page 71
→ Contact type, Page 72
→ Long operation after, Page 72
→ Interference suppression filter, Page 72
→ Block input, Page 73
→ State after ETS download or KNX voltage recovery, Page 73

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch/dim (2-button)*

7.2.5.6.1 On short operation

This parameter is used to define the switching behavior on short operation of the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.6.2 On long operation

This parameter is used to define the dimming direction on long operation of the contact connected to the input.

Option
Brighter
Darker

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.6.3 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Dimming process* • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.6.4 Dimming process

This parameter is used to define the dimming process.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Start-stop-dimming	The dimming process starts when the contact connected to the input is operated and stops when the contact is operated again.
Step dimming	The dimming process starts when the contact connected to the input is operated. The dimming reaction is specified in the dependent parameters. The following dependent parameters are shown: • *Change per step* • *Telegram is repeated every*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.6.5 Change per step

This parameter is used to define the brightness change per dim telegram sent.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
2 %
3 %
6 %
13 %
25 %
50 %
100 %

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Dimming process* \ Option *Step dimming*

7.2.5.6.6 Telegram is repeated every

This parameter is used to define the cycle for repeating the dim telegram while the contact connected to the input is operated. The dim telegram is sent on operation, then using the cycle defined until operation ends.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.6 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Dimming process* \ Option *Step dimming*

7.2.5.6.7 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.6.8 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/switch) is interpreted as long operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.6.9 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.6.10 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.6.11 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.7 Parameter window Scenes

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Recall or store scenes
- Define reaction on events on input

More information: → Scenes application, Page 19.

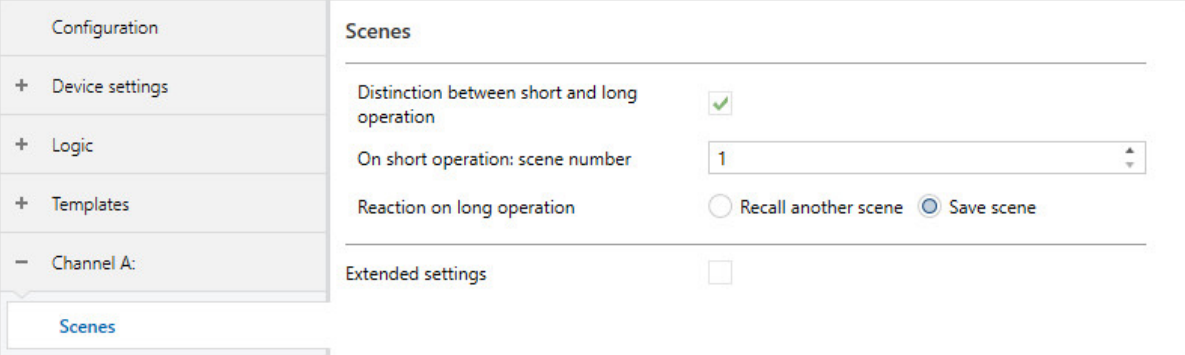


Fig. 15: Parameter window Scenes

This parameter window includes the following parameters:
→ Distinction between long and short operation, Page 74
- → On short operation: Scene number, Page 75
- → Reaction on long operation, Page 75
  - → On long operation: Scene number, Page 75
- → Scene number, Page 75
- → Scene, Page 76

→ Extended settings, Page 76
- → Contact type, Page 76
- → Long operation after, Page 77
- → Interference suppression filter, Page 77
- → Block input, Page 78
  - → State after ETS download or KNX voltage recovery, Page 78

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Scenes*

7.2.5.7.1 Distinction between long and short operation

This parameter is used to define whether a distinction is made between short and long operation of the contact connected (e.g. button/switch).

More information: → Distinction between short and long operation, Page 15.

Option	
No	The following dependent parameters are shown: • *Scene number* • *Scene*
Yes	The following dependent parameters are shown: • *On short operation: Scene number* • *Reaction on long operation*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.7.2 On short operation: Scene number

This parameter is used to define which scene number is recalled on short operation of the contact connected to the input.

Option
1 … 64

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Distinction between long and short operation* \ Option *Yes*

7.2.5.7.3 Reaction on long operation

This parameter is used to define how the device reacts on long operation of the contact connected to the input.

Option	
Save scene	The actual values for all KNX devices integrated are saved in the scene number recalled (→ parameter *On short operation: Scene number*). The values in the scene number are overwritten.
Recall another scene	Another scene is recalled. The following dependent parameters are shown: • *On long operation: Scene number*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Distinction between long and short operation* \ Option *Yes*

7.2.5.7.4 On long operation: Scene number

This parameter is used to define which scene number is recalled on long operation of the contact connected to the input.

Option
1 … 64

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Reaction on long operation* \ Option *Recall another scene*

7.2.5.7.5 Scene number

This parameter is used to define which scene number is recalled on operation of the contact connected to the input.

Option
1 … 64

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Distinction between long and short operation* \ Option *No*

7.2.5.7.6 Scene

This parameter is used to define how the device reacts when a scene number is recalled.

Option	
Send	The scene number recalled (→ parameter *Scene number*) is sent on the bus (ABB i-bus® KNX). The corresponding scene is executed on all KNX devices integrated.
Save	The actual values for all KNX devices integrated are saved in the scene number recalled (→ parameter *Scene number*). The values in the scene number are overwritten.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Distinction between long and short operation* \ Option *No*

7.2.5.7.7 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.7.8 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.7.9 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/ switch) is interpreted as long operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Note
The default option depends on the selection in the parameter *Reaction on long operation*.

Option
00.3 ... 00.4 ... 30.0 ss.f
00.3 ... 03.0 ... 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes*
  - Parameter *Distinction between long and short operation* \ Option *Yes*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.7.10 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 ... 30 ... 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.7.11 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.7.12 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Scenes* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.8 Parameter window Send value/multiple operation

> **Note**
> If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Define reaction on events on input
- Define data point types and values
- Define send behavior

More information: → Send value/multiple operation application, Page 20.

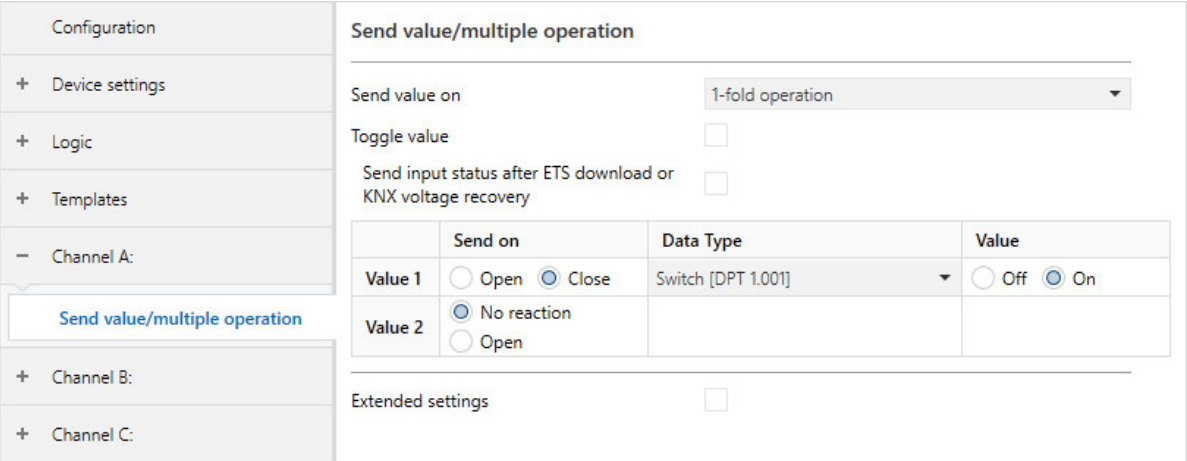


Fig. 16: Parameter window Send value/multiple operation

This parameter window includes the following parameters:

→ Send value on, Page 80
- → Send input status after ETS download or KNX voltage recovery, Page 80
- → Toggle value, Page 80
- → Maximum time between two operations, Page 80
- → Send values on every operation, Page 81

→ Send value x on, Page 81
- → Value x data type, Page 82
  - → Value x value, Page 83

→ Extended settings, Page 84
- → Activate minimum signal duration, Page 85
  - → When opening the contact, Page 85
  - → When closing the contact, Page 86
- → Contact type, Page 86
- → Long operation after, Page 86
- → Interference suppression filter, Page 87
- → Block input, Page 87
  - → State after ETS download or KNX voltage recovery, Page 88

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Send value/multiple actuation*

7.2.5.8.1 Send value on

This parameter is used to define the event on the input to which the application *Send value/multiple operation* reacts.

Option	
1-fold operation	The following dependent parameters are shown: • *Send input status after ETS download or KNX voltage recovery*
Short/long operation	The following dependent parameters are shown: • *Toggle value*
Multiple operation	The following dependent parameters are shown: • *Maximum time between two operations* • *Send values on every operation*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.8.2 Send input status after ETS download or KNX voltage recovery

This parameter is used to define whether the status of the input (connected contact open or closed) is sent on the bus (ABB i-bus® KNX) after ETS download or KNX voltage recovery.

Option
No
Yes

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Send value on* \ Option *1-fold operation*

7.2.5.8.3 Toggle value

This parameter is used to define whether two different telegram values with the same DPT are sent alternately on each operation.

Option
No
Yes

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Send value on* \ Option *Short/long operation*

7.2.5.8.4 Maximum time between two operations

This parameter is used to define the delay after an operation before a value is sent. If a further operation occurs before the time defined has elapsed, the value is discarded and the time starts again.

Example
The maximum time between two operations is defined as 2 s.
1. The contact is operated (1-fold operation).
   ⇨ Before there is a reaction, there is a delay of 2 s.
2. After 1 s there is a further operation (2-fold operation).
   ⇨ The value 1 (send on 1-fold operation) is discarded, the time defined starts again.
3. After 0.5 s there is a further operation (3-fold operation).
   ⇨ The value 2 (send on 2-fold operation) is discarded, the time defined starts again.
4. There is no further operation.

⇨ 2 s after the third operation, the value 3 (send on 3-fold operation) is sent.

Note
If, in the parameter *Send values on every operation*, the option *Yes* is selected, the value is sent immediately, irrespective of whether there is a further operation.

Option
00.3 … 00.5 … 10.0 ss.f

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Send value on* \ Option *Multiple operation*

7.2.5.8.5 Send values on every operation

This parameter is used to define whether the value of the Group Object "Value x: X" is sent on every operation of the contact connected to the input.

Option	
No	After operation, the time set in the parameter *Maximum time between two operations* elapses before a value is sent. If there is a further operation within the time set, the value of the Group Object for the previous operation is not sent. Only the value of the Group Object for the last operation is sent.
Yes	After operation, there is no wait for a further operation. The value of the Group Object for each operation is sent immediately.

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Send value on* \ Option *Multiple operation*

7.2.5.8.6 Send value x on

This parameter is used to define which edge or which operation triggers the Group Object "Value x: X" to send a telegram.

Note
The name and function of the Group Object depend on the selection in the parameter *Value x data type*.

Note
The possible options and the standard option depend on the selection made in the parameter *Send value on*.

Option	
Open	The telegram is sent on opening the contact (falling edge).
Close	The telegram is sent on closing the contact (rising edge).
Toggle	The telegram is sent on every operation.
No reaction	The device does not react and does not send any telegrams.
Short operation	The telegram is sent on short operation.
Long operation	The telegram is sent on long operation.
1-fold operation	The telegram is sent on 1-fold operation.
2-fold operation	The telegram is sent on 2-fold operation.
3-fold operation	The telegram is sent on 3-fold operation.
4-fold operation	The telegram is sent on 4-fold operation.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.8.7 Value x data type

This parameter is used to define the data point type (DPT), name and function of the Group Object "Value x: X".

Option	
Deactivated	No data point type is selected.
Switch (DPT 1.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: Switch*
Forced operation (DPT 2.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: Forced operation*
Percent (DPT 5.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: Percent*
1 byte unsigned (DPT 5.010)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: 1 byte*
1 byte signed (DPT 6.010)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: 1 byte signed*
2 bytes unsigned (DPT 7.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: 2 bytes*
2 bytes signed (DPT 8.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: 2 bytes signed*
4 bytes unsigned (DPT 12.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: 4 bytes*
Temperature (DPT 9.001)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: Temperature*
Color (DPT 232.600)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: Color*
HVAC mode (DPT 20.102)	The following dependent parameters are shown: • *Value x value* The following dependent Group Objects are displayed: • *Value x: HVAC mode*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.8.8 Value x value

This parameter is used to define the telegram value that the Group Object "Value x: X" sends if an event occurs on the input.

> **Note**
> Name and function of the Group Object, the possible options and the standard option depend on the selection made in the parameter *Value x data type*.

Option
On
Off
Toggle
No forced operation
Forced operation, value 0
Forced operation, value 1
0 … 100 %
0 … 255
-128 … 0 … 127
0 … 65,535
-32768 … 0 … 32767
0 … 4294967295
–100 … 20 … 250 °C
#000000 … #FFFFFF
Automatic
Comfort
Standby
Economy
Building Protection

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Send value x on* \ all options except *No reaction*

7.2.5.8.9 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Note
The parameters in the extended settings are dependent on the setting in the parameter *Send value on*.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Activate minimum signal duration* • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.8.10 Activate minimum signal duration

This parameter is used to define whether the minimum signal duration is activated.

Note
The minimum signal duration indicates the minimum time a contact (e.g. button/switch) must be operated to trigger a reaction. The minimum signal duration prevents unintentional operation from triggering a reaction.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
No	The minimum signal duration is not activated.
Yes	The following dependent parameters are shown: • *When opening the contact* • *When closing the contact*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation*
  - Parameter *Send value on* \ Option *1-fold operation*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.8.11 When opening the contact

This parameter is used to define how long the contact must be open as a minimum before a reaction is triggered.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00:00:00.1 … 00:00:01.0 … 23:59:59.9 hh:mm:ss:f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Activate minimum signal duration* \ Option *Yes*

7.2.5.8.12 When closing the contact

This parameter is used to define how long the contact must be closed as a minimum before a reaction is triggered.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00:00:00.1 … 00:00:01.0 … 23:59:59.9 hh:mm:ss:f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Activate minimum signal duration* \ Option *Yes*

7.2.5.8.13 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation*
  - Parameter *Send value on* \ Option *Short/long operation* / *Multiple operation*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.8.14 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/switch) is interpreted as long operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation*
  - Parameter *Send value on* \ Option *Short/long operation*
  - Parameter *Extended settings* \ Option *Yes*

  Or
  - Parameter *Send value on* \ Option *Multiple operation*
  - Parameter *Send value x on* \ Option *Long operation*
  - Parameter *Value x data type* \ all options except *Deactivated*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.8.15 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.8.16 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.8.17 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.9 Parameter window Fault indicator/logic input

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input as fault indicator/logic input
- Define reaction on events on input

More information: → Fault indicator/logic input application, Page 21.

