PRODUCT MANUAL

ABB i-bus® KNX

SAH/S x.x.7.1

Switch/Shutter Actuator

Table of contents

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.

NOTICE
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 usage 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 (distribution board).
- Operate the device only within the specified technical data.
- Mounting, installation, commissioning and maintenance must be carried out only by qualified electricians. (old)
- Disconnect device from the supply of electrical power before mounting.

2.2 Proper use

The Switch/Shutter Actuators are intended to be used to activate 230 V AC shutter and blind drives and to switch primarily ohmic electrical loads in a KNX environment.

NOTICE

The outputs on the device are not interlocked mechanically. The connection of shutter/blind motors to Switch Actuator outputs will result in damage to the shutter/blind motor.

- Connect shutter/blind motors only to Shutter Actuator output pairs.
- Do not drop below the switching/reversing time for the shutter/blind motor connected.

3 Product overview

3.1 Device description

The Switch/Shutter Actuators are modular installation devices in pro*M* design. The devices are designed for installation in electrical distribution boards and small housings for rapid mounting on a 35 mm mounting rail (according to EN 60715).

The devices possess mutually independent switching relays with which the following functions can be implemented:
- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The devices do not possess any mutually electromechanically interlocked output contacts.

The devices are provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

3.1.1 Membrane keypad

The devices can be operated manually using the membrane keypad. The membranes on the devices differ only in the number of zone LEDs.

Complete overview of operating and display elements → corresponding sub-chapter of the individual product variant.

Note
The safety functions (weather alarms as well as the functions *Safety priority*, *Forced operation* and *Disable*) take priority over *Manual operation* mode. An output cannot be operated using the membrane keypad if it is disabled by a safety function. If the safety function is canceled in *Manual operation* mode, the output reacts corresponding to its parameterization.

3.1.2 Product name description

Abbreviation	Description		
S	Switch		
A	Actuator		
H	Hybrid		
/S	MDRC		
x.	8	=	8-fold
	16	=	16-fold
	24	=	24-fold
x.	6	=	6 A
	10	=	10 A
	16	=	16 A
x.	7	=	Combined function (Switch/Shutter)
x	x	=	Version number (x = 1, 2, etc.)

Tab. 2: Product name description

3.2 Ordering details

Description	MB	Type	Order no.	Packaging unit [pcs.]	Weight 1 pc. (gross) [kg]
Switch/Shutter	8	SAH/S 16.10.7.1	2CDG 110 248 R0011	1	0.502
Switch/Shutter	8	SAH/S 16.16.7.1	2CDG 110 251 R0011	1	0.502
Switch/Shutter	8	SAH/S 16.6.7.1	2CDG 110 245 R0011	1	0.502
Switch/Shutter	12	SAH/S 24.10.7.1	2CDG 110 249 R0011	1	0.720
Switch/Shutter	12	SAH/S 24.16.7.1	2CDG 110 252 R0011	1	0.720
Switch/Shutter	12	SAH/S 24.6.7.1	2CDG 110 246 R0011	1	0.720
Switch/Shutter	4	SAH/S 8.10.7.1	2CDG 110 247 R0011	1	0.272
Switch/Shutter	4	SAH/S 8.16.7.1	2CDG 110 250 R0011	1	0.272
Switch/Shutter	4	SAH/S 8.6.7.1	2CDG 110 244 R0011	1	0.272

Tab. 3: Ordering details

3.3 Switch/Shutter Actuator SAH/S 8.6.7.1

Fig. 1: Device illustration SAH/S 8.6.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.3.1 Dimension drawing

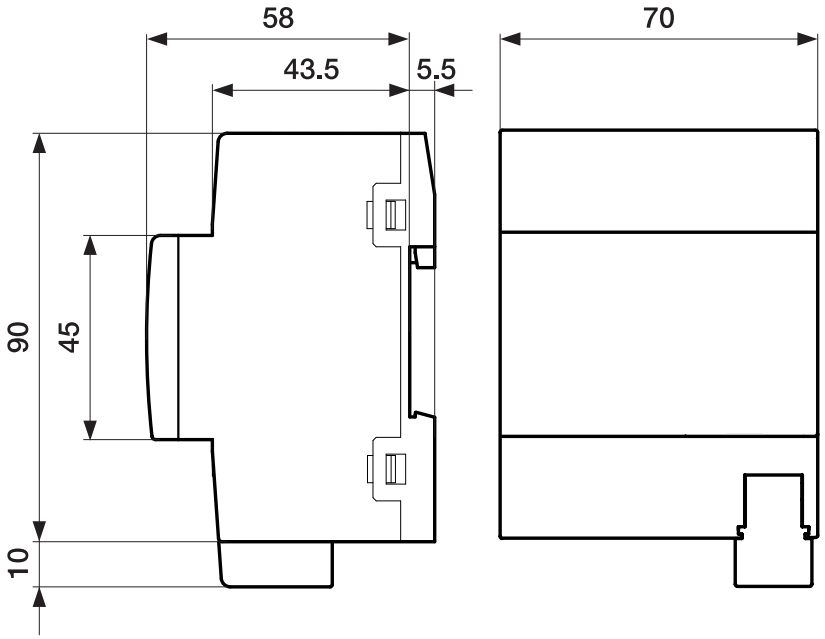

Fig. 2: Dimension drawing

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3.3.2 Connection diagram

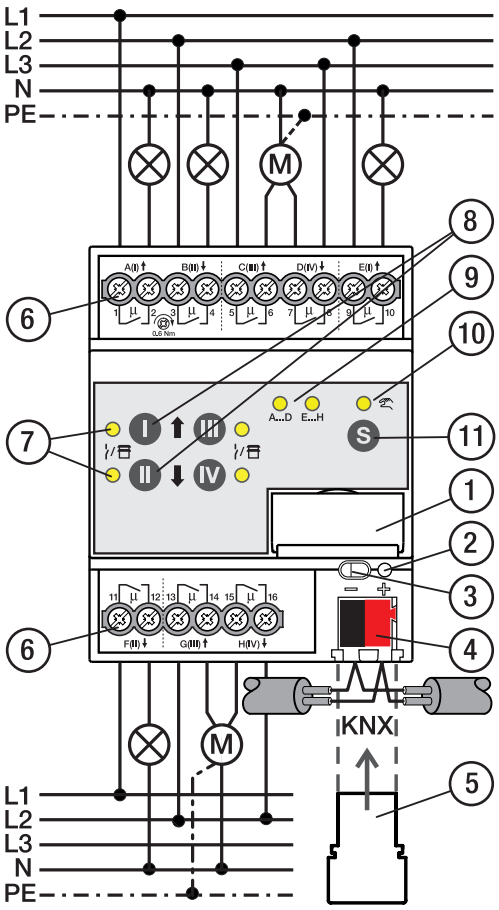

Fig. 3: Connection diagram SAH/S 8.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.3.3 Operating and display elements

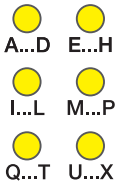
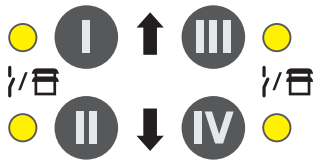
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 4: Operating and display elements – general

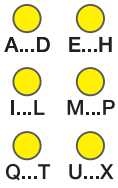
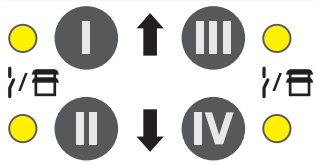
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 5: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 6: Operating and display elements – KNX operation

3.3.4 Technical data

3.3.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	2.5 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 70 × 63.5 mm (H × W × D)
	Mounting width in space units	4 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.272 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.3.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 8.6.7.1
	Application	Switch/Shutter 8f 16 A / …
		… = current version number of the application
	Maximum number of group objects	282
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.3.4.3 Output, rated current 6 A

Rated values	Number of outputs	8 switch / 4 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	6 A
	Maximum current per device	8 × 6 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	6 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6 × 10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	15
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.3.4.4 Output, lamp load 6 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	800 W
	Parallel compensated	800 W
Mercury-vapor lamp	Uncompensated	
	Parallel compensated	
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.4 Switch/Shutter Actuator SAH/S 16.6.7.1

Fig. 4: Device illustration SAH/S 16.6.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.4.1 Dimension drawing