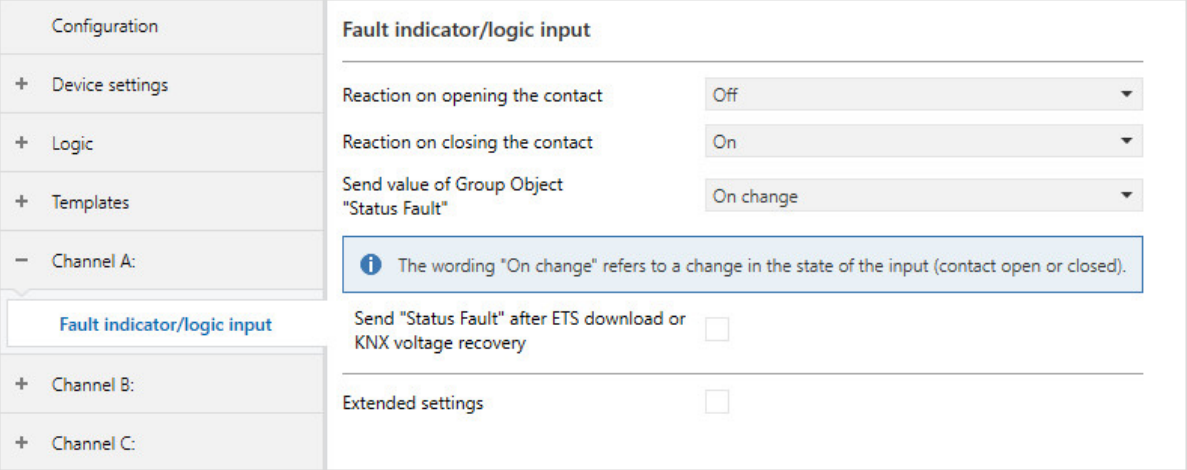


Fig. 17: Parameter window Fault indicator/logic input

This parameter window includes the following parameters:
→ Reaction on opening the contact, Page 90
→ Reaction on closing the contact, Page 90
→ Send value of Group Object "Status Fault", Page 90
  → Sending cycle, Page 91
  → On Group Object value, Page 92
  → Send "Status Fault" after ETS download or KNX voltage recovery, Page 92
→ Extended settings, Page 93
  → Contact type, Page 93
  → Activate minimum signal duration, Page 94
    → When opening the contact, Page 94
    → When closing the contact, Page 94
  → Interference suppression filter, Page 95
  → Block input, Page 95
    → State after ETS download or KNX voltage recovery, Page 96

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Fault indicator/logic input*

7.2.5.9.1 Reaction on opening the contact

This parameter is used to define how the device reacts on opening the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.
End cyclic transmission	Cyclic sending of the value from the following Group Object is ended: • *Status Fault*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.9.2 Reaction on closing the contact

This parameter is used to define how the device reacts on closing the contact connected to the input.

Option	
On	The device sends a switch telegram with the value 1 to the application-specific Group Object for the input.
Off	The device sends a switch telegram with the value 0 to the application-specific Group Object for the input.
Toggle	The device sends a switch telegram to the application-specific Group Object for the input. If the value 0 was sent last, the value 1 is sent. If the value 1 was sent last, the value 0 is sent.
No reaction	The device does not react and does not send any telegrams.
End cyclic transmission	Cyclic sending of the value from the following Group Object is ended: • *Status Fault*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.9.3 Send value of Group Object "Status Fault"

This parameter is used to define when the value of the following Group Object is sent on the bus (ABB i-bus® KNX):

- *Status Fault*

Note

The wording "On change" in the options refers to a change in the state of the input (contact open or closed).

Option	
No, update only	The value is updated but is not sent.
On change	The value is sent on a change. The following dependent parameters are shown: • *Send "Status Fault" after ETS download or KNX voltage recovery*
Cyclically	The value is sent cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent. The following dependent parameters are shown: • *Sending cycle* • *On Group Object value* • *Send "Status Fault" after ETS download or KNX voltage recovery*
After change or cyclically	The value is sent on change or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change. The following dependent parameters are shown: • *Sending cycle* • *On Group Object value* • *Send "Status Fault" after ETS download or KNX voltage recovery*
On request	The value is sent on request. The following dependent Group Objects are displayed: • *Request status Fault*
On change or on request	The value is sent on change or on request. The following dependent parameters are shown: • *Send "Status Fault" after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Request status Fault*
On request or cyclically	The value is sent on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on request. The following dependent parameters are shown: • *Sending cycle* • *On Group Object value* • *Send "Status Fault" after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Request status Fault*
After change, on request or cyclically	The value is sent on change, on request or cyclically. The cycle time can be set. The cycle time is restarted each time a value is sent, including if the value is sent on change or on request. The following dependent parameters are shown: • *Sending cycle* • *On Group Object value* • *Send "Status Fault" after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Request status Fault*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.9.4 Sending cycle

This parameter is used to define the cycle in which the value of the Group Object is sent.

Option
00:00:01 … 00:00:30 … 99:59:59 hh:mm:ss

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Send value of Group Object "Status Fault"* \ Option *Cyclically* / *After change or cyclically* / On request or cyclically / After change, on request or cyclically

7.2.5.9.5 On Group Object value

This parameter is used to define when the value of the Group Object is sent cyclically.

Option	
0	If the value of the Group Object is 0, this value is sent cyclically after an adjustable time has elapsed.
1	If the value of the Group Object is 1, this value is sent cyclically after an adjustable time has elapsed.
0 or 1	The value of the Group Object is sent cyclically after an adjustable time has elapsed.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Send value of Group Object "Status Fault"* \ Option *Cyclically* / *After change or cyclically* / On request or cyclically / After change, on request or cyclically

7.2.5.9.6 Send "Status Fault" after ETS download or KNX voltage recovery

This parameter is used to define whether the current value of the following Group Object is sent on the bus (ABB i-bus® KNX) after ETS download or KNX voltage recovery:

- *Status Fault*

Note

Whether the current value of the Group Object is sent depends on the current state of the input and the following settings:

1. Parameter *Send value of Group Object "Status Fault"*, option *On change*, *After change or cyclically*, *On change or on request* or *After change, on request or cyclically*
2. State of input: Contact open
3. Parameter *Reaction on opening the contact*, option *No reaction* or *End cyclic transmission*
   ⇨ The value of the Group Object is not sent.
4. State of input: Contact closed
5. Parameter *Reaction on closing the contact*, option *No reaction* or *End cyclic transmission*
   ⇨ The value of the Group Object is not sent.

⇨ With all other states and settings, the current value is sent.

Option
No
Yes

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Send value of Group Object "Status Fault"* \ Option *On change* / *Cyclically* / *After change or cyclically* / On change or on request / On request or cyclically / After change, on request or cyclically

7.2.5.9.7 Extended settings

This parameter is used to display the extended settings for the parameter window.

> **Note**
> The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Contact type* • *Activate minimum signal duration* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.9.8 Contact type

This parameter is used to set the type of contact connected to the input.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.9.9 Activate minimum signal duration

This parameter is used to define whether the minimum signal duration is activated.

Note
The minimum signal duration indicates the minimum time a contact (e.g. button/switch) must be operated to trigger a reaction. The minimum signal duration prevents unintentional operation from triggering a reaction.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
No	The minimum signal duration is not activated.
Yes	The following dependent parameters are shown: • *When opening the contact* • *When closing the contact*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.9.10 When opening the contact

This parameter is used to define how long the contact must be open as a minimum before a reaction is triggered.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00:00:00.1 … 00:00:01.0 … 23:59:59.9 hh:mm:ss:f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Activate minimum signal duration* \ Option Yes

7.2.5.9.11 When closing the contact

This parameter is used to define how long the contact must be closed as a minimum before a reaction is triggered.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00:00:00.1 … 00:00:01.0 … 23:59:59.9 hh:mm:ss:f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Activate minimum signal duration* \ Option Yes

7.2.5.9.12 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.9.13 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.9.14 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.10 Parameter window Switching sequence

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Create and parameterize switching sequence in 1-button operation
- Define function of Group Objects
- Integrate Group Objects in switching sequence
- Define reaction on events on input

More information: → Switching sequence application (1-button operation), Page 21.

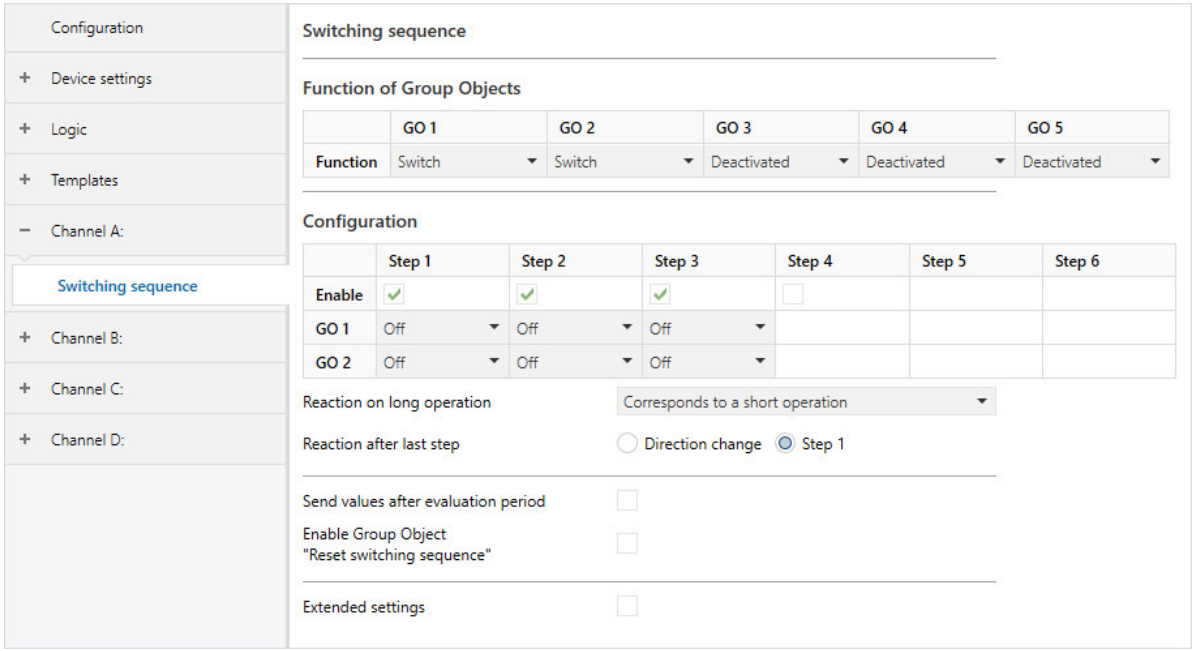


Fig. 18: Parameter window Switching sequence (1-button operation)

This parameter window includes the following parameters:
→ Function GO x, Page 98
→ Enable step x, Page 98
  → GO x, Page 98
→ Reaction on long operation, Page 99
→ Reaction after last step, Page 99
→ Send values after evaluation period, Page 99
  → Evaluation period, Page 99
→ Enable Group Object "Reset switching sequence", Page 100
→ Extended settings, Page 100
  → Contact type, Page 101
  → Long operation after, Page 101
  → Interference suppression filter, Page 101
  → Block input, Page 102
    → State after ETS download or KNX voltage recovery, Page 102

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switching sequence*

7.2.5.10.1 Function GO x

This parameter is used to enable the Group Objects for the switching sequence and define the function (data point types) of the Group Objects.

Option	
Deactivated	The Group Object is not used.
Switch	The following dependent Group Objects are displayed: • *Value x: Switch*
Percent	The following dependent Group Objects are displayed: • *Value x: Percent*
Byte	The following dependent Group Objects are displayed: • *Value x: Byte*
Scene	The following dependent Group Objects are displayed: • *Value x: Scene*
Color	The following dependent Group Objects are displayed: • *Value x: Color*
HVAC mode	The following dependent Group Objects are displayed: • *Value x: HVAC mode*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.2 Enable step x

Step x of the switching sequence is enabled using this parameter.

Option	
No	Step x of the switching sequence is not enabled.
Yes	The following dependent parameters are shown: • *GO x*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.3 GO x

This parameter is used to define the telegram value that the Group Object x sends in step x of the switching sequence.

Note

The possible options and the standard option depend on the selection made in the parameter *Function GO x*.

Option
On
Off
0 … 100 %
0 … 1 …255
1 … 64
#000000 … #FFFFFF
Automatic
Comfort
Standby
Economy
Building Protection

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence*
  - Parameter *Function GO x* \ all options except *Deactivated*
  - Parameter *Enable step x* \ Option *Yes*

7.2.5.10.4 Reaction on long operation

This parameter is used to define the reaction of the switching sequence on long operation of the contact connected to the input.

Option	
Corresponds to a short operation	The switching sequence makes no distinction between short and long operation.
Step 1	The switching sequence begins with step 1.
Previous step	The previous step of the switching sequence is called.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.5 Reaction after last step

This parameter is used to define how the switching sequence reacts if the contact connected to the input is operated after execution of the last step.

Note
The possible options and the standard option depend on the selection made in the parameter *Reaction on long operation*.

Option	
No reaction	The switching sequence does not react.
Direction change	The switching sequence changes the step direction (e.g. 1, 2, 3 → 2, 1).
Step 1	The switching sequence begins with step 1.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.6 Send values after evaluation period

This parameter is used to define whether the value of the Group Object "Value x: X" is sent on every operation of the contact connected to the input.

Option	
No	After operation, there is no wait for a further operation. The value of the Group Object for each operation is sent immediately.
Yes	After operation, the time set in the parameter *Evaluation period* elapses before a value is sent. If there is a further operation within the time set, the value of the Group Object for the previous operation is not sent. Only the value of the Group Object for the last operation is sent. The following dependent parameters are shown: • *Evaluation period*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.7 Evaluation period

This parameter is used to define the delay after an operation before a value is sent. If a further operation occurs before the time defined has elapsed, the value is discarded and the time starts again.

Example
The defined evaluation period is 2 s.
1. The contact is operated (1-fold operation).
   ⇨ Before there is a reaction, there is a delay of 2 s.
2. After 1 s there is a further operation (2-fold operation).
   ⇨ The value 1 (send on 1-fold operation) is discarded, the time defined starts again.
3. After 0.5 s there is a further operation (3-fold operation).
   ⇨ The value 2 (send on 2-fold operation) is discarded, the time defined starts again.
4. There is no further operation.

⇨ 2 s after the third operation, the value 3 (send on 3-fold operation) is sent.

Option
00.3 … 02.0 … 30.0 ss.f

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Send values after evaluation period* \ Option *Yes*

7.2.5.10.8 Enable Group Object "Reset switching sequence"

This parameter enables the following Group Object:
- *Reset switching sequence*

Option	
No	The Group Object is not enabled.
Yes	The following dependent Group Objects are displayed: • *Reset switching sequence*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.9 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.10.10 Contact type

This parameter is used to set the type of contact connected to the input.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.10.11 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/ switch) is interpreted as long operation.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence*
  - Parameter *Reaction on long operation* \ all options except *Corresponds to a short operation*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.10.12 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.10.13 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.10.14 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.11 Parameter window Switching sequence [2-button]

Note
In 2-button operation, two adjacent channels are combined. For this reason, 2-button operation is only available for channels A and C (depending on the device variant).

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:

- Create and parameterize switching sequence in 2-button operation
- Define function of Group Objects
- Integrate Group Objects in switching sequence
- Define reaction on events on input

More information: → Switching sequence application (2-button operation), Page 22.