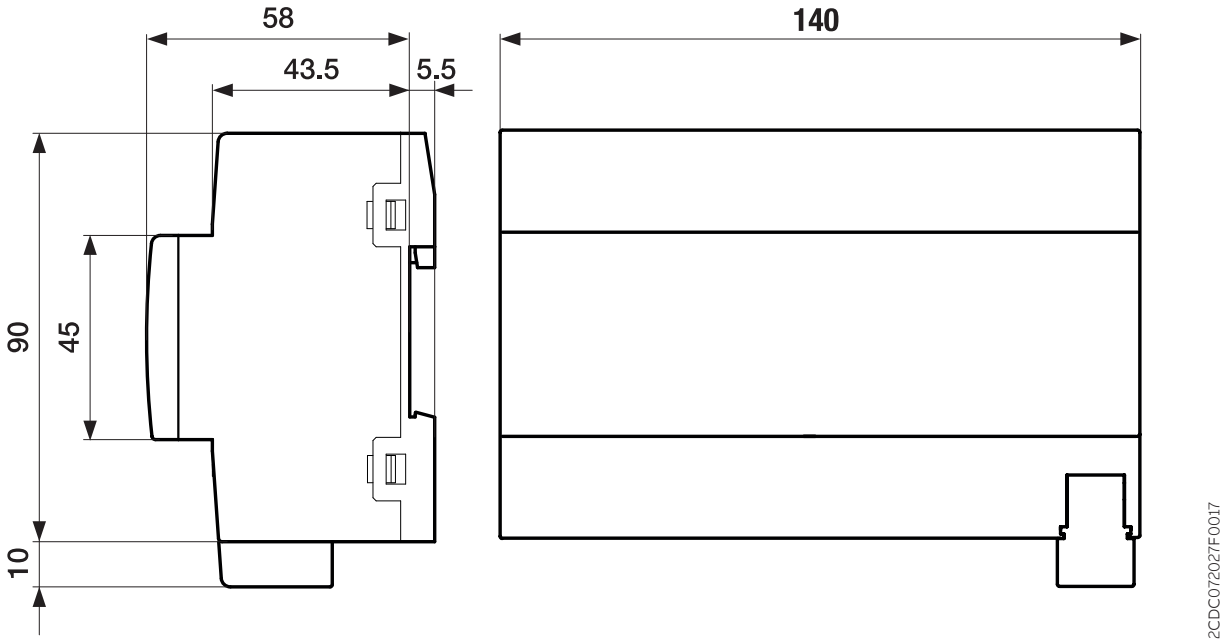


Fig. 5: Dimension drawing

3.4.2 Connection diagram

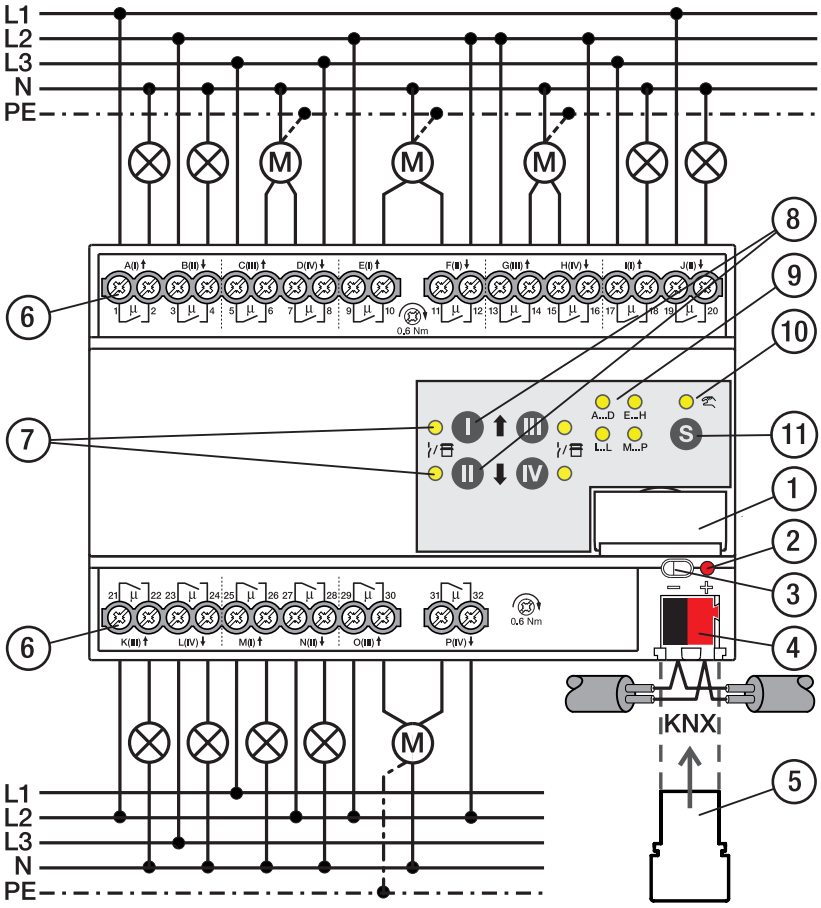


Fig. 6: Connection diagram SAH/S 16.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.4.3 Operating and display elements

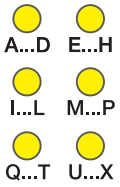
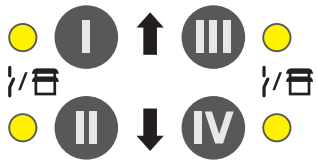
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 7: Operating and display elements – general

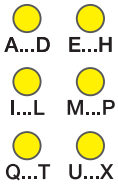
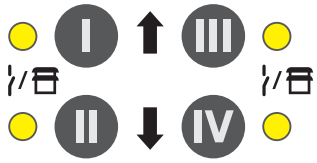
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 8: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 9: Operating and display elements – KNX operation

3.4.4 Technical data

3.4.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	5.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 140 × 63.5 mm (H × W × D)
	Mounting width in space units	8 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.502 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.4.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 16.6.7.1
	Application	Switch/Shutter 16f 16 A / …
		… = current version number of the application
	Maximum number of group objects	446
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.4.4.3 Output, rated current 6 A

Rated values	Number of outputs	16 switch / 8 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	6 A
	Maximum current per device	16 × 6 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	6 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6 × 10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	7
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.4.4.4 Output, lamp load 6 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.5 Switch/Shutter Actuator SAH/S 24.6.7.1

9PAA000000003657-Rev_A

Fig. 7: Device illustration SAH/S 24.6.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.5.1 Dimension drawing

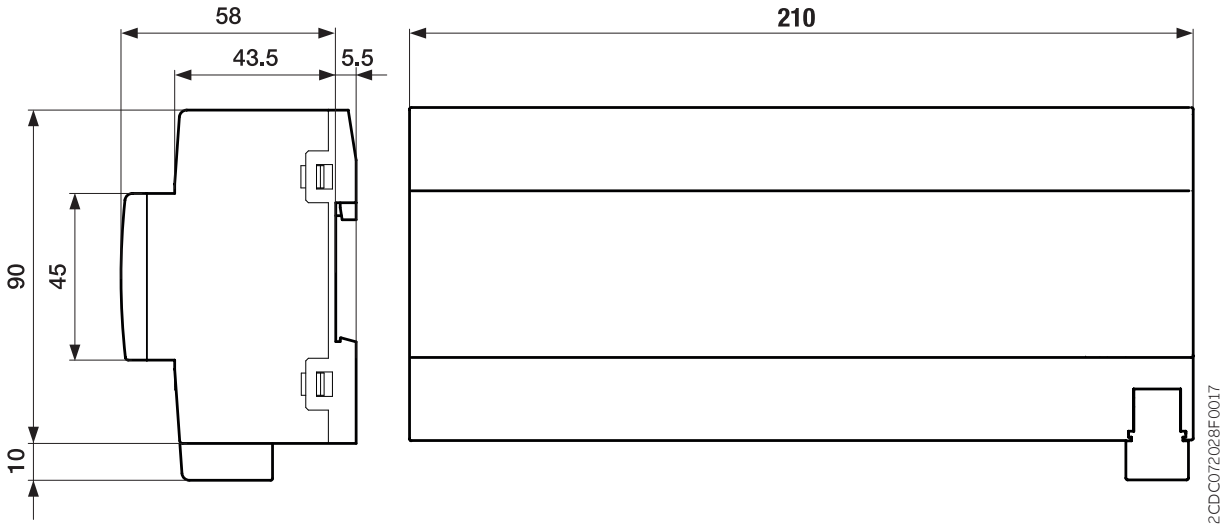


Fig. 8: Dimension drawing

3.5.2 Connection diagram

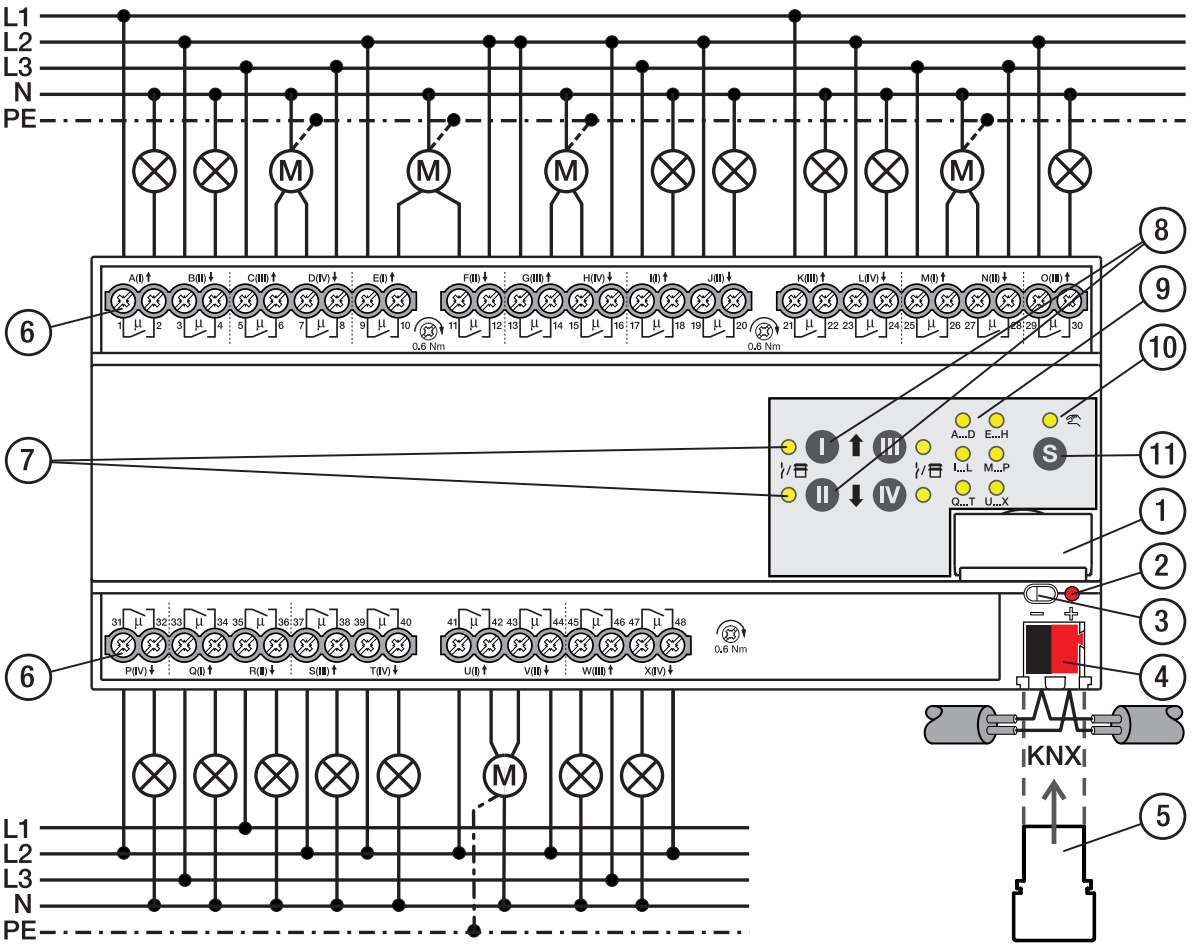


Fig. 9: Connection diagram SAH/S 24.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.5.3 Operating and display elements

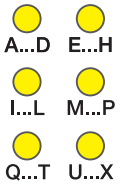
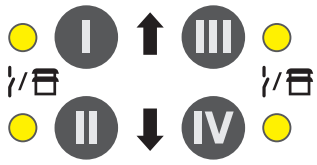
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 10: Operating and display elements – general

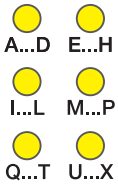
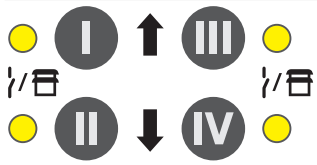
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 11: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 12: Operating and display elements – KNX operation

3.5.4 Technical data

3.5.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	7.5 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 210 × 63.5 mm (H × W × D)
	Mounting width in space units	12 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.72 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.5.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 24.6.7.1
	Application	Switch/Shutter 24f 16 A / …
		… = current version number of the application
	Maximum number of group objects	610
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.5.4.3 Output, rated current 6 A

Rated values	Number of outputs	24 switch / 12 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	6 A
	Maximum current per device	24 × 6 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	6 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6 × 10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	5
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.5.4.4 Output, lamp load 6 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.6 Switch/Shutter Actuator SAH/S 8.10.7.1

Fig. 10: Device illustration SAH/S 8.10.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.6.1 Dimension drawing

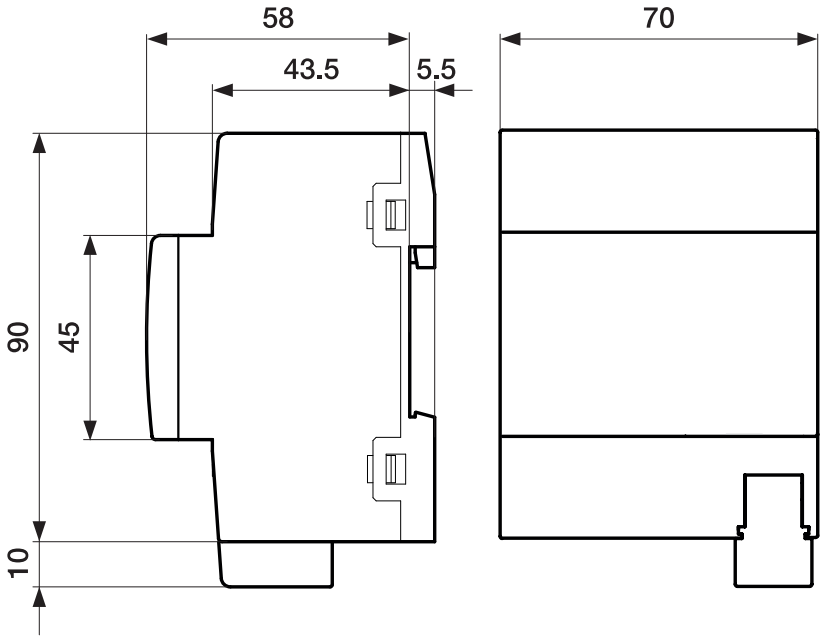


Fig. 11: Dimension drawing

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3.6.2 Connection diagram

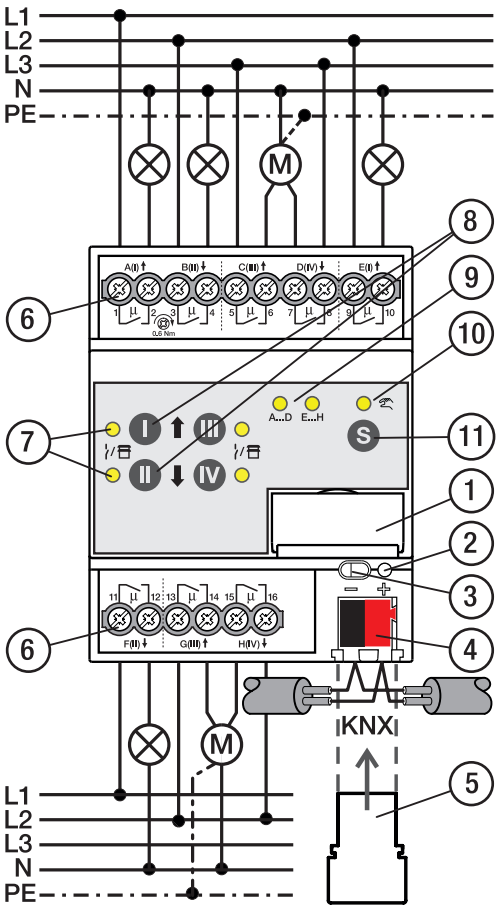

Fig. 12: Connection diagram SAH/S 8.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.6.3 Operating and display elements

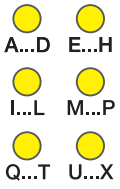
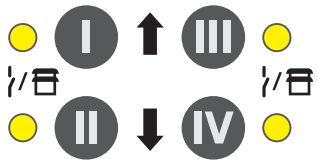
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 13: Operating and display elements – general

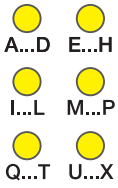
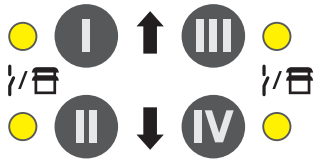
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 14: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 15: Operating and display elements – KNX operation

3.6.4 Technical data

3.6.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	3.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 70 × 63.5 mm (H × W × D)
	Mounting width in space units	4 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.272 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.6.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 8.10.7.1
	Application	Switch/Shutter 8f 16 A / …
		… = current version number of the application
	Maximum number of group objects	282
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.6.4.3 Output, rated current 10 A

Rated values	Number of outputs	8 switch / 4 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	10 A
	Maximum current per device	8 × 10 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	10 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6 × 10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	15
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.6.4.4 Output, lamp load 10 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.7 Switch/Shutter Actuator SAH/S 16.10.7.1

Fig. 13: Device illustration SAH/S 16.10.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.7.1 Dimension drawing

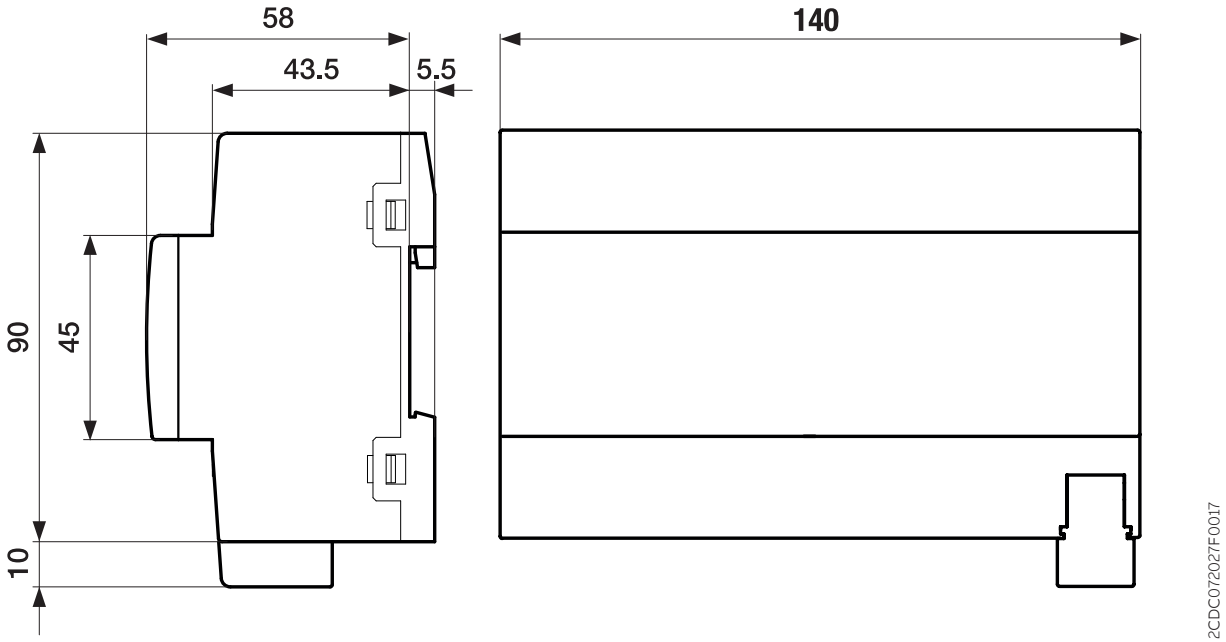


Fig. 14: Dimension drawing

3.7.2 Connection diagram

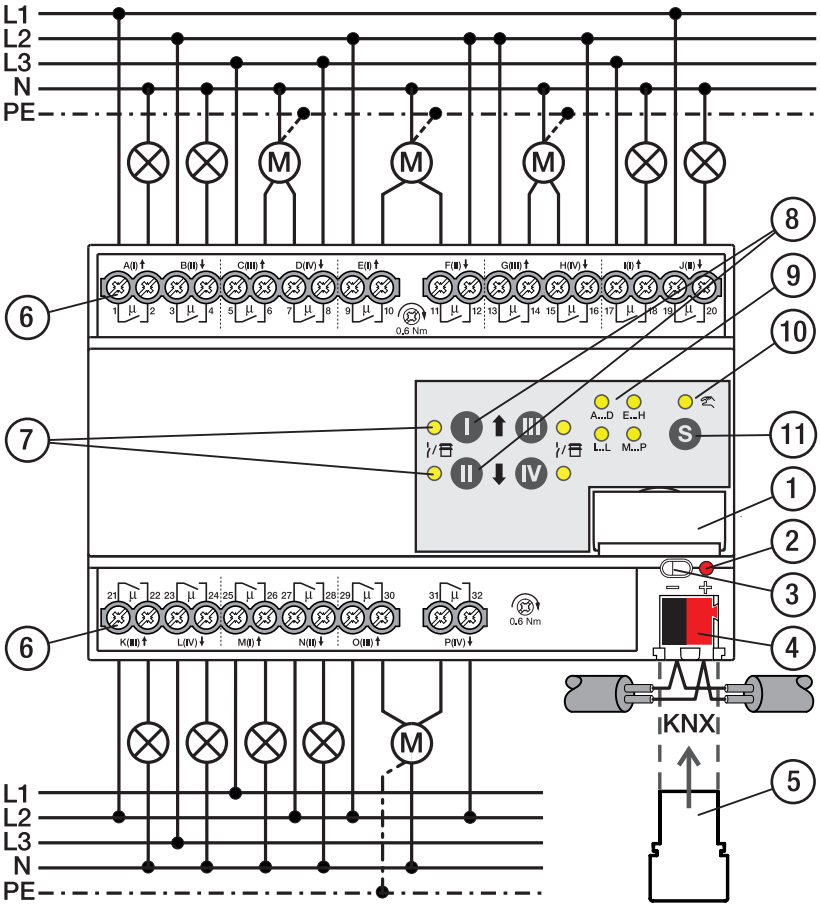


Fig. 15: Connection diagram SAH/S 16.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.7.3 Operating and display elements