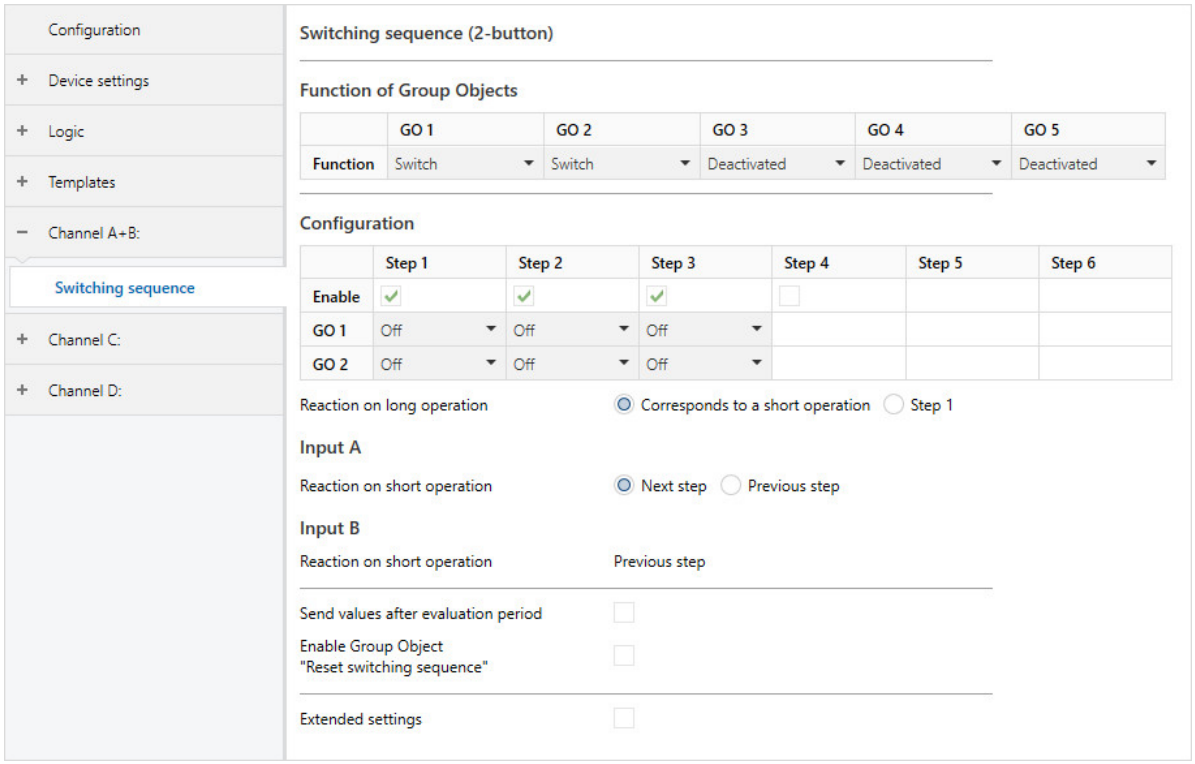


Fig. 19: Parameter window Switching sequence (2-button operation)

This parameter window includes the following parameters:

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switching sequence (2-button)*

7.2.5.11.1 Function GO x

This parameter is used to enable the Group Objects for the switching sequence and define the function (data point types) of the Group Objects.

Option	
Deactivated	The Group Object is not used.
Switch	The following dependent Group Objects are displayed: • *Value x: Switch*
Percent	The following dependent Group Objects are displayed: • *Value x: Percent*
Color	The following dependent Group Objects are displayed: • *Value x: Color*
HVAC mode	The following dependent Group Objects are displayed: • *Value x: HVAC mode*
Byte	The following dependent Group Objects are displayed: • *Value x: Byte*
Scene	The following dependent Group Objects are displayed: • *Value x: Scene*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.2 Enable step x

Step x of the switching sequence is enabled using this parameter.

Option	
No	Step x of the switching sequence is not enabled.
Yes	The following dependent parameters are shown: • *GO x*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.3 GO x

This parameter is used to define the telegram value that the Group Object x sends in step x of the switching sequence.

> **Note**
> The possible options and the standard option depend on the selection made in the parameter *Function GO x*.

Option
On
Off
0 ... 100 %
0 ... 1 ...255
1 ... 64
#000000 ... #FFFFFF
Automatic
Comfort
Standby
Economy
Building Protection

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]*
  - Parameter *Function GO x* \ all options except *Deactivated*
  - Parameter *Enable step x* \ Option *Yes*

7.2.5.11.4 Reaction on long operation

This parameter is used to define the reaction of the switching sequence on long operation of the contact connected to the input.

Option	
Corresponds to a short operation	The switching sequence makes no distinction between short and long operation.
Step 1	The switching sequence begins with step 1.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.5 Reaction on short operation

This parameter is used to define how the switching sequence reacts on short operation of the contacts connected to the inputs.

Option
Next step
Previous step

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.6 Send values after evaluation period

This parameter is used to define whether the value of the Group Object "Value x: X" is sent on every operation of the contact connected to the input.

Option	
No	After operation, there is no wait for a further operation. The value of the Group Object for each operation is sent immediately.
Yes	After operation, the time set in the parameter *Evaluation period* elapses before a value is sent. If there is a further operation within the time set, the value of the Group Object for the previous operation is not sent. Only the value of the Group Object for the last operation is sent. The following dependent parameters are shown: • *Evaluation period*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.7 Evaluation period

This parameter is used to define the delay after an operation before a value is sent. If a further operation occurs before the time defined has elapsed, the value is discarded and the time starts again.

Example
The defined evaluation period is 2 s.

1. The contact is operated (1-fold operation).
   ⇨ Before there is a reaction, there is a delay of 2 s.
2. After 1 s there is a further operation (2-fold operation).
   ⇨ The value 1 (send on 1-fold operation) is discarded, the time defined starts again.
3. After 0.5 s there is a further operation (3-fold operation).
   ⇨ The value 2 (send on 2-fold operation) is discarded, the time defined starts again.
4. There is no further operation.

⇨ 2 s after the third operation, the value 3 (send on 3-fold operation) is sent.

Option
00.3 … 02.0 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Send values after evaluation period* \ Option *Yes*

7.2.5.11.8 Enable Group Object "Reset switching sequence"

This parameter enables the following Group Object:

- *Reset switching sequence*

Option	
No	The Group Object is not enabled.
Yes	The following dependent Group Objects are displayed: • *Reset switching sequence*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.9 Extended settings

This parameter is used to display the extended settings for the parameter window.

> **Note**
> The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Contact type* • *Long operation after* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.11.10 Contact type

This parameter is used to set the type of contact connected to the input.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
NO contact
NC contact

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.11.11 Long operation after

This parameter is used to define the time from which operation of a connected contact (e.g. button/switch) is interpreted as long operation.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00.3 … 00.4 … 30.0 ss.f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]*
  - Parameter *Reaction on long operation* \ Option *Step 1*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.11.12 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.11.13 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.11.14 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.12 Parameter window Counter settings

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize input as pulse counter input

More information: → Pulse counter application, Page 22.

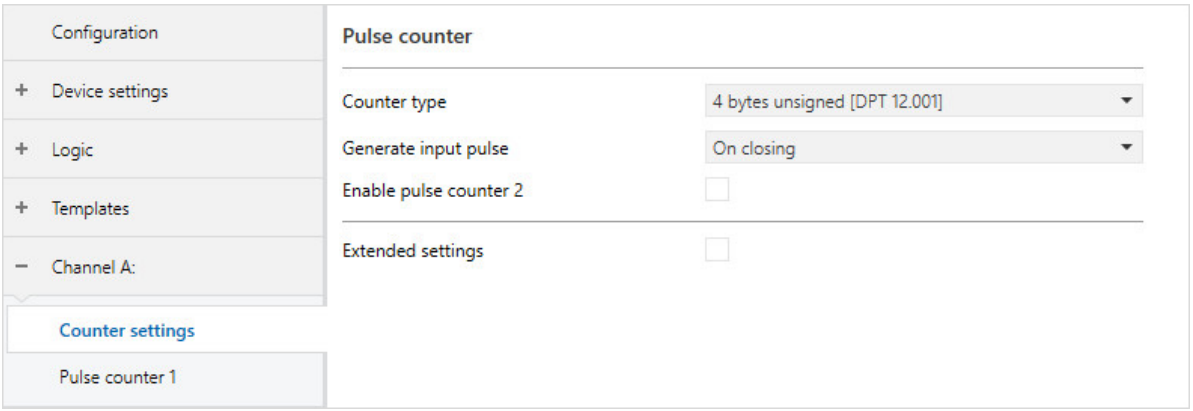


Fig. 20: Parameter window Counter settings

This parameter window includes the following parameters:
→ Counter type, Page 110
→ Generate input pulse, Page 111
→ Enable pulse counter 2, Page 111
→ Extended settings, Page 112
  → Activate minimum signal duration, Page 112
    → When closing the contact, Page 113
    → When opening the contact, Page 113
    → Minimum signal duration, Page 113
  → Interference suppression filter, Page 114
  → Block input, Page 114
    → State after ETS download or KNX voltage recovery, Page 115

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Pulse counter*

7.2.5.12.1 Counter type

This parameter is used to define the DPT (data point type) for pulse counter 1 and pulse counter 2.

Option	
1 byte signed (DPT 6.010)	The following dependent Group Objects are displayed: • *Counter value* (DPT 6.010)
1 byte unsigned (DPT 5.010)	The following dependent Group Objects are displayed: • *Counter value* (DPT 5.010)
2 bytes signed (DPT 8.001)	The following dependent Group Objects are displayed: • *Counter value* (DPT 8.001)
2 bytes unsigned (DPT 7.001)	The following dependent Group Objects are displayed: • *Counter value* (DPT 7.001)
4 bytes signed (DPT 13.001)	The following dependent Group Objects are displayed: • *Counter value* (DPT 13.001)
4 bytes unsigned (DPT 12.001)	The following dependent Group Objects are displayed: • *Counter value* (DPT 12.001)

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.2 Generate input pulse

This parameter is used to define which event on the input generates an input pulse.

Option	
On closing	The input pulse is generated on closing the contact connected to the input.
On opening	The input pulse is generated on opening the contact connected to the input.
On closing or opening	The input pulse is generated on a change of the contact position of the contact connected to the input.

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.3 Enable pulse counter 2

This parameter enables pulse counter 2.

Option	
No	Pulse counter 2 is not enabled.
Yes	• *Reset counter value* • *Request counter value* • One of the following Group Objects, depending on the setting in the parameter *Counter type*: – *Counter value* (DPT 6.010) – *Counter value* (DPT 5.010) – *Counter value* (DPT 8.001) – *Counter value* (DPT 7.001) – *Counter value* (DPT 13.001) – *Counter value* (DPT 12.001) The following dependent parameter windows are shown: • *Pulse counter 2*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.4 Extended settings

This parameter is used to display the extended settings for the parameter window.

Note
The modified settings for the dependent parameters are only valid if the dependent parameters are shown.

Option	
No	The extended settings are not shown. The corresponding parameters are used with the default values. Changes to the default values are discarded.
Yes	The extended settings are shown. The default values for the corresponding parameters can be changed. The following dependent parameters are shown: • *Activate minimum signal duration* • *Minimum signal duration* • *Interference suppression filter* • *Block input*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.5 Activate minimum signal duration

This parameter is used to define whether the minimum signal duration is activated.

Note
The minimum signal duration indicates the minimum time a contact (e.g. button/switch) must be operated to trigger a reaction. The minimum signal duration prevents unintentional operation from triggering a reaction.

More information: → Minimum signal duration, Page 147.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
No	The minimum signal duration is not activated.
Yes	The following dependent parameters are shown: • *When closing the contact* • *When opening the contact* • *Minimum signal duration*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Generate input pulse* \ Option *On closing / On opening*
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.12.6 When closing the contact

This parameter is used to define how long the contact must be closed as a minimum before a reaction is triggered.

More information: → Minimum signal duration, Page 147.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00:00:00.1 … 00:00:01.0 … 23:59:59.9 hh:mm:ss:f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Generate input pulse* \ Option *On opening*
  - Parameter *Activate minimum signal duration* \ Option *Yes*

7.2.5.12.7 When opening the contact

This parameter is used to define how long the contact must be open as a minimum before a reaction is triggered.

More information: → Minimum signal duration, Page 147.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
00:00:00.1 … 00:00:01.0 … 23:59:59.9 hh:mm:ss:f

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Generate input pulse* \ Option *On closing*
  - Parameter *Activate minimum signal duration* \ Option *Yes*

7.2.5.12.8 Minimum signal duration

This parameter is used to define how long the signal must be present as a minimum before a reaction is triggered.

> **Note**
> A change to the default value for this parameter is only valid if the extended settings are active.

Option
20 … 30 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Generate input pulse* \ Option S0 counter
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.12.9 Interference suppression filter

This parameter is used to define the time for suppressing interference on the input. An operation is only detected if the signal received on the input remains constant for the time defined. In this way, interfering signals or undesirable, multiple edges (e.g. due to the contact bouncing) are detected and filtered out.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option
12 … 30 … 150 ms

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Generate input pulse* \ all options except S0 counter
  - Parameter *Extended settings* \ Option *Yes*

7.2.5.12.10 Block input

This parameter is used to define the telegram value with which the input is blocked.

Note
When the input is blocked, events on the input are ignored. When the block is canceled, the present status of the inputs (connected contacts open or closed) applies.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Deactivated	The input cannot be blocked.
On value 1	The input is blocked when a telegram with the value 1 is received on the dependent Group Object. The block is removed when a telegram with the value 0 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*
On value 0	The input is blocked when a telegram with the value 0 is received on the dependent Group Object. The block is removed when a telegram with the value 1 is received. The following dependent parameters are shown: • *State after ETS download or KNX voltage recovery* The following dependent Group Objects are displayed: • *Block*

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Extended settings* \ Option *Yes*

7.2.5.12.11 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the input after ETS download or KNX voltage recovery.

Note
A change to the default value for this parameter is only valid if the extended settings are active.

Option	
Last state	The last known state is set.
Blocked	The input is blocked.
Enabled	The input is enabled.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Block input* \ Option *On value 1* / *On value 0*

7.2.5.12.12 Parameter window Pulse counter 1

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize send behavior for counter value 1
- Define specific settings for pulse counter 1

More information: → Pulse counter application, Page 22.

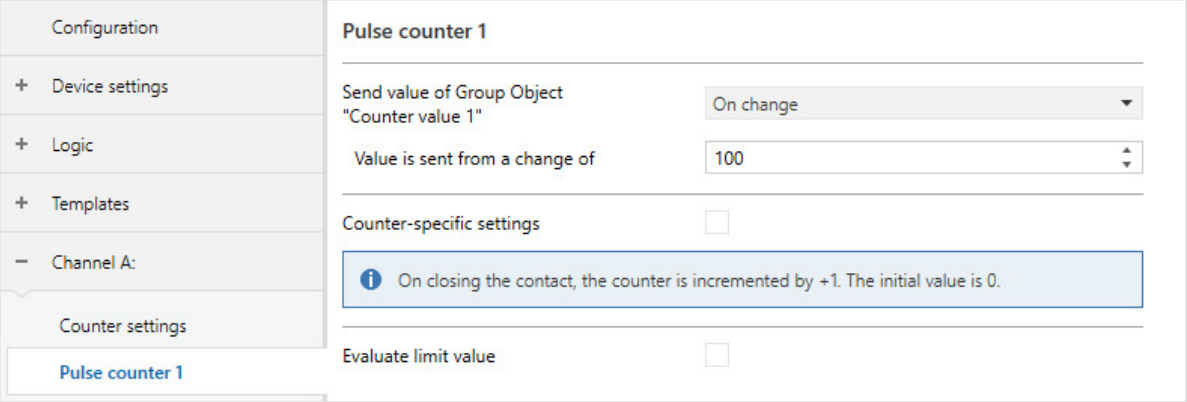


Fig. 21: Parameter window Pulse counter 1

This parameter window includes the following parameters:
→ Send value of Group Object "Counter value 1", Page 116
  → Sending cycle, Page 117
  → Value is sent from a change of, Page 117
→ Counter-specific settings, Page 118
  → Initial value, Page 118
  → Number of input pulses per counting pulse, Page 118
  → Counter reading change per counting pulse, Page 118
→ Evaluate limit value, Page 119
  → Limit value, Page 119
  → Reaction on reaching limit value, Page 119

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Pulse counter*

7.2.5.12.12.1 Send value of Group Object "Counter value 1"

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):
- *Counter value* [DPT 6.010]
- *Counter value* [DPT 5.010]
- *Counter value* [DPT 8.001]
- *Counter value* [DPT 7.001]
- *Counter value* [DPT 13.001]
- *Counter value* [DPT 12.001]

Option	
No, update only	The value is updated but is not sent.
On change	The value is sent if there is a change. The following dependent parameters are shown: • *Value is sent from a change of*
Cyclically	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • *Sending cycle*
On change or cyclically	The value is sent on change or cyclically. The cycle time can be set.
On request	The value is sent on request. The following dependent Group Objects are displayed: • *Request counter value*
On change or on request	The value is sent on change or on request. The following dependent parameters are shown: • *Value is sent from a change of* The following dependent Group Objects are displayed: • *Request counter value*
On request or cyclically	The value is sent on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • *Sending cycle* The following dependent Group Objects are displayed: • *Request counter value*
On change, on request or cyclically	The value is sent on change, on request or cyclically. The cycle time can be set. The following dependent Group Objects are displayed: • *Request counter value*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.12.2 **Sending cycle**

This parameter is used to define the cycle in which the value of the Group Object is sent.