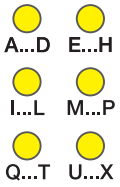
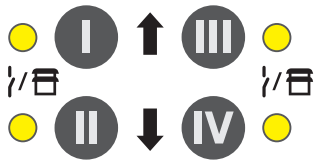
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 16: Operating and display elements – general

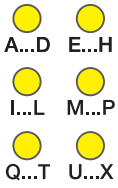
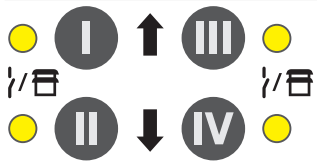
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 17: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 18: Operating and display elements – KNX operation

3.7.4 Technical data

3.7.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	6.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 140 × 64.5 mm (H × W × D)
	Mounting width in space units	8 modules
	Mounting depth	64.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.502 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.7.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 16.10.7.1
	Application	Switch/Shutter 16f 16 A / …
		… = current version number of the application
	Maximum number of group objects	446
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.7.4.3 Output, rated current 10 A

Rated values	Number of outputs	16 switch / 8 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	10 A
	Maximum current per device	16 × 10 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	10 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6 × 10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	7
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.7.4.4 Output, lamp load 10 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.8 Switch/Shutter Actuator SAH/S 24.10.7.1

9PAA000000003639-Rev_A

Fig. 16: Device illustration SAH/S 24.10.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.8.1 Dimension drawing

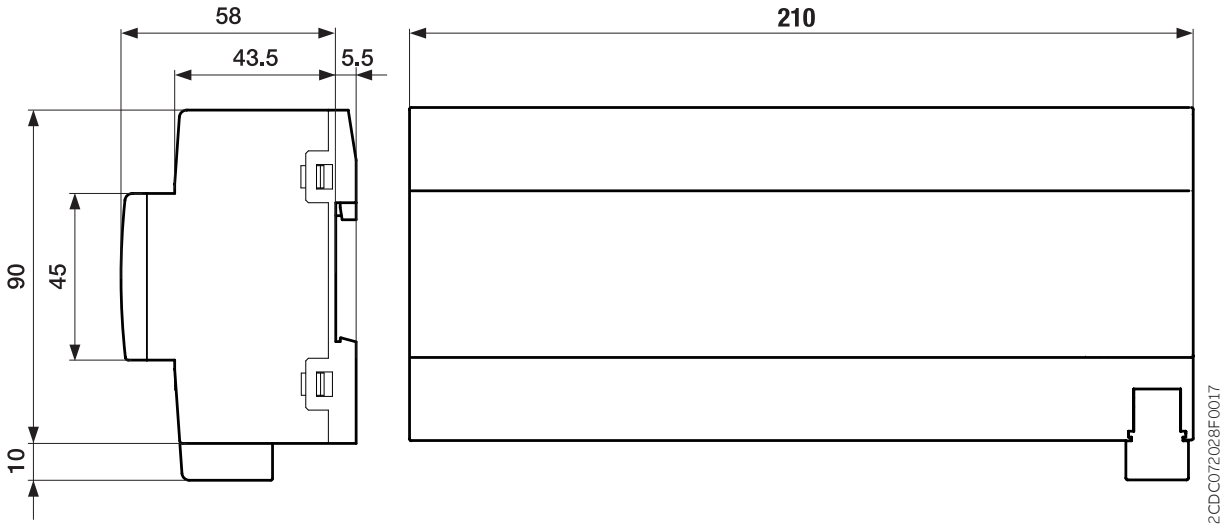


Fig. 17: Dimension drawing

3.8.2 Connection diagram

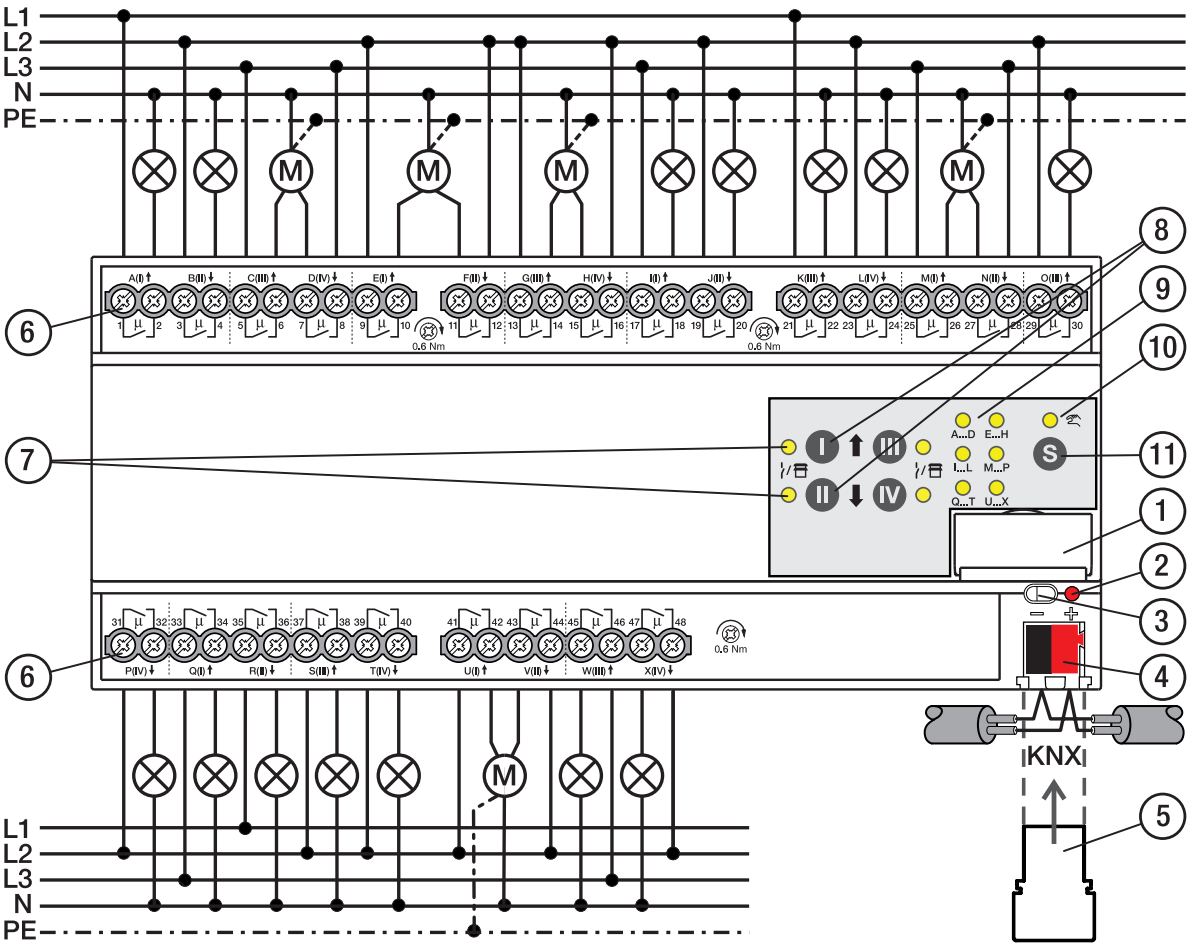


Fig. 18: Connection diagram SAH/S 24.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.8.3 Operating and display elements

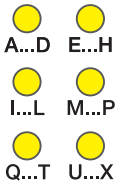
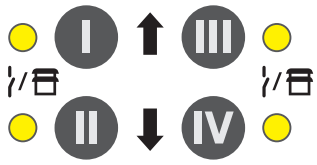
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 19: Operating and display elements – general

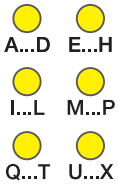
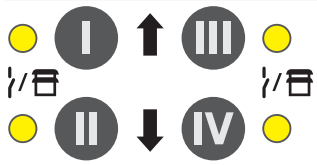
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 20: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 21: Operating and display elements – KNX operation

3.8.4 Technical data

3.8.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	9.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 210 × 63.5 mm (H × W × D)
	Mounting width in space units	12 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.72 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.8.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 24.10.7.1
	Application	Switch/Shutter 24f 16 A / …
		… = current version number of the application
	Maximum number of group objects	610
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.8.4.3 Output, rated current 10 A

Rated values	Number of outputs	24 switch / 12 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	10 A
	Maximum current per device	200 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	10 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6×10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	5
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.8.4.4 Output, lamp load 10 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	300 W
	DUO circuit	350 W
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	800 W
	Parallel compensated	800 W
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.9 Switch/Shutter Actuator SAH/S 8.16.7.1