Option
00:00:30 … 24:00:00 … 99:59:59 hh:mm:ss

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Send value of Group Object "Counter value 1"* \ Option *Cyclically* / *On change or cyclically* / *On request or cyclically* / *On change, on request or cyclically*

7.2.5.12.12.3 **Value is sent from a change of**

This parameter is used to define the minimum change in the input value for sending the output value on the bus (ABB i-bus® KNX).

Option
1 … 100 … 10000

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Send value of Group Object "Counter value 1"* \ Option *On change* / *On change or cyclically* / *On change or on request* / *On change, on request or cyclically*

7.2.5.12.12.4 **Counter-specific settings**

This parameter is used to display the counter-specific settings for the pulse counter.

Option	
No	The counter is incremented by 1 when the contact is operated. The initial value is 0.
Yes	The following dependent parameters are shown: • *Initial value* • *Number of input pulses per counting pulse* • *Counter reading change per counting pulse*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.12.5 **Initial value**

This parameter is used to define the initial value of the pulse counter. If the counter reading is reset, counting starts at the defined value.

Note
The possible options and the standard option depend on the selection made in the parameter *Counter type*.

Option
-128 … 0 … 127
0 … 255
-32768 … 0 … 32767
0 … 65,535
-2147483648 … 0 … 2147483647
0 … 4294967295

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Counter-specific settings* \ Option *Yes*

7.2.5.12.12.6 **Number of input pulses per counting pulse**

This parameter is used to define how many input pulses (events on the input) are required before a counting pulse is generated.

Option
1 … 10000

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Counter-specific settings* \ Option *Yes*

7.2.5.12.12.7 **Counter reading change per counting pulse**

This parameter is used to define the counter reading change per counting pulse.

Option
-10000 … 1 … 10000

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Counter-specific settings* \ Option *Yes*

7.2.5.12.12.8 **Evaluate limit value**

This parameter enables limit value evaluation and the following Group Object:
- *Limit value reached*

More information: → Pulse counter application, Page 22.

Option	
No	The limit value evaluation is not used.
Yes	The following dependent parameters are shown: • *Limit value* • *Reaction on reaching limit value* The following dependent Group Objects are displayed: • *Limit value reached*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.12.9 **Limit value**

This parameter is used to define the limit value of the pulse counter.

Note
The possible options and the standard option depend on the selection made in the parameter *Counter type*.

Option
-128 … 0 … 127
0 … 255
-32768 … 0 … 32767
0 … 65,535
-2147483648 … 0 … 2147483647
0 … 4294967295

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Evaluate limit value* \ Option *Yes*

7.2.5.12.12.10 **Reaction on reaching limit value**

This parameter is used to define how the pulse counter reacts when the limit value is reached.

Option	
Reset to initial value	The pulse counter is reset to the value defined in the parameter *Initial value*.
Stop counting	The pulse counter is stopped. To start another counting operation, the pulse counter must be reset using the Group Object Reset counter value.

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Evaluate limit value* \ Option *Yes*

7.2.5.12.13 Parameter window Pulse counter 2

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize send behavior for counter value 2
- Define specific settings for pulse counter 2

More information: → Pulse counter application, Page 22.

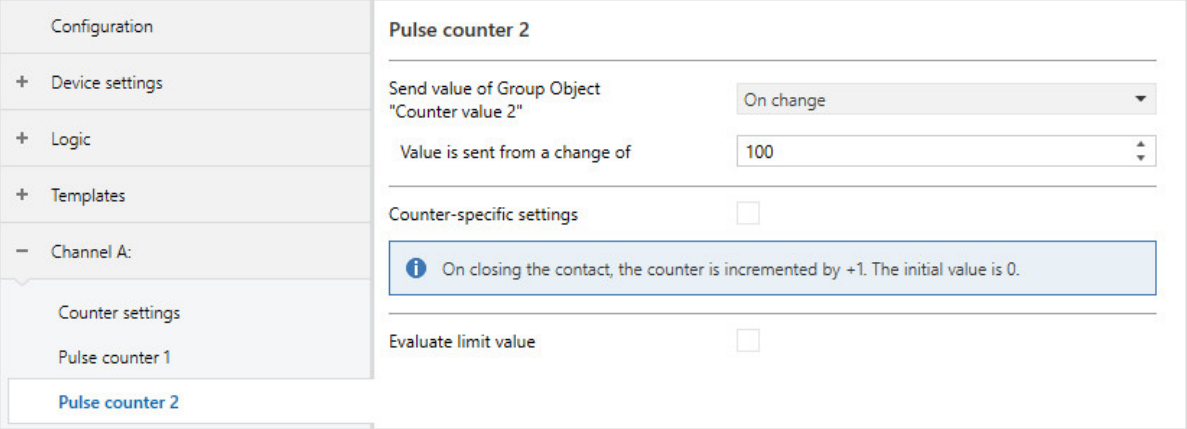


Fig. 22: Parameter window Pulse counter 2

This parameter window includes the following parameters:
→ Send value of Group Object "Counter value 2", Page 120
  → Sending cycle, Page 121
  → Value is sent from a change of, Page 121
→ Counter-specific settings, Page 122
  → Initial value, Page 122
  → Number of input pulses per counting pulse, Page 122
  → Counter reading change per counting pulse, Page 122
→ Evaluate limit value, Page 123
  → Limit value, Page 123
  → Reaction on reaching limit value, Page 123

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Enable pulse counter 2* \ Option *Yes*

7.2.5.12.13.1 Send value of Group Object "Counter value 2"

This parameter is used to define when the values of the following Group Objects are sent on the bus (ABB i-bus® KNX):
- *Counter value* (DPT 6.010)
- *Counter value* (DPT 5.010)
- *Counter value* (DPT 8.001)
- *Counter value* (DPT 7.001)
- *Counter value* (DPT 13.001)
- *Counter value* (DPT 12.001)

Option	
No, update only	The value is updated but is not sent.
On change	The value is sent if there is a change. The following dependent parameters are shown: • *Value is sent from a change of*
Cyclically	The value is sent cyclically. The cycle time can be set. The following dependent parameters are shown: • *Sending cycle*
On change or cyclically	The value is sent on change or cyclically. The cycle time can be set.
On request	The value is sent on request. The following dependent Group Objects are displayed: • *Request counter value*
On change or on request	The value is sent on change or on request. The following dependent parameters are shown: • *Value is sent from a change of* The following dependent Group Objects are displayed: • *Request counter value*
On request or cyclically	The value is sent on request or cyclically. The cycle time can be set. The following dependent parameters are shown: • *Sending cycle* The following dependent Group Objects are displayed: • *Request counter value*
On change, on request or cyclically	The value is sent on change, on request or cyclically. The cycle time can be set. The following dependent Group Objects are displayed: • *Request counter value*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.13.2 **Sending cycle**

This parameter is used to define the cycle in which the value of the Group Object is sent.

Option
00:00:30 … 24:00:00 … 99:59:59 hh:mm:ss

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Send value of Group Object "Counter value 2"* \ Option *Cyclically* / *On change or cyclically* / *On request or cyclically* / *On change, on request or cyclically*

7.2.5.12.13.3 **Value is sent from a change of**

This parameter is used to define the minimum change in the input value for sending the output value on the bus (ABB i-bus® KNX).

Option
1 … 100 … 10000

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Send value of Group Object "Counter value 2"* \ Option *On change* / *On change or cyclically* / *On change or on request* / *On change, on request or cyclically*

7.2.5.12.13.4 **Counter-specific settings**

This parameter is used to display the counter-specific settings for the pulse counter.

Option	
No	The counter is incremented by 1 when the contact is operated. The initial value is 0.
Yes	The following dependent parameters are shown: • *Initial value* • *Number of input pulses per counting pulse* • *Counter reading change per counting pulse*

Prerequisites for visibility

- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.13.5 **Initial value**

This parameter is used to define the initial value of the pulse counter. If the counter reading is reset, counting starts at the defined value.

Note
The possible options and the standard option depend on the selection made in the parameter *Counter type*.

Option
-128 … 0 … 127
0 … 255
-32768 … 0 … 32767
0 … 65,535
-2147483648 … 0 … 2147483647
0 … 4294967295

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Counter-specific settings* \ Option *Yes*

7.2.5.12.13.6 **Number of input pulses per counting pulse**

This parameter is used to define how many input pulses (events on the input) are required before a counting pulse is generated.

Option
1 … 10000

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Counter-specific settings* \ Option *Yes*

7.2.5.12.13.7 **Counter reading change per counting pulse**

This parameter is used to define the counter reading change per counting pulse.

Option
-10000 … 1 … 10000

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Counter-specific settings* \ Option *Yes*

7.2.5.12.13.8 **Evaluate limit value**

This parameter enables limit value evaluation and the following Group Object:
- *Limit value reached*

More information: → Pulse counter application, Page 22.

Option	
No	The limit value evaluation is not used.
Yes	The following dependent parameters are shown: • *Limit value* • *Reaction on reaching limit value* The following dependent Group Objects are displayed: • *Limit value reached*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X template* \ Option *No*

7.2.5.12.13.9 **Limit value**

This parameter is used to define the limit value of the pulse counter.

Note
The possible options and the standard option depend on the selection made in the parameter *Counter type*.

Option
-128 … 0 … 127
0 … 255
-32768 … 0 … 32767
0 … 65,535
-2147483648 … 0 … 2147483647
0 … 4294967295

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Evaluate limit value* \ Option *Yes*

7.2.5.12.13.10 **Reaction on reaching limit value**

This parameter is used to define how the pulse counter reacts when the limit value is reached.

Option	
Reset to initial value	The pulse counter is reset to the value defined in the parameter *Initial value*.
Stop counting	The pulse counter is stopped. To start another counting operation, the pulse counter must be reset using the Group Object Reset counter value.

Prerequisites for visibility
- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Evaluate limit value* \ Option *Yes*

7.2.5.13 Parameter window LED control

Note
If several channels are to be set to the same values, parameterization can be performed in the parameter window *Templates*.

The following settings can be made in this parameter window:
- Parameterize an output to control an LED
- Define the function and reaction of the output

More information: → LED control application, Page 24.

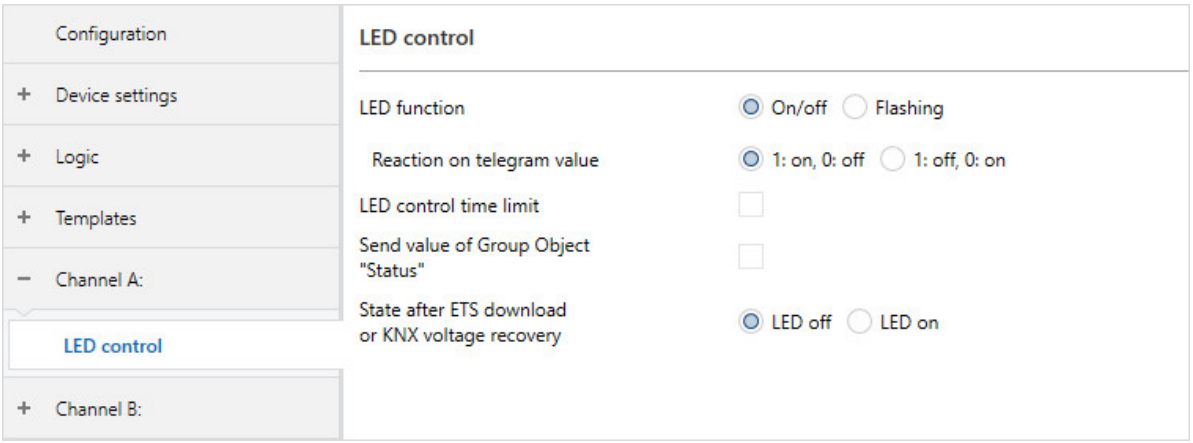


Fig. 23: Parameter window LED control

This parameter window includes the following parameters:
→ LED function, Page 124
  → Reaction on telegram value 0/1, Page 125
  → Flashing if Group Object "Flashing" is, Page 125
  → Time for on, Page 125
  → Time for off, Page 125
→ LED activation time limit, Page 126
  → Duration, Page 126
→ Send value of Group Object "Status", Page 126
→ State after ETS download or KNX voltage recovery, Page 126

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *LED activation*

7.2.5.13.1 LED function

This parameter is used to define the function of the LED.

Option	
On/off	The following dependent parameters are shown: • *Reaction on telegram value 0/1* The following dependent Group Objects are displayed: • *Switch*
Flashing	The following dependent parameters are shown: • *Flashing if Group Object "Flashing" is* • *Time for on* • *Time for off* The following dependent Group Objects are displayed: • *Flashing*

7.2.5.13.2 Reaction on telegram value 0/1

This parameter is used to define the telegram value with which the LED is switched on or off.

Option	
1: on, 0: off	The LED is switched on with the telegram value 1 and off with the telegram value 0.
1: off, 0: on	The LED is switched off with the telegram value 1 and on with the telegram value 0.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED function* \ Option *On/off*

7.2.5.13.3 Flashing if Group Object "Flashing" is

This parameter is used to define the telegram value with which flashing is started.

Note

The flashing is always started with the state that inverts the present state of the LED.

- If the LED is switched on, the flashing starts with the Off state (e.g. after ending the permanent on).
- If the LED is switched off, the flashing starts with the On state.

Option	
On (1)	A telegram with the value 1 starts the flashing. A telegram with the value 0 ends flashing.
Off (0)	A telegram with the value 0 starts the flashing. A telegram with the value 1 ends the flashing.

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED function* \ Option *Flashing*

7.2.5.13.4 Time for on

This parameter is used to define how long the LED remains switched on during a flashing cycle.

Option
00:00:100 ... 00:01:000 ... 01:00:000 mm:ss:fff

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED function* \ Option *Flashing*

7.2.5.13.5 Time for off

This parameter is used to define how long the LED remains switched off during a flashing cycle.

Option
00:00:100 ... 00:01:000 ... 01:00:000 mm:ss:fff

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED function* \ Option *Flashing*

7.2.5.13.6 LED activation time limit

This parameter is used to define whether there is a time limit for controlling the LED.

Note
The time limit only has an effect if the LED was controlled via the Group Objects *Switch* or *Flashing*.

Option	
No	There is no time limit for the operation of the LED.
Yes	The following dependent parameters are shown: • *Duration*

7.2.5.13.7 Duration

This parameter is used to define the duration of the LED activation. After the time set has elapsed, the LED is switched off, independent of the telegram values and the Group Objects *Switch* or *Flashing*.

Note
The time limit only has an effect if the LED was controlled via the Group Objects *Switch* or *Flashing*.

Option
00:00:01 … 00:01:00 … 18:12:15 hh:mm:ss

Prerequisites for visibility

- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED activation time limit* \ Option *Yes*

7.2.5.13.8 Send value of Group Object "Status"

This parameter enables the Group Object *Status* and sends the telegram value on change.

Note
After ETS reset, the telegram value is sent irrespective of whether it has changed.

Option	
No	The Group Object is not enabled, and the sending of the telegram value is deactivated.
Yes	The following dependent Group Objects are displayed: • *Status*

7.2.5.13.9 State after ETS download or KNX voltage recovery

This parameter is used to define the state of the LED after ETS download or KNX voltage recovery.

Option
LED off
LED on

8 Group Objects

8.1 Overview of Group Objects

Function	Group Object name	Data point type	Length	Flags
Block logic	Logic – Block x:	DPT 1.003	1 bit	C W
Block	Channel X – Blind/shutter:	DPT 1.003	1 bit	C W
Block	Channel X – Fault indicator/logic input:	DPT 1.003	1 bit	C W
Block	Channel X – Pulse counter:	DPT 1.003	1 bit	C W
Block	Channel X – Send value:	DPT 1.003	1 bit	C W
Block	Channel X – Switching sequence:	DPT 1.003	1 bit	C W
Block	Channel X – Scene:	DPT 1.003	1 bit	C W
Block	Channel X – Switch/dim:	DPT 1.003	1 bit	C W
Block	Channel X – Switch:	DPT 1.003	1 bit	C W
Block	Channel X+Y – Blind/shutter:	DPT 1.003	1 bit	C W
Block	Channel X+Y – Switch/dim	DPT 1.003	1 bit	C W
Block	Channel X+Y – Switching sequence:	DPT 1.003	1 bit	C W
Block	Channel X+Y – Switch:	DPT 1.003	1 bit	C W
Connection A	Logic – Connection x:	DPT 1.002	1 bit	C W T U
Connection B	Logic – Connection x:	DPT 1.002	1 bit	C W T U
Counter value	Channel X – Pulse counter 1:	DPT 6.010	1 byte	C R T
Counter value	Channel X – Pulse counter 1:	DPT 5.010	1 byte	C R T
Counter value	Channel X – Pulse counter 1:	DPT 8.001	2 bytes	C R T
Counter value	Channel X – Pulse counter 1:	DPT 7.001	2 bytes	C R T
Counter value	Channel X – Pulse counter 1:	DPT 13.001	4 bytes	C R T
Counter value	Channel X – Pulse counter 1:	DPT 12.001	4 bytes	C R T
Counter value	Channel X – Pulse counter 2:	DPT 6.010	1 byte	C R T
Counter value	Channel X – Pulse counter 2:	DPT 5.010	1 byte	C R T
Counter value	Channel X – Pulse counter 2:	DPT 8.001	2 bytes	C R T
Counter value	Channel X – Pulse counter 2:	DPT 7.001	2 bytes	C R T
Counter value	Channel X – Pulse counter 2:	DPT 13.001	4 bytes	C R T
Counter value	Channel X – Pulse counter 2:	DPT 12.001	4 bytes	C R T
Dimming	Channel X – Switch/dim:	DPT 3.007	3 bit	C T
Dimming	Channel X+Y – Switch/dim:	DPT 3.007	3 bit	C T
Flashing	Channel X – LED control:	DPT 1.001	1 bit	C W
In operation	Central – General:	DPT 1.002	1 bit	C R T
Limit value reached	Channel X – Pulse counter 1:	DPT 1.002	1 bit	C R T
Limit value reached	Channel X – Pulse counter 2:	DPT 1.002	1 bit	C R T
Next/previous step	Channel X – Switching sequence:	DPT 1.007	1 bit	C W
Next/previous step	Channel X+Y – Switching sequence:	DPT 1.007	1 bit	C W
Number of operations	Channel X – Switching sequence:	DPT 5.010	1 byte	C W T U
Number of operations	Channel X+Y – Switching sequence:	DPT 5.010	1 byte	C W T U
Permanent On	Channel X – LED control:	DPT 1.003	1 bit	C W
Request counter value	Channel X – Pulse counter 1:	DPT 1.017	1 bit	C W
Request counter value	Channel X – Pulse counter 2:	DPT 1.017	1 bit	C W
Request status Fault	Channel X – Fault indicator/logic input:	DPT 1.017	1 bit	C W
Request status values	Logic – Request x:	DPT 1.017	1 bit	C W
Reset counter value	Channel X – Pulse counter 1:	DPT 1.015	1 bit	C W
Reset counter value	Channel X – Pulse counter 2:	DPT 1.015	1 bit	C W
Reset switching sequence	Channel X – Switching sequence:	DPT 1.017	1 bit	C W
Reset switching sequence	Channel X+Y – Switching sequence:	DPT 1.017	1 bit	C W
Scene 1 … 64	Channel X – Scene:	DPT 18.001	1 byte	C T
Status Fault	Channel X – Fault indicator/logic input:	DPT 1.011	1 bit	C R W T
Status Lower end position	Channel X – Blind/shutter:	DPT 1.002	1 bit	C W U
Status Lower end position	Channel X+Y – Blind/shutter:	DPT 1.002	1 bit	C W U
Status Move	Channel X – Blind/shutter:	DPT 1.002	1 bit	C W U
Status Move	Channel X+Y – Blind/shutter:	DPT 1.002	1 bit	C W U
Status Result	Logic – Result x:	DPT 1.002	1 bit	C R T
Status Upper end position	Channel X – Blind/shutter:	DPT 1.002	1 bit	C W U
Status Upper end position	Channel X+Y – Blind/shutter:	DPT 1.002	1 bit	C W U
Status	Channel X – LED control:	DPT 1.011	1 bit	C R T
Step/stop	Channel X – Blind/shutter:	DPT 1.007	1 bit	C W T U
Step/stop	Channel X+Y – Blind/shutter:	DPT 1.007	1 bit	C W T U
Stop	Channel X – Blind/shutter:	DPT 1.017	1 bit	C W T U
Stop	Channel X+Y – Blind/shutter:	DPT 1.017	1 bit	C W T U
Switch	Channel X – LED control:	DPT 1.001	1 bit	C W
Switch	Channel X – Switch/dim:	DPT 1.001	1 bit	C W T U

Function	Group Object name	Data point type	Length	Flags
Switch	Channel X – Switch:	DPT 1.001	1 bit	C W T U
Switch	Channel X+Y – Switch/dim:	DPT 1.001	1 bit	C W T U
Switch	Channel X+Y – Switch:	DPT 1.001	1 bit	C W T U
Up/down	Channel X – Blind/shutter:	DPT 1.008	1 bit	C W T U
Up/down	Channel X+Y – Blind/shutter:	DPT 1.008	1 bit	C W T U
Value x: 1 byte	Channel X – Send value:	DPT 5.010	1 byte	C W T U
Value x: 1 byte signed	Channel X – Send value:	DPT 6.010	1 byte	C W T U
Value x: 2 bytes	Channel X – Send value:	DPT 7.001	2 bytes	C W T U
Value x: 2 bytes signed	Channel X – Send value:	DPT 8.001	2 bytes	C W T U
Value x: 4 bytes	Channel X – Send value:	DPT 12.001	4 bytes	C W T U
Value x: Byte	Channel X – Switching sequence:	DPT 5.010	1 byte	C W T U
Value x: Byte	Channel X+Y – Switching sequence:	DPT 5.010	1 byte	C W T U
Value x: Color	Channel X – Send value:	DPT 232.600	3 bytes	C W T U
Value x: Color	Channel X – Switching sequence:	DPT 232.600	3 bytes	C W T U
Value x: Color	Channel X+Y – Switching sequence:	DPT 232.600	3 bytes	C W T U
Value x: Forced operation	Channel X – Send value:	DPT 2.001	2 bit	C R W T
Value x: HVAC mode	Channel X – Send value:	DPT 20.102	1 byte	C W T U
Value x: HVAC mode	Channel X – Switching sequence:	DPT 20.102	1 byte	C W T U
Value x: HVAC mode	Channel X+Y – Switching sequence:	DPT 20.102	1 byte	C W T U
Value x: Percent	Channel X – Send value:	DPT 5.001	1 byte	C W T U
Value x: Percent	Channel X – Switching sequence:	DPT 5.001	1 byte	C W T U
Value x: Percent	Channel X+Y – Switching sequence:	DPT 5.001	1 byte	C W T U
Value x: Scene	Channel X – Switching sequence:	DPT 18.001	1 byte	C W T U
Value x: Scene	Channel X+Y – Switching sequence:	DPT 18.001	1 byte	C W T U
Value x: Switch	Channel X – Send value:	DPT 1.001	1 bit	C W T U
Value x: Switch	Channel X – Switching sequence:	DPT 1.001	1 bit	C W T U
Value x: Switch	Channel X+Y – Switching sequence:	DPT 1.001	1 bit	C W T U
Value x: Temperature	Channel X – Send value:	DPT 9.001	2 bytes	C W T U

8.2 Group objects Central

Function	Group Object name	Data point type	Length	Flags
In operation	**Central – General:**	**DPT 1.002**	**1 bit**	**C R T**

This Group Object cyclically sends an In operation telegram on the bus (ABB i-bus® KNX). The sending cycle is set in parameter *Sending cycle*.
The telegram value depends on the setting in the parameter *Enable Group Object "In operation"*.
Telegram value:
- 1 = Device in operation
- 0 = Device in operation

Note
Readiness can be monitored by another KNX device using this Group Object. If a telegram is not received, the sending device could be faulty or the bus cable to the transmitting device could be interrupted.

Prerequisites for visibility
- Parameter window *Device settings* \ Parameter *Enable Group Object "In operation"* \ Option *Yes, send value 0 cyclically* / *Yes, send value 1 cyclically*

8.3 Group Objects Logic

Function	Group Object name	Data point type	Length	Flags
Connection A	**Logic – Connection x:**	**DPT 1.002**	**1 bit**	**C W T U**

This Group Object is used to receive, via the bus (ABB i-bus® KNX), an input value for the function *Logic*.
More information: → Function Logic, Page 24.

Telegram value:
- 1 = Logically true
- 0 = Logically false

Note
Prerequisite for automatic update of the Group Object:
- The read flag is set for the sending Group Object

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Enable Logic x-y* \ Option *Yes*
- Parameter window *Logic* \ Parameter window *Logic x-y*
  - Parameter *Logic function* \ all options except *None*
  - Parameter *"Connection A"* \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Connection B	**Logic – Connection x:**	**DPT 1.002**	**1 bit**	**C W T U**

This Group Object is used to receive, via the bus (ABB i-bus® KNX), an input value for the function *Logic*.
More information: → Function Logic, Page 24.

Telegram value:
- 1 = Logically true
- 0 = Logically false

Note
Prerequisite for automatic update of the Group Object:
- The read flag is set for the sending Group Object

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Enable Logic x-y* \ Option *Yes*
- Parameter window *Logic* \ Parameter window *Logic x-y*
  - Parameter *Logic function* \ all options except *None*
  - Parameter *"Connection B"* \ all options except *Deactivated*

Status Result	**Logic – Result x:**	**DPT 1.002**	**1 bit**	**C R T**

This Group Object sends the result of the function *Logic* on the bus (ABB i-bus® KNX).
More information: → Function Logic, Page 24.

Telegram value:
- 1 = Logically true
- 0 = Logically false

Note
The result can be inverted, → parameter *Invert result*.

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Enable Logic x-y* \ Option *Yes*
- Parameter window *Logic* \ Parameter window *Logic x-y* \ Parameter *Logic function* \ all options except *None*

Block logic	**Logic – Block x:**	**DPT 1.003**	**1 bit**	**C W**

This Group Object is used to block or enable the function *Logic*.

Telegram value:
- Depends on the setting in the parameter *Block logic*

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Enable Logic x-y* \ Option *Yes*
- Parameter window *Logic* \ Parameter window *Logic x-y*
  - Parameter *Logic function* \ all options except *None*
  - Parameter *Block logic* \ all options except *Deactivated*

Request status values	**Logic – Request x:**	**DPT 1.017**	**1 bit**	**C W**

If a telegram is received on this Group Object, the value of the Group Object *Status Result* is sent on the bus (ABB i-bus® KNX).
More information: → Function Logic, Page 24.

Telegram value:
- 1 = Request status values
- 0 = Request status values

Note
The values of the status Group Objects are sent only if sending on request is set in the related parameters.

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Enable Logic x-y* \ Option *Yes*
- Parameter window *Logic* \ Parameter window *Logic x-y*
  - Parameter *Logic function* \ all options except *None*
  - Parameter Send value of Group Object "Status Result" \ Option On request / On change or on request / After receiving input value or on request

8.4 Group Objects Switch

Note
An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Switch	**Channel X – Switch:**	**DPT 1.001**	**1 bit**	**C W T U**

This Group Object sends a switch telegram on the bus (ABB i-bus® KNX).

Telegram value:
- 1 = On
- 0 = Off

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch*

Function	Group Object name	Data point type	Length	Flags
Block	**Channel X – Switch:**	**DPT 1.003**	**1 bit**	**C W**
This Group Object blocks or enables channel X. Telegram value: • Depends on the setting in the parameter *Block input* Prerequisites for visibility • Parameter window *Configuration* – Parameter *Channel X application* \ Option *Switch* – Parameter *Channel X template* \ Option *No* • Parameter window *Channel X:* \ Parameter window *Switch* – Parameter *Extended settings* \ Option *Yes* – Parameter *Block input* \ all options except *Deactivated*				
Switch	**Channel X+Y – Switch:**	**DPT 1.001**	**1 bit**	**C W T U**
This Group Object sends a switch telegram on the bus (ABB i-bus® KNX). Telegram value: • 1 = On • 0 = Off Prerequisites for visibility • Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch (2-button)*				
Block	**Channel X+Y – Switch:**	**DPT 1.003**	**1 bit**	**C W**
This Group Object blocks or enables channel X+Y. Telegram value: • Depends on the setting in the parameter *Block input* Prerequisites for visibility • Parameter window *Configuration* – Parameter *Channel X application* \ Option *Switch (2-button)* – Parameter *Channel X template* \ Option *No* • Parameter window *Channel X:* \ Parameter window *Switch [2-button]* – Parameter *Extended settings* \ Option *Yes* – Parameter *Block input* \ all options except *Deactivated*				

8.5 Group Objects Blind/shutter

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Up/down	**Channel X – Blind/shutter:**	**DPT 1.008**	**1 bit**	**C W T U**
This Group Object sends, via the bus (ABB i-bus® KNX), the command to move the blind/shutter. Telegram value: • 1 = Down • 0 = Up Prerequisites for visibility • Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Blind/shutter*				
Step/stop	**Channel X – Blind/shutter:**	**DPT 1.007**	**1 bit**	**C W T U**
This Group Object sends, via the bus (ABB i-bus® KNX), the command to stop the movement or to change the slat position. Telegram value: • 1 = Stop / Close slats • 0 = Stop / Open slats Prerequisites for visibility • Parameter window *Configuration* – Parameter *Channel X application* \ Option *Blind/shutter* – Parameter *Channel X template* \ Option *No* • Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Operating mode* \ Option *Blind*				
Stop	**Channel X – Blind/shutter:**	**DPT 1.017**	**1 bit**	**C W T U**
This Group Object sends, via the bus (ABB i-bus® KNX), the command to stop the movement. Telegram value: • 1 = Stop • 0 = Stop Prerequisites for visibility • Parameter window *Configuration* – Parameter *Channel X application* \ Option *Blind/shutter* – Parameter *Channel X template* \ Option *No* • Parameter window *Channel X:* \ Parameter window *Blind/shutter* \ Parameter *Operating mode* \ Option *Shutter*				

Function	Group Object name	Data point type	Length	Flags
Status Upper end position	**Channel X – Blind/shutter:**	**DPT 1.002**	**1 bit**	**C W U**

This Group Object receives the information, via the bus (ABB i-bus® KNX), as to whether the blind/shutter is at the upper end position.