Fig. 19: Device illustration SAH/S 8.16.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.9.1 Dimension drawing

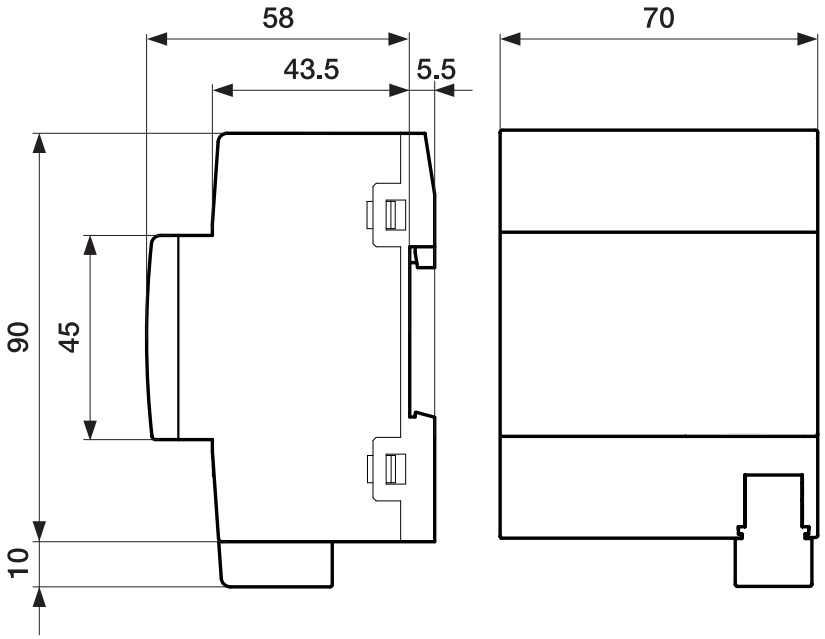


Fig. 20: Dimension drawing

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3.9.2 Connection diagram

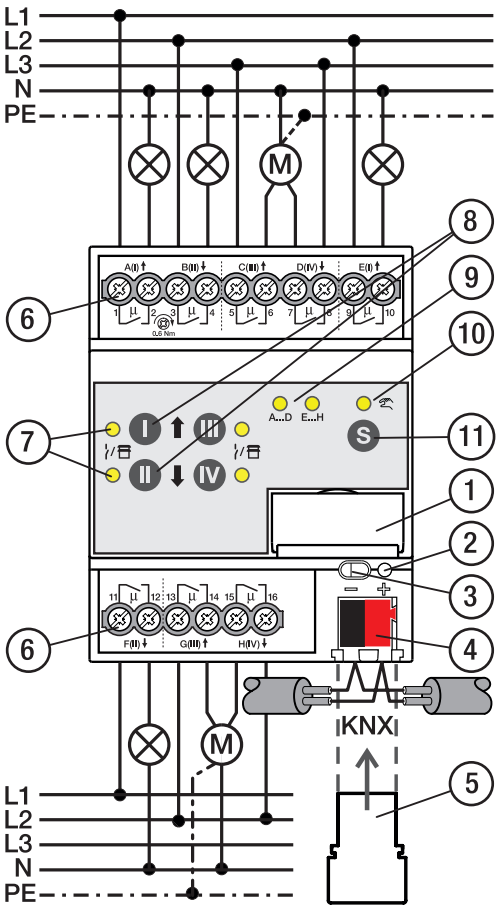

Fig. 21: Connection diagram SAH/S 8.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

2CDC072006F0019

3.9.3 Operating and display elements

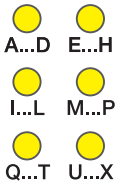
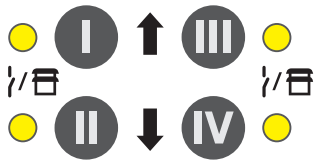
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 22: Operating and display elements – general

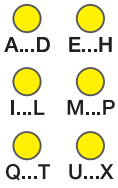
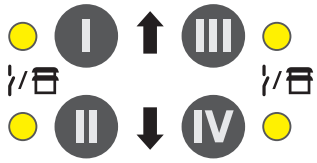
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 23: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 24: Operating and display elements – KNX operation

3.9.4 Technical data

3.9.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	4.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 70 × 63.5 mm (H × W × D)
	Mounting width in space units	4 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.272 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.9.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 8.16.7.1
	Application	Switch/Shutter 8f 16 A / …
		… = current version number of the application
	Maximum number of group objects	282
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.9.4.3 Output, rated current 16 A

Rated values	Number of outputs	8 switch / 4 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	16 A
	Maximum current per device	100 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	16 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6×10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	15
	Maximum output relay position changes per minute if only one relay is switched.	120

Note

The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.9.4.4 Output, lamp load 16 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note

The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

3.10 Switch/Shutter Actuator SAH/S 16.16.7.1

Fig. 22: Device illustration SAH/S 16.16.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.10.1 Dimension drawing

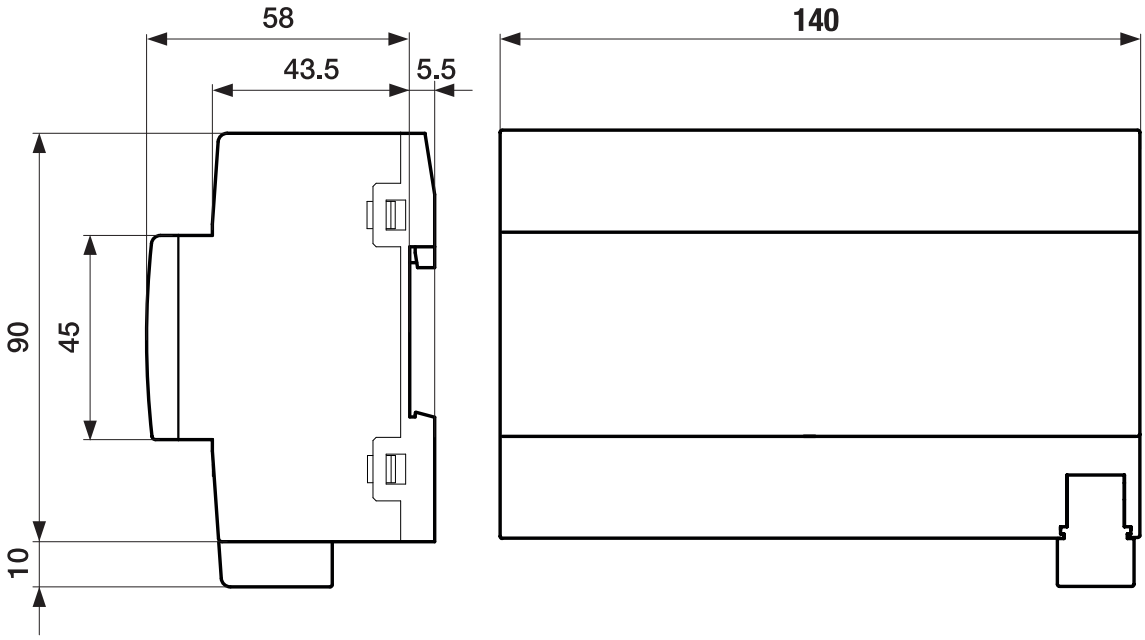


Fig. 23: Dimension drawing

3.10.2 Connection diagram

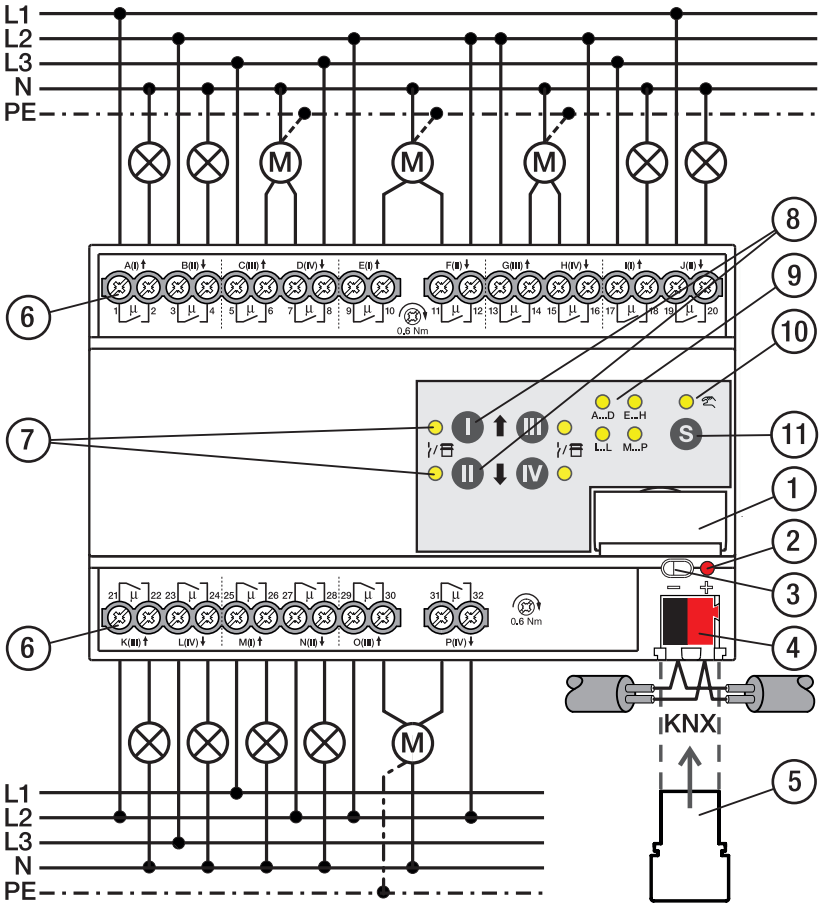


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Fig. 24: Connection diagram SAH/S 16.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.10.3 Operating and display elements

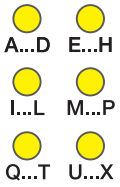
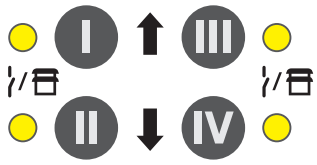
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 25: Operating and display elements – general

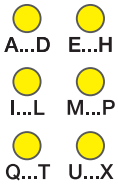
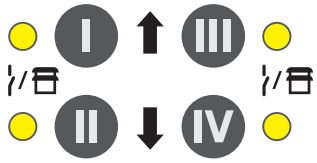
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 26: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/*Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 27: Operating and display elements – KNX operation

3.10.4 Technical data

3.10.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	8.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 140 × 63.5 mm (H × W × D)
	Mounting width in space units	8 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.502 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.10.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 16.6.7.1
	Application	Switch/Shutter 16f 16 A / …
		… = current version number of the application
	Maximum number of group objects	446
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.10.4.3 Output, rated current 16 A

Rated values	Number of outputs	16 switch / 8 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	16 A
	Maximum current per device	160 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	16 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	100 mA
	minimum switching current at 24 V AC	100 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6×10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	7
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.10.4.4 Output, lamp load 16 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

3.11 Switch/Shutter Actuator SAH/S 24.16.7.1

9PAA000000003634-Rev_A

Fig. 25: Device illustration SAH/S 24.16.7.1

The Switch/Shutter Actuator is a modular installation device in proM design. The device is designed for installation in electrical distribution boards and small housings for rapid mounting on a 35-mm mounting rail (to EN 60715).