Telegram value:
- 1 = Blind/shutter in upper end position
- 0 = Blind/shutter not in upper end position

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Blind/shutter*

Function	Group Object name	Data point type	Length	Flags
Status Lower end position	**Channel X – Blind/shutter:**	**DPT 1.002**	**1 bit**	**C W U**

This Group Object receives the information, via the bus (ABB i-bus® KNX), as to whether the blind/shutter is at the lower end position.

Telegram value:
- 1 = Blind/shutter in lower end position
- 0 = Blind/shutter not in lower end position

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Blind/shutter*

Function	Group Object name	Data point type	Length	Flags
Status Move	**Channel X – Blind/shutter:**	**DPT 1.002**	**1 bit**	**C W U**

This Group Object receives the information, via the bus (ABB i-bus® KNX), as to whether the blind/shutter is in motion.

Telegram value:
- 1 = Blind/shutter in motion
- 0 = Blind/shutter not in motion

Note
This Group Object can be used to synchronize animations in visualization applications with the actual blind/shutter motion.

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter*
- Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter*
  - Parameter *Operating mode* \ Option *Shutter*
  - Parameter *Shutter operation* \ Option *Only move*
  - Parameter *Stop movement* \ Option *On next operation*

Function	Group Object name	Data point type	Length	Flags
Block	**Channel X – Blind/shutter:**	**DPT 1.003**	**1 bit**	**C W**

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Up/down	**Channel X+Y – Blind/shutter:**	**DPT 1.008**	**1 bit**	**C W T U**

This Group Object sends, via the bus (ABB i-bus® KNX), the command to move the blind/shutter.

Telegram value:
- 1 = Down
- 0 = Up

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Blind/shutter (2-button)*

Function	Group Object name	Data point type	Length	Flags
Step/stop	**Channel X+Y – Blind/shutter:**	**DPT 1.007**	**1 bit**	**C W T U**

This Group Object sends, via the bus (ABB i-bus® KNX), the command to stop the movement or to change the slat position.

Telegram value:
- 1 = Stop / Close slats
- 0 = Stop / Open slats

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Operating mode* \ Option *Blind*

Function	Group Object name	Data point type	Length	Flags
Stop	**Channel X+Y – Blind/shutter:**	**DPT 1.017**	**1 bit**	**C W T U**

This Group Object sends, via the bus (ABB i-bus® KNX), the command to stop the movement.

Telegram value:
- 1 = Stop
- 0 = Stop

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]* \ Parameter *Operating mode* \ Option *Shutter*

Function	Group Object name	Data point type	Length	Flags		
Status Upper end position	**Channel X+Y – Blind/shutter:**	**DPT 1.002**	**1 bit**	**C**	**W**	**U**

This Group Object receives the information, via the bus (ABB i-bus® KNX), as to whether the blind/shutter is at the upper end position.

Telegram value:
- 1 = Blind/shutter in upper end position
- 0 = Blind/shutter not in upper end position

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*
  - Parameter *Operating mode* \ Option *Shutter*
  - Parameter *Shutter operation* \ Option *Only move*
  - Parameter *Stop movement* \ Option *On next operation*

Function	Group Object name	Data point type	Length	Flags		
Status Lower end position	**Channel X+Y – Blind/shutter:**	**DPT 1.002**	**1 bit**	**C**	**W**	**U**

This Group Object receives the information, via the bus (ABB i-bus® KNX), as to whether the blind/shutter is at the lower end position.

Telegram value:
- 1 = Blind/shutter in lower end position
- 0 = Blind/shutter not in lower end position

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*
  - Parameter *Operating mode* \ Option *Shutter*
  - Parameter *Shutter operation* \ Option *Only move*
  - Parameter *Stop movement* \ Option *On next operation*

Function	Group Object name	Data point type	Length	Flags		
Status Move	**Channel X+Y – Blind/shutter:**	**DPT 1.002**	**1 bit**	**C**	**W**	**U**

This Group Object receives the information, via the bus (ABB i-bus® KNX), as to whether the blind/shutter is in motion.

Telegram value:
- 1 = Blind/shutter in motion
- 0 = Blind/shutter not in motion

Note
This Group Object can be used to synchronize animations in visualization applications with the actual blind/shutter motion.

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*
  - Parameter *Operating mode* \ Option *Shutter*
  - Parameter *Shutter operation* \ Option *Only move*
  - Parameter *Stop movement* \ Option *On next operation*

Function	Group Object name	Data point type	Length	Flags		
Block	**Channel X+Y – Blind/shutter:**	**DPT 1.003**	**1 bit**	**C**	**W**	

This Group Object blocks or enables channel X+Y.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Blind/shutter (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Blind/shutter [2-button]*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter *Block input* \ all options except *Deactivated*

8.6 Group Objects Switch/dim

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Dimming	**Channel X – Switch/dim:**	**DPT 3.007**	**3 bit**	**C T**
This Group Object sends a dim telegram on the bus (ABB i-bus® KNX). Telegram value: • 0000: Stop • 0001: 100 % darker • 1000: Stop • 1001: 100 % brighter Prerequisites for visibility • Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch/dim*				
Switch	**Channel X – Switch/dim:**	**DPT 1.001**	**1 bit**	**C W T U**
This Group Object sends a switch telegram on the bus (ABB i-bus® KNX). Telegram value: • 1 = On • 0 = Off Prerequisites for visibility • Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch/dim*				
Block	**Channel X – Switch/dim:**	**DPT 1.003**	**1 bit**	**C W**
This Group Object blocks or enables channel X. Telegram value: • Depends on the setting in the parameter *Block input* Prerequisites for visibility • Parameter window *Configuration* – Parameter *Channel X application* \ Option *Switch/dim* – Parameter *Channel X template* \ Option *No* • Parameter window *Channel X:* \ Parameter window *Switch/dim* – Parameter *Extended settings* \ Option *Yes* – Parameter *Block input* \ all options except *Deactivated*				
Dimming	**Channel X+Y – Switch/dim:**	**DPT 3.007**	**3 bit**	**C T**
This Group Object sends a dim telegram on the bus (ABB i-bus® KNX). Telegram value: • 0000: Stop • 0001: 100 % darker • 1000: Stop • 1001: 100 % brighter Prerequisites for visibility • Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch/dim (2-button)*				
Switch	**Channel X+Y – Switch/dim:**	**DPT 1.001**	**1 bit**	**C W T U**
This Group Object sends a switch telegram on the bus (ABB i-bus® KNX). Telegram value: • 1 = On • 0 = Off Prerequisites for visibility • Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switch/dim (2-button)*				
Block	**Channel X+Y – Switch/dim**	**DPT 1.003**	**1 bit**	**C W**
This Group Object blocks or enables channel X+Y. Telegram value: • Depends on the setting in the parameter *Block input* Prerequisites for visibility • Parameter window *Configuration* – Parameter *Channel X application* \ Option *Switch/dim (2-button)* – Parameter *Channel X template* \ Option *No* • Parameter window *Channel X:* \ Parameter window *Switch/dim [2-button]* – Parameter *Extended settings* \ Option *Yes* – Parameter *Block input* \ all options except *Deactivated*				

8.7 Group Objects Scenes

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Scene 1 … 64	**Channel X – Scene:**	**DPT 18.001**	**1 byte**	**C T**

This Group Object sends a scene telegram on the bus (ABB i-bus® KNX).
The scene telegram includes the scene number and information about whether the scene is recalled or saved.

Telegram value:
- 0 … 63 = Recall scene x (x = 1 … 64)
- 128 … 191 = Save scene x (x = 1 … 64)

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Scenes*

Function	Group Object name	Data point type	Length	Flags
Block	**Channel X – Scene:**	**DPT 1.003**	**1 bit**	**C W**

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Scenes*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Scenes*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter *Block input* \ all options except *Deactivated*

8.8 Group Objects Send value/multiple operation

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Value x: Switch	**Channel X – Send value:**	**DPT 1.001**	**1 bit**	**C W T U**

This Group Object sends a switch telegram on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- 1 = On
- 0 = Off

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *Switch (DPT 1.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: Forced operation	**Channel X – Send value:**	**DPT 2.001**	**2 bit**	**C R W T**

This Group Object is used to activate or deactivate 2-bit forced operation via the bus (ABB i-bus® KNX).

Telegram value Bit 1 | Bit 0 (depends on the setting in the parameter *Value x value*):
- 0 | 0 = Forced operation inactive
- 0 | 1 = Forced operation inactive
- 1 | 0 = Forced operation active "OFF"
- 1 | 1 = Forced operation active "ON"

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *Forced operation (DPT 2.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: Percent	**Channel X – Send value:**	**DPT 5.001**	**1 byte**	**C W T U**

This Group Object sends a percentage value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- 0 … 100 %

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *Percent (DPT 5.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: 1 byte	**Channel X – Send value:**	**DPT 5.010**	**1 byte**	**C W T U**

This Group Object sends a 1-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- 0 … 255

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *1 byte unsigned (DPT 5.010)*

Function	Group Object name	Data point type	Length	Flags
Value x: 1 byte signed	**Channel X – Send value:**	**DPT 6.010**	**1 byte**	**C W T U**

This Group Object sends a 1-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- -128 … 127

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *1 byte signed (DPT 6.010)*

Function	Group Object name	Data point type	Length	Flags
Value x: 2 bytes	**Channel X – Send value:**	**DPT 7.001**	**2 bytes**	**C W T U**

This Group Object sends a 2-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- 0 … 65535

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *2 bytes unsigned (DPT 7.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: 2 bytes signed	**Channel X – Send value:**	**DPT 8.001**	**2 bytes**	**C W T U**

This Group Object sends a 2-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- -32768 … 32767

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *2 bytes signed (DPT 8.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: 4 bytes	**Channel X – Send value:**	**DPT 12.001**	**4 bytes**	**C W T U**

This Group Object sends a 4-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- 0 … 4294967295

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *4 bytes unsigned (DPT 12.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: Temperature	**Channel X – Send value:**	**DPT 9.001**	**2 bytes**	**C W T U**

This Group Object sends a temperature value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- -100 … 250 °C

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *Temperature (DPT 9.001)*

Function	Group Object name	Data point type	Length	Flags
Value x: Color	**Channel X – Send value:**	**DPT 232.600**	**3 bytes**	**C W T U**

This Group Object sends a color value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- #000000 … #FFFFFF

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *Color (DPT 232.600)*

Function	Group Object name	Data point type	Length	Flags
Value x: HVAC mode	**Channel X – Send value:**	**DPT 20.102**	**1 byte**	**C W T U**

This Group Object sends the HVAC mode to be set (operating mode) on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *Value x value*):
- 0 = Automatic
- 1 = Comfort
- 2 = Standby
- 3 = Economy
- 4 = Building Protection

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation* \ Parameter *Value x data type* \ Option *HVAC mode (DPT 20.102)*

Block	Channel X – Send value:	DPT 1.003	1 bit	C W

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Send value/multiple actuation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Send value/multiple operation*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter *Block input* \ all options except *Deactivated*

8.9 Group Objects Fault indicator/logic input

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Status Fault	**Channel X – Fault indicator/logic input:**	**DPT 1.011**	**1 bit**	**C R W T**

This Group Object sends the status of the fault indicator input on the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Fault
- 0 = No fault

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Fault indicator/logic input*

Block	Channel X – Fault indicator/logic input:	DPT 1.003	1 bit	C W

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Fault indicator/logic input*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter *Block input* \ all options except *Deactivated*

Request status Fault	Channel X – Fault indicator/logic input:	DPT 1.017	1 bit	C W

If a telegram is received on this Group Object, the value of the following Group Object is sent on the bus (ABB i-bus® KNX):
- *Status Fault*

Telegram value:
- 1 = Request status values
- 0 = Request status values

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Fault indicator/logic input*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Fault indicator/logic input* \ Parameter *Send value of Group Object "Status Fault"* \ Option *On request* / *On change or on request* / *On request or cyclically* / *After change, on request or cyclically*

8.10 Group Objects Switching sequence

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Value x: Switch	**Channel X – Switching sequence:**	**DPT 1.001**	**1 bit**	**C W T U**

This Group Object sends a switch telegram on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 1 = On
- 0 = Off

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Function GO x* \ Option *Switch*

Function	Group Object name	Data point type	Length	Flags
Value x: Percent	**Channel X – Switching sequence:**	**DPT 5.001**	**1 byte**	**C W T U**

This Group Object sends a percentage value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 0 … 100 %

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Function GO x* \ Option *Percent*

Function	Group Object name	Data point type	Length	Flags
Value x: Byte	**Channel X – Switching sequence:**	**DPT 5.010**	**1 byte**	**C W T U**

This Group Object sends a 1-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 0 … 255

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Function GO x* \ Option *Byte*

Function	Group Object name	Data point type	Length	Flags
Value x: Scene	**Channel X – Switching sequence:**	**DPT 18.001**	**1 byte**	**C W T U**

This Group Object sends a scene telegram on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 1 … 64

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Function GO x* \ Option *Scene*

Function	Group Object name	Data point type	Length	Flags
Value x: Color	**Channel X – Switching sequence:**	**DPT 232.600**	**3 bytes**	**C W T U**

This Group Object sends a color value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- #000000 … #FFFFFF

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Function GO x* \ Option *Color*

Function	Group Object name	Data point type	Length	Flags
Value x: HVAC mode	**Channel X – Switching sequence:**	**DPT 20.102**	**1 byte**	**C W T U**

This Group Object sends the HVAC mode to be set (operating mode) on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 0 = Automatic
- 1 = Comfort
- 2 = Standby
- 3 = Economy
- 4 = Building Protection

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Function GO x* \ Option *HVAC mode*

Function	Group Object name	Data point type	Length	Flags
Number of operations	**Channel X – Switching sequence:**	**DPT 5.010**	**1 byte**	**C W T U**

This Group Object sends the number of the active step in the switching sequence on the bus (ABB i-bus® KNX).

Telegram value:
- 0 = Step 1
- 1 = Step 2
- 2 = Step 3
- 3 = Step 4
- 4 = Step 5
- 5 = Step 6

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switching sequence*

Function	Group Object name	Data point type	Length	Flags
Reset switching sequence	**Channel X – Switching sequence:**	**DPT 1.017**	**1 bit**	**C W**

This Group Object is used to reset the switching sequence via the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Reset switching sequence
- 0 = Not defined

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence* \ Parameter *Enable Group Object "Reset switching sequence"* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Next/previous step	**Channel X – Switching sequence:**	**DPT 1.007**	**1 bit**	**C W**

This Group Object is used to call the next or previous step in the switching sequence via the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Next step
- 0 = Previous step

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switching sequence*

Function	Group Object name	Data point type	Length	Flags
Block	**Channel X – Switching sequence:**	**DPT 1.003**	**1 bit**	**C W**

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter *Block input* \ all options except *Deactivated*

Function	Group Object name	Data point type	Length	Flags
Value x: Switch	**Channel X+Y – Switching sequence:**	**DPT 1.001**	**1 bit**	**C W T U**

This Group Object sends a switch telegram on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 1 = On
- 0 = Off

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Function GO x* \ Option *Switch*

Function	Group Object name	Data point type	Length	Flags
Value x: Percent	**Channel X+Y – Switching sequence:**	**DPT 5.001**	**1 byte**	**C W T U**

This Group Object sends a percentage value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 0 … 100 %

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Function GO x* \ Option *Percent*

Function	Group Object name	Data point type	Length	Flags
Value x: Byte	**Channel X+Y – Switching sequence:**	**DPT 5.010**	**1 byte**	**C W T U**

This Group Object sends a 1-byte value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 0 … 255

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Function GO x* \ Option *Byte*

Function	Group Object name	Data point type	Length	Flags
Value x: Scene	**Channel X+Y – Switching sequence:**	**DPT 18.001**	**1 byte**	**C W T U**

This Group Object sends a scene telegram on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 1 … 64

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Function GO x* \ Option *Scene*

Value x: Color	Channel X+Y – Switching sequence:	DPT 232.600	3 bytes	C W T U

This Group Object sends a color value on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- #000000 … #FFFFFF

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Function GO x* \ Option *Color*

Value x: HVAC mode	Channel X+Y – Switching sequence:	DPT 20.102	1 byte	C W T U

This Group Object sends the HVAC mode to be set (operating mode) on the bus (ABB i-bus® KNX).

Telegram value (depends on the setting in the parameter *GO x*):
- 0 = Automatic
- 1 = Comfort
- 2 = Standby
- 3 = Economy
- 4 = Building Protection

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Function GO x* \ Option *HVAC mode*

Number of operations	Channel X+Y – Switching sequence:	DPT 5.010	1 byte	C W T U

This Group Object sends the number of the active step in the switching sequence on the bus (ABB i-bus® KNX).

Telegram value:
- 0 = Step 1
- 1 = Step 2
- 2 = Step 3
- 3 = Step 4
- 4 = Step 5
- 5 = Step 6

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switching sequence (2-button)*

Reset switching sequence	Channel X+Y – Switching sequence:	DPT 1.017	1 bit	C W

This Group Object is used to reset the switching sequence via the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Reset switching sequence
- 0 = Not defined

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]* \ Parameter *Enable Group Object "Reset switching sequence"* \ Option *Yes*

Next/previous step	Channel X+Y – Switching sequence:	DPT 1.007	1 bit	C W

This Group Object is used to call the next or previous step in the switching sequence via the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Next step
- 0 = Previous step

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Switching sequence (2-button)*

Block	Channel X+Y – Switching sequence:	DPT 1.003	1 bit	C W

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Switching sequence (2-button)*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Switching sequence [2-button]*
  - Parameter *Extended settings* \ Option *Yes*
  - Parameter *Block input* \ all options except *Deactivated*

8.11 Group Objects Pulse counter

> **Note**
> An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 1:**	**DPT 6.010**	**1 byte**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 1 on the bus (ABB i-bus® KNX).

Telegram value:
- -128 … 127

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Counter type* \ Option *1 byte signed (DPT 6.010)*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 1:**	**DPT 5.010**	**1 byte**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 1 on the bus (ABB i-bus® KNX).

Telegram value:
- 0 … 255

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Counter type* \ Option *1 byte unsigned (DPT 5.010)*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 1:**	**DPT 8.001**	**2 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 1 on the bus (ABB i-bus® KNX).

Telegram value:
- -32768 … 32767

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Counter type* \ Option *2 bytes signed (DPT 8.001)*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 1:**	**DPT 7.001**	**2 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 1 on the bus (ABB i-bus® KNX).

Telegram value:
- 0 … 65535

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Counter type* \ Option *2 bytes unsigned (DPT 7.001)*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 1:**	**DPT 13.001**	**4 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 1 on the bus (ABB i-bus® KNX).

Telegram value:
- -2147483648 … 2147483647

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Counter type* \ Option *4 bytes signed (DPT 13.001)*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 1:**	**DPT 12.001**	**4 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 1 on the bus (ABB i-bus® KNX).

Telegram value:
- 0 … 4294967295

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Counter type* \ Option *4 bytes unsigned (DPT 12.001)*

Function	Group Object name	Data point type	Length	Flags
Reset counter value	**Channel X – Pulse counter 1:**	**DPT 1.015**	**1 bit**	**C W**

This Group Object resets the value of pulse counter 1 to the initial value via the bus (ABB i-bus® KNX) (→ Parameter *Initial value*).

Telegram value:
- 1 = Reset counter
- 0 = Not defined

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *Pulse counter*

Function	Group Object name	Data point type	Length	Flags
Request counter value	**Channel X – Pulse counter 1:**	**DPT 1.017**	**1 bit**	**C W**

If a telegram is received on this Group Object, the counter value is sent on the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Send counter value
- 0 = Send counter value

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Send value of Group Object "Counter value 1"* \ Option *On request* / *On change or on request* / *On request or cyclically* / *On change, on request or cyclically*

Function	Group Object name	Data point type	Length	Flags
Limit value reached	**Channel X – Pulse counter 1:**	**DPT 1.002**	**1 bit**	**C R T**

This Group Object sends the information, via the bus (ABB i-bus® KNX), as to whether the limit value of pulse counter 1 has been reached.

Telegram value:
- 1 = Limit value reached
- 0 = Limit value not reached

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Pulse counter 1* \ Parameter *Evaluate limit value* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 2:**	**DPT 6.010**	**1 byte**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 2 on the bus (ABB i-bus® KNX).

Telegram value:
- -128 … 127

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Counter type* \ Option *1 byte signed (DPT 6.010)*
  - Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 2:**	**DPT 5.010**	**1 byte**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 2 on the bus (ABB i-bus® KNX).

Telegram value:
- 0 … 255

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Counter type* \ Option *1 byte unsigned (DPT 5.010)*
  - Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 2:**	**DPT 8.001**	**2 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 2 on the bus (ABB i-bus® KNX).

Telegram value:
- -32768 … 32767

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Counter type* \ Option *2 bytes signed (DPT 8.001)*
  - Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 2:**	**DPT 7.001**	**2 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 2 on the bus (ABB i-bus® KNX).

Telegram value:
- 0 … 65535

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *Pulse counter*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  - Parameter *Counter type* \ Option *2 bytes unsigned (DPT 7.001)*
  - Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 2:**	**DPT 13.001**	**4 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 2 on the bus (ABB i-bus® KNX).

Telegram value:
- -2147483648 … 2147483647

Prerequisites for visibility
- Parameter window *Configuration* \
  – Parameter *Channel X application* \ Option *Pulse counter*
  – Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  – Parameter *Counter type* \ Option *4 bytes signed (DPT 13.001)*
  – Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Counter value	**Channel X – Pulse counter 2:**	**DPT 12.001**	**4 bytes**	**C R T**

This Group Object sends the value (counter reading) of pulse counter 2 on the bus (ABB i-bus® KNX).

Telegram value:
- 0 … 4294967295

Prerequisites for visibility
- Parameter window *Configuration*
  – Parameter *Channel X application* \ Option *Pulse counter*
  – Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  – Parameter *Counter type* \ Option *4 bytes unsigned (DPT 12.001)*
  – Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Reset counter value	**Channel X – Pulse counter 2:**	**DPT 1.015**	**1 bit**	**C W**

This Group Object resets the value of pulse counter 2 to the initial value via the bus (ABB i-bus® KNX) (→ parameter *Initial value*).

Telegram value:
- 1 = Reset counter
- 0 = Not defined

Prerequisites for visibility
- Parameter window *Configuration*
  – Parameter *Channel X application* \ Option *Pulse counter*
  – Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Enable pulse counter 2* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Request counter value	**Channel X – Pulse counter 2:**	**DPT 1.017**	**1 bit**	**C W**

If a telegram is received on this Group Object, the counter value is sent on the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Send counter value
- 0 = Send counter value

Prerequisites for visibility
- Parameter window *Configuration*
  – Parameter *Channel X application* \ Option *Pulse counter*
  – Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:*
  – Parameter window *Counter settings* \ Parameter *Enable pulse counter 2* \ Option *Yes*
  – Parameter window *Pulse counter 2* \ Parameter *Send value of Group Object "Counter value 2"* \ Option *On request* / *On change or on request* / *On request or cyclically* / *On change, on request or cyclically*

Function	Group Object name	Data point type	Length	Flags
Limit value reached	**Channel X – Pulse counter 2:**	**DPT 1.002**	**1 bit**	**C R T**

This Group Object sends the status of the counter value (limit value reached) on the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Limit value reached
- 0 = Limit value not reached

Prerequisites for visibility
- Parameter window *Configuration*
  – Parameter *Channel X application* \ Option *Pulse counter*
  – Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings* \ Parameter *Enable pulse counter 2* \ Option *Yes*
- Parameter window *Channel X:* \ Parameter window *Pulse counter 2* \ Parameter *Evaluate limit value* \ Option *Yes*

Function	Group Object name	Data point type	Length	Flags
Block	**Channel X – Pulse counter:**	**DPT 1.003**	**1 bit**	**C W**

This Group Object blocks or enables channel X.

Telegram value:
- Depends on the setting in the parameter *Block input*

Prerequisites for visibility
- Parameter window *Configuration*
  – Parameter *Channel X application* \ Option *Pulse counter*
  – Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *Counter settings*
  – Parameter *Extended settings* \ Option *Yes*
  – Parameter *Block input* \ all options except *Deactivated*

8.12 Group Objects LED control

Note
An individual description can be added to the names of the Group Objects, → parameter *Channel X description*.

Function	Group Object name	Data point type	Length	Flags
Switch	**Channel X – LED control:**	**DPT 1.001**	**1 bit**	**C W**

This Group Object is used to switch the LED on or off via the bus (ABB i-bus® KNX).

Telegram value:
- 1 = Switch on LED
- 0 = Switch off LED

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *LED activation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED function* \ Option *On/off*

Function	Group Object name	Data point type	Length	Flags
Flashing	**Channel X – LED control:**	**DPT 1.001**	**1 bit**	**C W**

This Group Object is used, via the bus (ABB i-bus® KNX), to start or stop the LED flashing.

Telegram value:
- Depends on the setting in the parameter *Flashing if Group Object "Flashing" is*

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *LED activation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *LED function* \ Option *Flashing*

Function	Group Object name	Data point type	Length	Flags
Permanent On	**Channel X – LED control:**	**DPT 1.003**	**1 bit**	**C W**

This Group Object is used via the bus (ABB i-bus® KNX) to permanently switch the LED on or off.

Note
When the LED is controlled by this Group Object while the LED is flashing, the flashing cycle is ended before the Group Object permanently switches the LED on or off.

Note
If the LED is switched on via this Group Object, the LED cannot be controlled via other Group Objects. To control the LED via other Group Objects, permanent on must first be ended via this Group Object. After permanent on is ended, the value of the Group Object *Switch* or *Flashing* applies.

Telegram value:
- 1 = LED permanent on
- 0 = End permanent on

Prerequisites for visibility
- Parameter window *Configuration* \ Parameter *Channel X application* \ Option *LED activation*

Function	Group Object name	Data point type	Length	Flags
Status	**Channel X – LED control:**	**DPT 1.011**	**1 bit**	**C R T**

This Group Object sends the status of the LED on the bus (ABB i-bus® KNX).

Telegram value:
- 1 = LED on or flashing
- 0 = LED off

Prerequisites for visibility
- Parameter window *Configuration*
  - Parameter *Channel X application* \ Option *LED activation*
  - Parameter *Channel X template* \ Option *No*
- Parameter window *Channel X:* \ Parameter window *LED control* \ Parameter *Send value of Group Object "Status"* \ Option *Yes*

9 Operation

Note
The devices cannot be operated manually.

10 Maintenance and cleaning

10.1 Maintenance

The devices are maintenance-free if used properly. In the event of damage, e.g. during transport and/or storage, repairs are not allowed to be made.

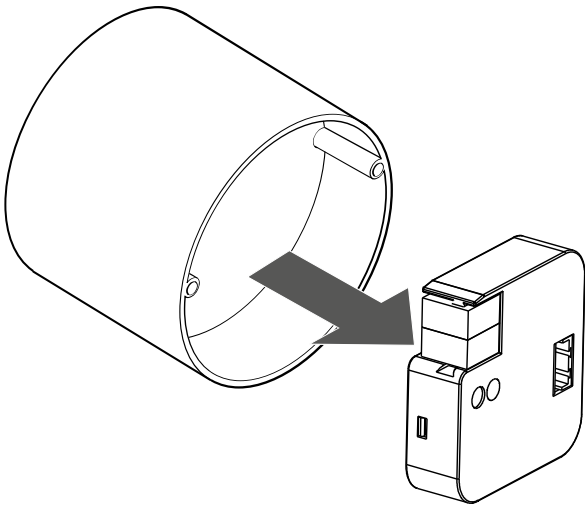
10.2 Cleaning

1. Disconnect devices from the electrical power supply before cleaning.
2. Clean dirty devices using a dry cloth or a slightly damp cloth.

11 Removal and disposal

11.1 Removal

DANGER – Severe injuries due to touch voltage
Electric feedback from different phase conductors can cause contact voltages and lead to serious injuries.
- Operate the device only in a closed housing.
- Disconnect all phases before working on the electrical connection.



9AKK108464A0548

Fig. 24: Removing from flush mounting socket

1. Open the flush mounting socket.
2. Remove the device forwards out of the flush mounting socket.
3. Disconnect electrical connections and bus connection terminal.

11.2 Environment

Consider environmental protection.

Electrical and electronic devices must not be disposed of as domestic waste.

The device contains valuable resources that can be recycled. Therefore, please take the device to a suitable recycling center. All packaging materials and devices are provided with markings and test seals for proper disposal. Always dispose of packaging material and electrical devices or their components at collection points or disposal companies authorized for this purpose. The products comply with the statutory requirements, particularly the law on electrical and electronic equipment and the REACH regulation. (EU directive 2012/19/EU WEEE and 2011/65/EU RoHS) (EU REACH regulation and the law implementing the regulation (EC) no.1907/2006)

12 Planning and application

12.1 Priorities

Note
This section is not relevant for these devices.

12.2 Basic knowledge

12.2.1 KNX DATA Secure

Note
KNX DATA Secure is supported by ETS version 5.5.0 or later. ETS version 6 or later is recommended when using KNX DATA Secure. Using older ETS versions can cause errors in project planning, problems during commissioning, or problems when diagnosing group addresses and devices.

KNX DATA Secure is an encryption technology that guarantees data protection in a KNX twisted pair network. KNX DATA Secure uses a longer KNX telegram format (long frames) to transmit the authenticated and encrypted data. The longer KNX telegram format has no impact on the reaction time of devices.

KNX DATA Secure is based on end-to-end encryption that ensures all data exchanged between KNX devices are encrypted and can only be read by authorized users. In conventional KNX networks (KNX plain), data are sent unencrypted on the bus. The data can be read by anyone with access to the bus and can be intercepted or manipulated by unauthorized persons.

Using KNX DATA Secure protects transmitted data against unauthorized access, ensures data integrity and minimizes potential security risks. KNX DATA Secure helps to increase security and privacy in KNX-based smart home or building automation systems. Standard KNX devices that only support KNX plain can be used in the same installation and on the same media with the help of a suitable coupler.

To use KNX DATA Secure devices in the KNX system must support KNX DATA Secure encryption technology. Both the KNX devices and the KNX installation must be configured accordingly, → Secure commissioning with KNX DATA Secure, Page 28.

A KNX DATA Secure product is identifiable by the KNX DATA Secure logo on the packaging or the product itself. This logo indicates that the product meets the KNX DATA Secure security standard. The product should also be listed in the KNX product database.

For more information, see:
→ ABB documentation "KNX DATA Secure"
→ https://www.knx.org/knx-en/for-professionals/benefits/knx-secure/index.php

12.2.2 Minimum signal duration

If an edge is detected on the input, the input reacts to this immediately, e.g. by sending a telegram.

To prevent an immediate reaction, the minimum signal duration can be used. The minimum signal duration (T_M) starts if an edge is detected on the input. No telegrams are sent until after the minimum signal duration (T_M).