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching electric consumers (individually)
- Activation of 230 V AC blind and shutter drives (in pairs)

The device does not possess any mutually electromechanically interlocked output contacts.

The device is provided with bus voltage via the ABB i-bus® KNX. The connection to the ABB i-bus® KNX is implemented using the bus connection terminal. The consumers are connected at the outputs using screw terminals (terminal designation on the housing).

Manual operation mode permits on-site operation of the device using a membrane keypad.

3.11.1 Dimension drawing

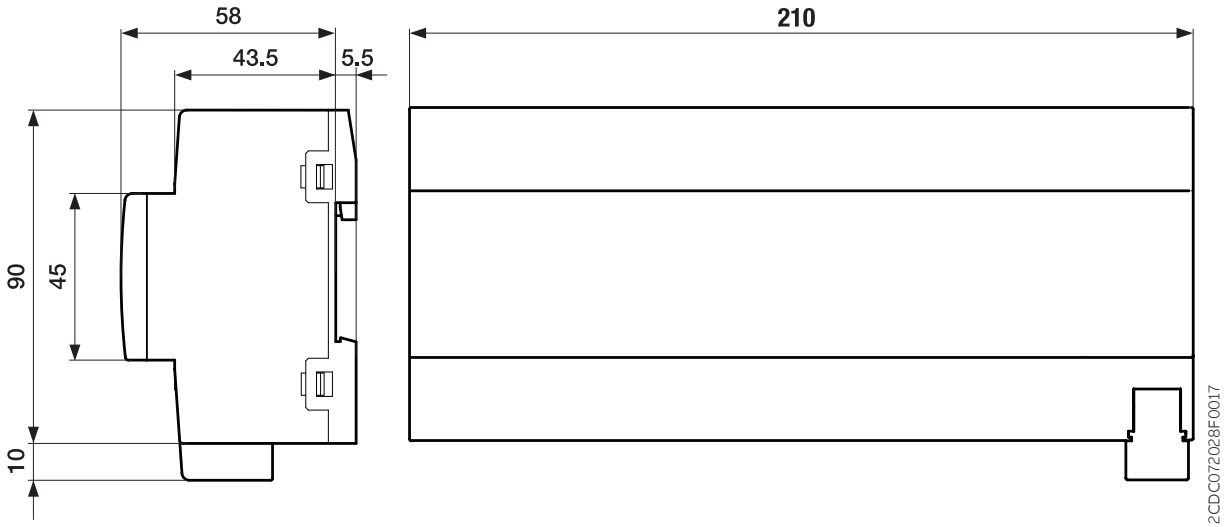


Fig. 26: Dimension drawing

3.11.2 Connection diagram

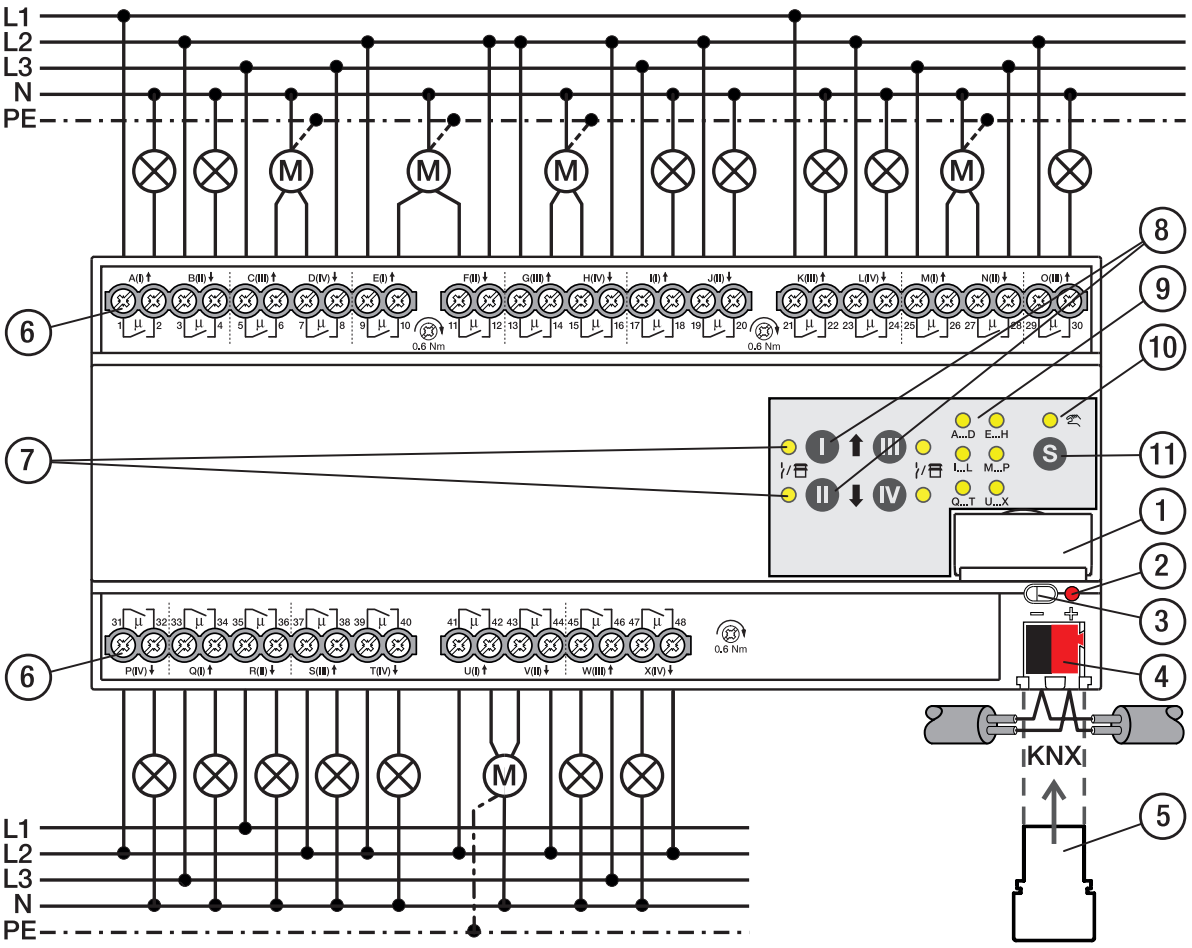


Fig. 27: Connection diagram SAH/S 24.x.7.1

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Legend

1 Label carriers
2 Programming LED
3 Programming button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 Output status LED (yellow)
8 Output button
9 Groups LED (yellow)
10 Manual operation LED (yellow)
11 S button (manual operation / select output)

3.11.3 Operating and display elements

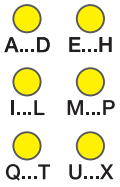
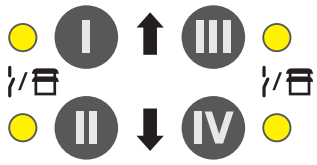
Note
A device with 24 channels (A … X) is described below.

Note
In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

Button/LED	Description/function	LED indicator
 *Programming*	Assignment of the physical address	LED On: *Programming mode* active

Tab. 28: Operating and display elements – general

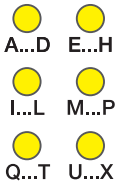
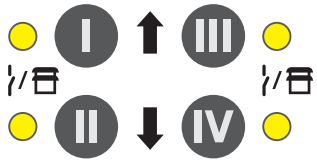
Manual operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:** Short button push < 2 s. **Switch to KNX operation:** Button push 2 … 5 s **Selection of all relays (for central Off).** Long button push> 5 s.	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	**Switch mode:** Switch outputs individually (toggle function) Button I: First output of group (A/E/I/M/Q/U) Taste II: Second output of group (B/F/J/N/R/V) Button III: Third output of group (C/G/K/O/S/W) Button IV: Fourth output of group (D/H/L/P/T/X)	**Switch mode:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output disabled; manual operation not possible.
	Shutter mode: Control shutter outputs Button I: Long button push > 1 s: Shutter Up Short button push < 1 s: Shutter STOP/slat adjustment Taste II: Long button push > 1 s: Shutter Down Short button push < 1 s: Shutter STOP/slat adjustment	**Shutter mode:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 29: Operating and display elements – manual operation

More information → Manual operation, Page 82.

KNX operation

Button/LED	Description/function	LED indicator
 *S button* / LED *Manual operation*	**Select relay group:**short button push < 2 s **Change to manual operation:** Button push 2 … 5 s	**Manual operation active:** LED: ON **KNX operation active:** LED: OFF **Manual operation disabled:** LED: Flashing (1 Hz) or device is controlled via i-bus® Tool
 LED *Group*		LED On: Group selected LED Off: Group not selected
 *Output* button/ *Output status* LED	Button without function	**Switch mode:** LED On: Relay closed LED Off: Relay open LED flashing (1 Hz): Output disabled; manual operation not possible
		Shutter mode: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Moving up LED I Off and LED II flashing (1 Hz): Moving down LED I flashing (1 Hz) and LED II flashing (1 Hz): Output disabled LED I flashing (5 Hz) and LED II flashing (5 Hz): Signals the active shutter output (after the group is changed or after the operating mode is changed to *Manual operation*)

Tab. 30: Operating and display elements – KNX operation

3.11.4 Technical data

3.11.4.1 General technical data

Supply	Bus voltage	21 … 32 V DC
	Current consumption, bus	< 12 mA
	Power loss, bus	Max. 250 mW
	Power loss, device	12.0 W
Connections	KNX	Ø 0.8 mm single core (via bus connection terminal)
Connection terminals	Screw terminal	Screw terminal with universal head (PZ 1)
		0.2 … 4 mm² stranded, 2 × (0.2 … 2.5 mm²)
		0.2 … 6 mm² single core, 2 × (0.2 … 4 mm²)
	Ferrule without plastic sleeve	0.25 … 2.5 mm²
	Ferrule with plastic sleeve	0.25 … 4 mm²
	TWIN ferrules	0.5 … 2.5 mm²
	Ferrule contact pin length	Min. 10 mm
	Tightening torque	Max. 0.6 Nm
Degree of protection and protection class	Degree of protection	IP 20 to EN 60529
	Protection class	II to EN 61140
Isolation category	Overvoltage category	III to EN 60664-1
	Pollution degree	II to EN 60664-1
	Fire classification	Flammability V-0 as per UL94
SELV	KNX safety extra low voltage	SELV 24 V DC
Temperature range	Operation	–5 … +45 °C
	Transport	–25 … +70 °C
	Storage	–25 … +55 °C
Ambient conditions	Maximum air humidity	95 %, no condensation allowed
Design	Modular installation device (MDRC)	Modular installation device
	Design	pro*M*
	Housing/color	Plastic, gray
Dimensions	Dimensions	90 × 210 × 63.5 mm (H × W × D)
	Mounting width in space units	12 modules
	Mounting depth	63.5 mm
Mounting	35 mm mounting rail	To EN 60715
	Mounting position	Any
	Weight (net)	0.72 kg
Approvals	KNX certification	To EN 50090-1, -2
	CE marking	In accordance with the EMC and Low Voltage Directives

3.11.4.2 Device type

Device type	Switch/Shutter Actuator	SAH/S 24.16.7.1
	Application	Switch/Shutter 24f 16 A / …
		… = current version number of the application
	Maximum number of group objects	610
	Maximum number of group addresses	1,000
	Maximum number of assignments	1,000

ⓘ Note

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

ⓘ Note

The device supports the locking function of a KNX device in ETS. If a BCU code was assigned, the device can be read and programmed only with this BCU code.

3.11.4.3 Output, rated current 16 A

Rated values	Number of outputs	24 switch / 12 shutter
	U_n Rated voltage	230 V AC (50/60 Hz)
	I_n Rated current	16 A
	Maximum current per device	200 A
Switching currents	AC3 operation (cos ϕ= 0.45) to EN 60947-4-1	6 A / 230 V AC
	AC1 operation (cos ϕ= 0.8) to EN 60947-4-1	16 A / 230 V AC
	Fluorescent lighting load according to EN 60669-1	
	minimum switching current at 12 V AC	10 mA
	minimum switching current at 24 V AC	10 mA
	DC switching capacity, resistive load, at 24 V DC	6 A
Service life	Mechanical service life	> 10^6 cycles
	Electrical endurance of switching contacts according to IEC 60 947-4-1:	
	AC1 (240 V/cos ϕ=0.8)	> 10^5 cycles
	AC3 (240 V/cos ϕ=0.45)	> 6×10^3 cycles
	AC5a (240 V/cos ϕ=0.45)	
Switching times	Maximum output relay position changes per minute if all relays are switched.	5
	Maximum output relay position changes per minute if only one relay is switched.	120

Note
The switching times apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical relay delay is approx. 20 ms.

3.11.4.4 Output, lamp load 16 A

Lamps	Incandescent lamp load	1,200 W
Fluorescent lamps	Uncompensated	800 W
	Parallel compensated	
	DUO circuit	
Low-voltage halogen lamps	Inductive transformer	800 W
	Electronic transformer	1,000 W
	Halogen 230 V	1,000 W
Dulux lamp	Uncompensated	
	Parallel compensated	
Mercury-vapor lamp	Uncompensated	1,000 W
	Parallel compensated	800 W
Switching capacity (switching contact)	Maximum peak inrush current I_p (150 ms)	200 A
	Maximum peak inrush current I_p (250 ms)	160 A
	Maximum peak inrush current I_p (600 ms)	100 A
Number of ballasts (T5/T8, single element)	18 W (ABB ballast 1 x 18 SF)	10
	24 W (ABB ballast T5 1 x 24 CY)	10
	36 W (ABB ballast 1 x 36 CF)	7
	58 W (ABB ballast 1 x 58 CF)	5
	80 W (Helvar EL 1 x 80 SC)	3
Energy-saving lamps	LED lamps	250 W
Rated motor power		1,380 W

Note
The device features independent switching relays that are linked by software to control the shutters. The contacts are not mutually electromechanically interlocked.

Note
The peak inrush current I_p is the typical ballast load current that results during switching. Using the peak inrush current I_p, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output for the various ballast types. The number of ballasts specified in the table can be only a sample guide value.

4 Function

4.1 Function description

The compact 8-, 16-, 24-fold Switch/Shutter Actuator SAH/S with a rated current of 6, 10, 16 A is a modular installation device in pro*M* design. The device is suitable for installation in distribution units or small housings for fast installation on 35 mm mounting rails according to EN 60 715. The device possesses 8, 16 or 24 mutually independent switching relays (no mutual mechanical interlock). Via the ABB i-bus® KNX, the relays can be used individually to switch electrical load (max. 8, 16, 24) or in pairs to activate 230 V AC blind and shutter drives (max. 4, 8, 12). Switch, shutter and blind outputs can be mixed in the device. On-site operation of the output is permissible by manual operation (can be disabled). LEDs additionally indicate the switching/movement status. The device is powered by the ABB i-bus® KNX and requires no additional power supply.