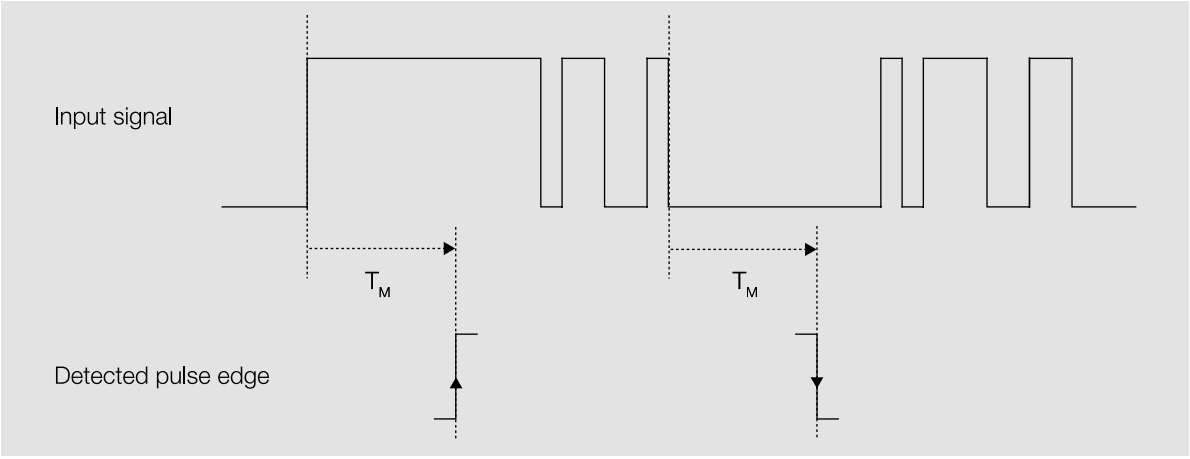


Fig. 25: Minimum signal duration

12.2.3 Network (cyber) security

The industry is increasingly faced with cyber security risks. To increase the stability, security and robustness of its solutions, ABB has introduced cyber security robustness tests as part of the product development process.

In addition, the sections below include guidelines and mechanisms that you can use to improve the security of KNX systems.

12.2.3.1 Preventing unauthorized access

The basis for any protection concept is the careful shielding of the system against unauthorized access. The following points must be taken into consideration when planning and installing a KNX system:

- Only authorized persons (installers, custodians, users) should be allowed to have physical access to the KNX system.
- Sub-distributions with KNX devices should be closed, or in rooms to which only authorized persons have access.
- If available, use the anti-theft features on the KNX devices.
- All components in a KNX system should be permanently installed and protected from unauthorized access.
- The bus cable (ABB i-bus® KNX) should not be visible inside or outside the building. Cables outdoors are an increased risk. Physical access should be made particularly difficult here.
- Devices installed in areas with limited protection (e.g. outdoor areas, underground parking lots, restrooms, etc.) should be designed using a line coupler as a separate line.
- If possible, KNX DATA Secure should be used for data transmission in KNX networks (→ KNX DATA Secure, Page 147).
- The system should be divided into security segments that are based on the available security functions of the devices used. This is done by using segment couplers.

12.2.3.2 IP cabling inside the building

For building automation, use a separate LAN or WiFi network with its own hardware (routers, switches, etc.). Regardless of the KNX system, apply the usual security mechanisms for IP networks:

- MAC filter
- Encryption of wireless networks
- Usage of strong passwords, and password protection against access by unauthorized persons

12.2.3.3 Using filter tables

Filter tables in line couplers prevent attackers from gaining access to the KNX system as a whole. It is strongly recommended to maintain filter tables in line couplers and IP routers, and as far as possible, to avoid operating line couplers and IP routers in "forward all" mode.

12.2.4 Sending or switching delay

No telegrams are sent on the bus during the sending or switching delay (ABB i-bus® KNX).

Telegrams received (e.g. requests from a visualization system) are sent to the outputs after the sending or switching delay expires. The state of the outputs is set according to the settings in the ETS application or the telegram values of the Group Objects.

Time sequences (e.g. staircase lighting time) are started immediately during the sending or switching delay. If, at the time of reception, the staircase lighting time is shorter than the remaining sending or switching delay, the staircase lighting time elapses during the sending or switching delay. After the sending or switching delay has elapsed, there is no switching command; the staircase lighting is not switched on.

Note
The sending or switching delay includes the device initialization time.

12.2.5 Telegram rate limit

The bus load generated by the device can be limited using the telegram rate limit. This limit relates to all telegrams sent by the device.

The device counts the number of telegrams sent within the parameterized period. As soon as the maximum number of sent telegrams is reached, no further telegrams are sent on the bus (ABB i-bus® KNX) until the end of the period. A new period commences automatically at the end of the previous period. The telegram counter is reset to zero. Telegrams can be sent again. The Group Object always sends the current telegram value.

The first period (break time) is not precisely predefined. The break time can be anywhere between 0 seconds and the parameterized period. The subsequent periods correspond to the parameterization.

Example
- Number of telegrams = 20
- Maximum number of telegrams per period = 5
- Period = 5 s

The device immediately sends 5 telegrams. The next 5 telegrams are sent after a maximum of 5 seconds. From this point, a further 5 telegrams are sent via the bus (ABB i-bus® KNX) every 5 seconds.

13 Appendix

13.1 Scope of delivery

The device is supplied together with the following components:

- 1 x universal interface
- 1 x installation and operating instructions
- 1 x KNX bus connection terminal (red/black)
- 1 x cover cap
- 1 x plug-in connecting cable

13.2 Table of values, Group Object "Scene 1 ... 64"

The following table contains the telegram code of the 64 Scenes. Each 8-bit Scene is indicated in hexadecimal and binary codes. The 8-bit value is sent when a Scene is recalled/stored.
x = Value 1
Empty = Value 0

Bit no.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Recall/store	Not defined	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Recall A Store S No reaction –
0	00									1	A
1	01								x	2	A
2	02							x		3	A
3	03							x	x	4	A
4	04						x			5	A
5	05						x		x	6	A
6	06						x	x		7	A
7	07						x	x	x	8	A
8	08					x				9	A
9	09					x			x	10	A
10	0A					x		x		11	A
11	0B					x		x	x	12	A
12	0C					x	x			13	A
13	0D					x	x		x	14	A
14	0E					x	x	x		15	A
15	0F					x	x	x	x	16	A
16	10				x					17	A
17	11				x				x	18	A
18	12				x			x		19	A
19	13				x			x	x	20	A
20	14				x		x			21	A
21	15				x		x		x	22	A
22	16				x		x	x		23	A
23	17				x		x	x	x	24	A
24	18				x	x				25	A
25	19				x	x			x	26	A
26	1A				x	x		x		27	A
27	1B				x	x		x	x	28	A
28	1C				x	x	x			29	A
29	1D				x	x	x		x	30	A
30	1E				x	x	x	x		31	A
31	1F				x	x	x	x	x	32	A
32	20			x						33	A
33	21			x					x	34	A
34	22			x				x		35	A
35	23			x				x	x	36	A
36	24			x			x			37	A
37	25			x			x		x	38	A
38	26			x			x	x		39	A
39	27			x			x	x	x	40	A
40	28			x		x				41	A
41	29			x		x			x	42	A
42	2A			x		x		x		43	A
43	2B			x		x		x	x	44	A
44	2C			x		x	x			45	A
45	2D			x		x	x		x	46	A
46	2E			x		x	x	x		47	A
47	2F			x		x	x	x	x	48	A
48	30			x	x					49	A
49	31			x	x				x	50	A
50	32			x	x			x		51	A
51	33			x	x			x	x	52	A
52	34			x	x		x			53	A
53	35			x	x		x		x	54	A
54	36			x	x		x	x		55	A
55	37			x	x		x	x	x	56	A
56	38			x	x	x				57	A
57	39			x	x	x			x	58	A
58	3A			x	x	x		x		59	A
59	3B			x	x	x		x	x	60	A
60	3C			x	x	x	x			61	A
61	3D			x	x	x	x		x	62	A
62	3E			x	x	x	x	x		63	A

Bit no.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Recall/store	Not defined	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Recall A Store S No reaction –
63	3F			x	x	x	x	x	x	64	A
64	40		x							–	–
65	41		x						x	–	–
66	42		x					x		–	–
67	43		x					x	x	–	–
68	44		x				x			–	–
69	45		x				x		x	–	–
70	46		x				x	x		–	–
71	47		x				x	x	x	–	–
72	48		x			x				–	–
73	49		x			x			x	–	–
74	4A		x			x		x		–	–
75	4B		x			x		x	x	–	–
76	4C		x			x	x			–	–
77	4D		x			x	x		x	–	–
78	4E		x			x	x	x		–	–
79	4F		x			x	x	x	x	–	–
80	50		x		x					–	–
81	51		x		x				x	–	–
82	52		x		x			x		–	–
83	53		x		x			x	x	–	–
84	54		x		x		x			–	–
85	55		x		x		x		x	–	–
86	56		x		x		x	x		–	–
87	57		x		x		x	x	x	–	–
88	58		x		x	x				–	–
89	59		x		x	x			x	–	–
90	5A		x		x	x		x		–	–
91	5B		x		x	x		x	x	–	–
92	5C		x		x	x	x			–	–
93	5D		x		x	x	x		x	–	–
94	5E		x		x	x	x	x		–	–
95	5F		x		x	x	x	x	x	–	–
96	60		x	x						–	–
97	61		x	x					x	–	–
98	62		x	x				x		–	–
99	63		x	x				x	x	–	–
100	64		x	x			x			–	–
101	65		x	x			x		x	–	–
102	66		x	x			x	x		–	–
103	67		x	x			x	x	x	–	–
104	68		x	x		x				–	–
105	69		x	x		x			x	–	–
106	6A		x	x		x		x		–	–
107	6B		x	x		x		x	x	–	–
108	6C		x	x		x	x			–	–
109	6D		x	x		x	x		x	–	–
110	6E		x	x		x	x	x		–	–
111	6F		x	x		x	x	x	x	–	–
112	70		x	x	x					–	–
113	71		x	x	x				x	–	–
114	72		x	x	x			x		–	–
115	73		x	x	x			x	x	–	–
116	74		x	x	x		x			–	–
117	75		x	x	x		x		x	–	–
118	76		x	x	x		x	x		–	–
119	77		x	x	x		x	x	x	–	–
120	78		x	x	x	x				–	–
121	79		x	x	x	x			x	–	–
122	7A		x	x	x	x		x		–	–
123	7B		x	x	x	x		x	x	–	–
124	7C		x	x	x	x	x			–	–
125	7D		x	x	x	x	x		x	–	–

Bit no.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Recall/store	Not defined	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Recall A Store S No reaction –
126	7E		x	x	x	x	x	x		–	–
127	7F		x	x	x	x	x	x	x	–	–
128	80	x								1	S
129	81	x							x	2	S
130	82	x						x		3	S
131	83	x						x	x	4	S
132	84	x					x			5	S
133	85	x					x		x	6	S
134	86	x					x	x		7	S
135	87	x					x	x	x	8	S
136	88	x				x				9	S
137	89	x				x			x	10	S
138	8A	x				x		x		11	S
139	8B	x				x		x	x	12	S
140	8C	x				x	x			13	S
141	8D	x				x	x		x	14	S
142	8E	x				x	x	x		15	S
143	8F	x				x	x	x	x	16	S
144	90	x			x					17	S
145	91	x			x				x	18	S
146	92	x			x			x		19	S
147	93	x			x			x	x	20	S
148	94	x			x		x			21	S
149	95	x			x		x		x	22	S
150	96	x			x		x	x		23	S
151	97	x			x		x	x	x	24	S
152	98	x			x	x				25	S
153	99	x			x	x			x	26	S
154	9A	x			x	x		x		27	S
155	9B	x			x	x		x	x	28	S
156	9C	x			x	x	x			29	S
157	9D	x			x	x	x		x	30	S
158	9E	x			x	x	x	x		31	S
159	9F	x			x	x	x	x	x	32	S
160	A0	x		x						33	S
161	A1	x		x					x	34	S
162	A2	x		x				x		35	S
163	A3	x		x				x	x	36	S
164	A4	x		x			x			37	S
165	A5	x		x			x		x	38	S
166	A6	x		x			x	x		39	S
167	A7	x		x			x	x	x	40	S
168	A8	x		x		x				41	S
169	A9	x		x		x			x	42	S
170	AA	x		x		x		x		43	S
171	AB	x		x		x		x	x	44	S
172	AC	x		x		x	x			45	S
173	AD	x		x		x	x		x	46	S
174	AE	x		x		x	x	x		47	S
175	AF	x		x		x	x	x	x	48	S
176	B0	x		x	x					49	S
177	B1	x		x	x				x	50	S
178	B2	x		x	x			x		51	S
179	B3	x		x	x			x	x	52	S
180	B4	x		x	x		x			53	S
181	B5	x		x	x		x		x	54	S
182	B6	x		x	x		x	x		55	S
183	B7	x		x	x		x	x	x	56	S
184	B8	x		x	x	x				57	S
185	B9	x		x	x	x			x	58	S
186	BA	x		x	x	x		x		59	S
187	BB	x		x	x	x		x	x	60	S
188	BC	x		x	x	x	x			61	S
189	BD	x		x	x	x	x		x	62	S
190	BE	x		x	x	x	x	x		63	S
191	BF	x		x	x	x	x	x	x	64	S
192	C0	x	x							–	–
193	C1	x	x						x	–	–
194	C2	x	x					x		–	–
195	C3	x	x					x	x	–	–
196	C4	x	x				x			–	–
197	C5	x	x				x		x	–	–
198	C6	x	x				x	x		–	–
199	C7	x	x				x	x	x	–	–
200	C8	x	x			x				–	–
201	C9	x	x			x			x	–	–
202	CA	x	x			x		x		–	–
203	CB	x	x			x		x	x	–	–
204	CC	x	x			x	x			–	–
205	CD	x	x			x	x		x	–	–
206	CE	x	x			x	x	x		–	–
207	CF	x	x			x	x	x	x	–	–
208	D0	x	x		x					–	–
209	D1	x	x		x				x	–	–
210	D2	x	x		x			x		–	–
211	D3	x	x		x			x	x	–	–
212	D4	x	x		x		x			–	–
213	D5	x	x		x		x		x	–	–
214	D6	x	x		x		x	x		–	–
215	D7	x	x		x		x	x	x	–	–
216	D8	x	x		x	x				–	–
217	D9	x	x		x	x			x	–	–
218	DA	x	x		x	x		x		–	–
219	DB	x	x		x	x		x	x	–	–
220	DC	x	x		x	x	x			–	–
221	DD	x	x		x	x	x		x	–	–
222	DE	x	x		x	x	x	x		–	–
223	DF	x	x		x	x	x	x	x	–	–
224	E0	x	x	x						–	–
225	E1	x	x	x					x	–	–
226	E2	x	x	x				x		–	–
227	E3	x	x	x				x	x	–	–
228	E4	x	x	x			x			–	–
229	E5	x	x	x			x		x	–	–
230	E6	x	x	x			x	x		–	–
231	E7	x	x	x			x	x	x	–	–
232	E8	x	x	x		x				–	–
233	E9	x	x	x		x			x	–	–
234	EA	x	x	x		x		x		–	–
235	EB	x	x	x		x		x	x	–	–
236	EC	x	x	x		x	x			–	–
237	ED	x	x	x		x	x		x	–	–
238	EE	x	x	x		x	x	x		–	–
239	EF	x	x	x		x	x	x	x	–	–
240	F0	x	x	x	x					–	–
241	F1	x	x	x	x				x	–	–
242	F2	x	x	x	x			x		–	–
243	F3	x	x	x	x			x	x	–	–
244	F4	x	x	x	x		x			–	–
245	F5	x	x	x	x		x		x	–	–
246	F6	x	x	x	x		x	x		–	–
247	F7	x	x	x	x		x	x	x	–	–
248	F8	x	x	x	x	x				–	–
249	F9	x	x	x	x	x			x	–	–
250	FA	x	x	x	x	x		x		–	–
251	FB	x	x	x	x	x		x	x	–	–
252	FC	x	x	x	x	x	x			–	–
253	FD	x	x	x	x	x	x		x	–	–
254	FE	x	x	x	x	x	x	x		–	–
255	FF	x	x	x	x	x	x	x	x	–	–

Tab. 10: Code table 8-bit Scene

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