4.1.1 Function diagram of Shutter Actuator

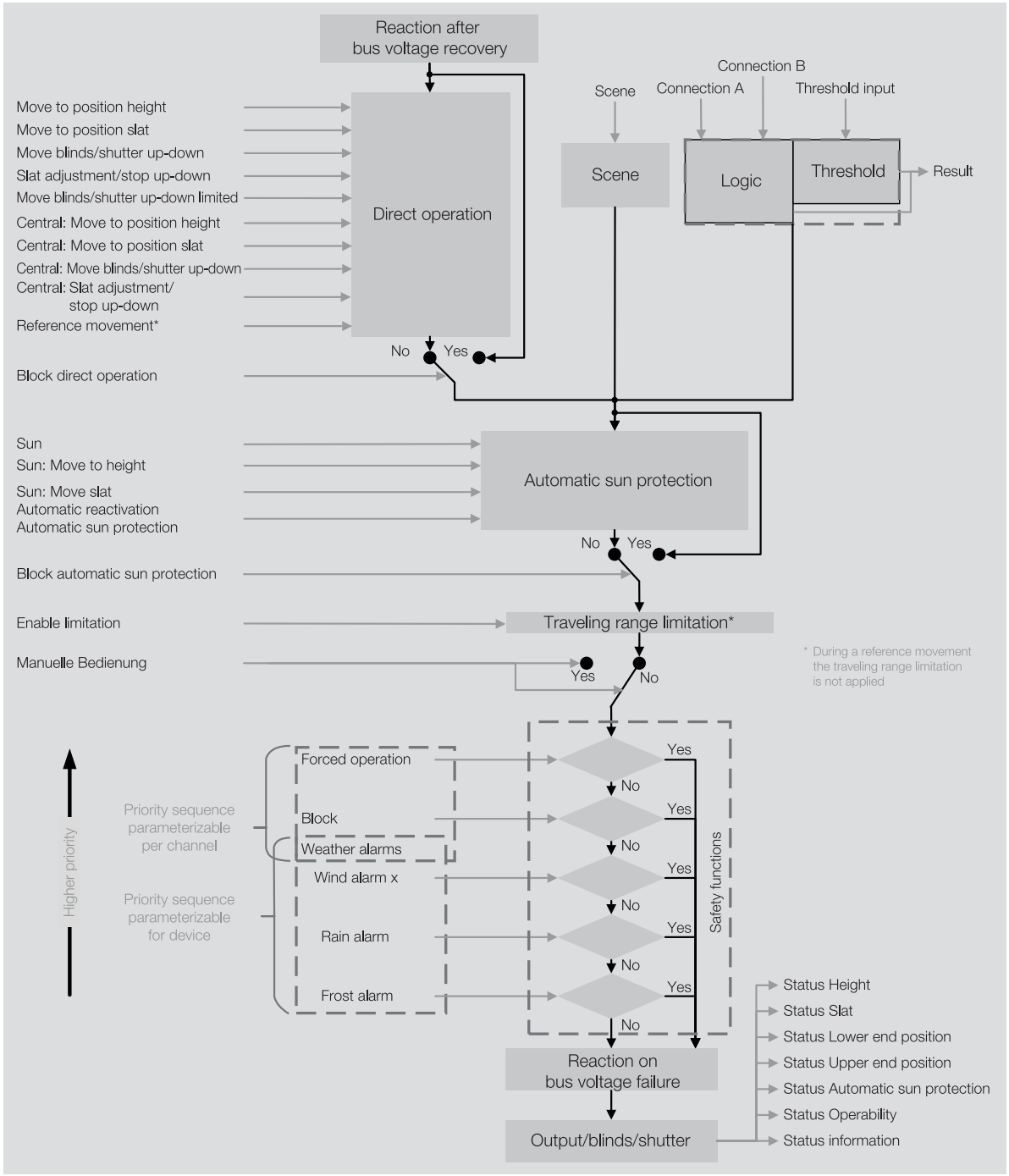
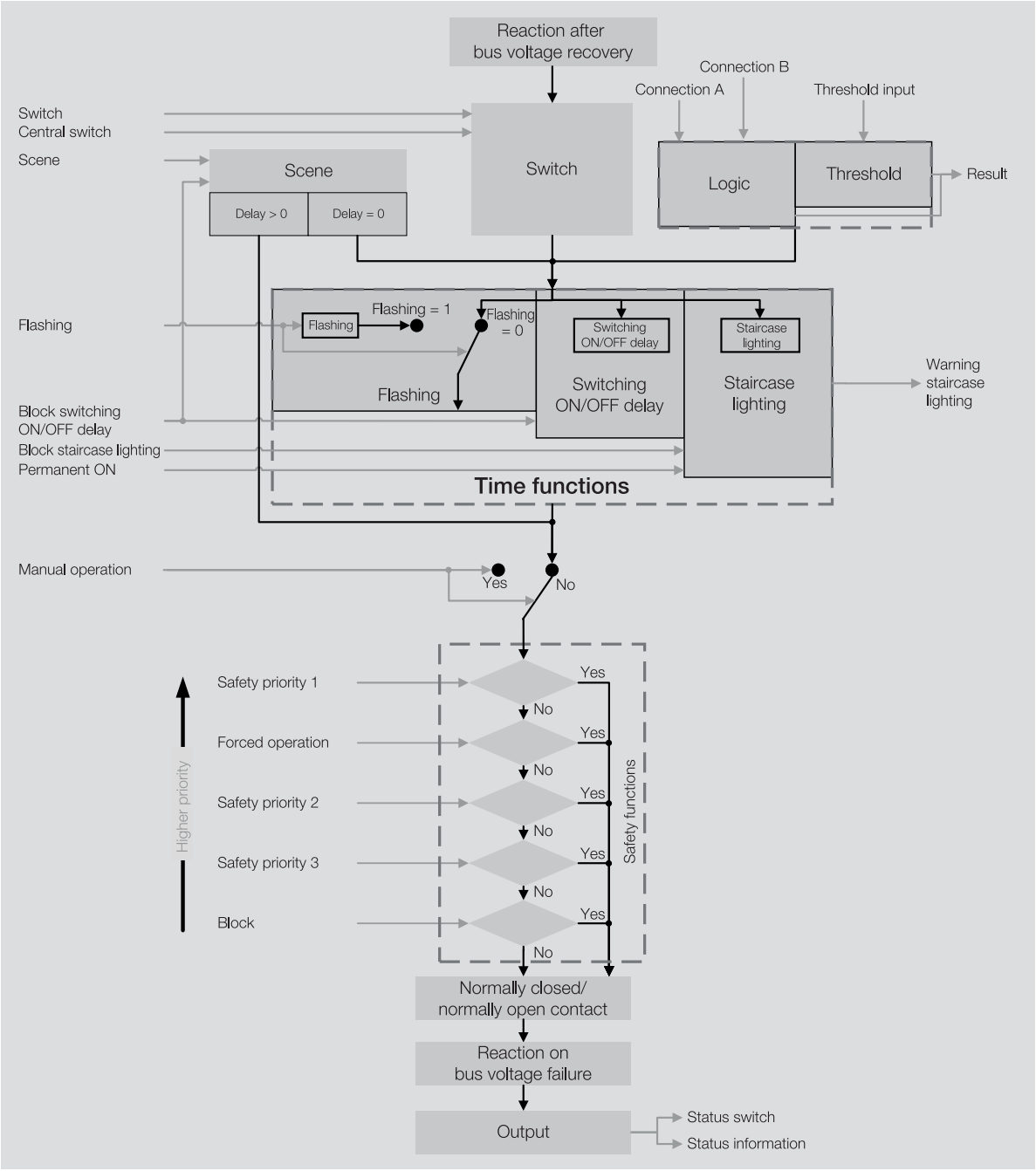


Fig. 28: Function diagram of Shutter Actuator

4.1.2 Function diagram of Switch Actuator



4.1.3 Safety functions

4.1.3.1 Safety functions of Shutter Actuator

4.1.3.1.1 Wind alarm

The device can receive wind alarm telegrams from up to three wind sensors to protect the blind/shutter in windy conditions. The user can freely select which (if any) of the three wind alarms each output should react to.

If a wind alarm occurs, the blind/shutter will be moved to the position defined in the parameterPosition on wind alarm and operation will be disabled.

The alarm position of the blind/shutter can be set individually for each output. If several wind alarms are assigned to an output, they will be linked by a logic OR.

The order of priority of alarms can be defined in the Order of priority of weather alarm, disabling and forced operation.

Note
In case of a weather alarm, the blind/shutter cannot be operated via other group objects, manual operation or the i-bus® Tool until the weather alarm is canceled. Travel range limits are not taken into account with weather alarms.

Note
The sensors can be cyclically monitored by the device, and they can cyclically send the alarm status to the device. If the device does not receive the alarm status within a defined monitoring time, the device assumes that the sensor is faulty or communication is interrupted. The blind/shutter is moved to the defined alarm position and disabled for all outputs upon which the alarm acts.
The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

When a wind, rain or frost alarm is canceled, the blind/shutter will be moved to the position defined in the parameter Position on cancellation of weather alarm, disabling and forced operation and operation will be enabled.

4.1.3.1.2 Rain alarm

The device can receive a rain alarm telegram to protect the blind/shutter in rainy conditions.

If a rain alarm occurs, the blind/shutter will be moved to the position defined in the parameter Position for rain alarm and operation will be disabled.

The order of priority of alarms can be defined in the Order of priority of weather alarm, disabling and forced operation.

Note
In case of a weather alarm, the blind/shutter cannot be operated via other group objects, manual operation or the i-bus® Tool until the weather alarm is canceled. Travel range limits are not taken into account with weather alarms.

Note
The sensors can be cyclically monitored by the device, and they can cyclically send the alarm status to the device. If the device does not receive the alarm status within a defined monitoring time, the device assumes that the sensor is faulty or communication is interrupted. The blind/shutter is moved to the defined alarm position and disabled for all outputs upon which the alarm acts.
The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

When a wind, rain or frost alarm is canceled, the blind/shutter will be moved to the position defined in the parameter Position on cancellation of weather alarm, disabling and forced operation and operation will be enabled.

4.1.3.1.3 Frost alarm

The device can receive a frost alarm telegram to protect the blind/shutter in freezing conditions.

If a frost alarm occurs, the blind/shutter will be moved to the position defined in the parameterPosition for frost alarm and operation will be disabled.

The order of priority of alarms can be defined in the Order of priority of weather alarm, disabling and forced operation.

NOTICE
The blind/shutter can freeze in place at temperatures below 0 °C. Attempting to move the frozen blind/shutter can damage the drive.
► Use the function *Frost alarm*.

Note
In case of a weather alarm, the blind/shutter cannot be operated via other group objects, manual operation or the i-bus® Tool until the weather alarm is canceled. Travel range limits are not taken into account with weather alarms.

Note
The sensors can be cyclically monitored by the device, and they can cyclically send the alarm status to the device. If the device does not receive the alarm status within a defined monitoring time, the device assumes that the sensor is faulty or communication is interrupted. The blind/shutter is moved to the defined alarm position and disabled for all outputs upon which the alarm acts.
The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

When a wind, rain or frost alarm is canceled, the blind/shutter will be moved to the position defined in the parameter Position on cancellation of weather alarm, disabling and forced operation and operation will be enabled.

4.1.3.1.4 Disable

The function *Disable* can be used to move the blind/shutter to a defined Position on disabling and disable operation. When disabling is canceled, the blind/shutter is moved to the parameterized Position on cancellation of weather alarm, disabling and forced operation and operation is enabled.

Note
If the blind/shutter is disabled in its position, it cannot be operated via other group objects, manual operation or the i-bus® Tool until disabling is canceled. Travel range limits are not taken into account during disabling.
Higher-priority safety functions will continue to run.

Example:
With appropriate parameterization, this function can be used to monitor a terrace door. When the terrace door is opened, blind/shutter will be moved to the upper end position and disabled in this position.

4.1.3.1.5 Forced operation

The function *Forced operation* can be used to set the output to a defined state and disable it. 1-bit or 2-bit forced operation can be used for this purpose.

Note
When the function *Forced operation* is active, the output can no longer be operated via other group objects or manual operation until forced operation has been canceled.
Higher-priority safety functions will continue to run.

A state that is set when forced operation is triggered can be parametrized with 1-bit forced operation. It can additionally be defined whether activation is to take place via the value 1 or 0.

Two states that are set when forced operation is triggered can be parametrized with 2-bit forced operation. The first bit activates forced operation. The second bit switches between the two states.

Bit 1	Bit 0	State of forced operation
0	0	Forced operation inactive
0	1	Forced operation inactive
1	0	Forced operation active, state Off
1	1	Forced operation active, state On

Tab. 31: Coding of 2-bit forced operation

The function *Forced operation* is set in the parameter Forced operation (1 bit / 2 bit).

Note
Travel range limits are not taken into account with forced operation.

When the forced operation is canceled, the blind/shutter is moved to the parameterized Position on cancellation of weather alarm, disabling and forced operation and operation is enabled.

Example:
To prevent unexpected movement of the blind/shutter from endangering the cleaning personnel when they are cleaning the windows, the connected shutters are moved to the upper end position and operation is disabled. The shutter cannot be moved while the function *Forced operation* is active.

4.1.3.1.6 Priority of safety functions

The safety functions *Wind alarm*, *Rain alarm*, *Frost alarm*, *Disable* and *Forced operation* have priority over all other functions. If one of these functions is active, operation of the corresponding output is disabled.

In order to control the blind/shutter when several safety functions are active, the order of priority of safety functions can be defined in the parameter Order of priority of weather alarm, disabling and forced operation.

Example:
The order of priority defines that *Forced operation* takes priority over a *Wind alarm* when windows are being cleaned. This prevents a movement command due to a *Wind alarm* from impairing the cleaning personnel when they are cleaning the slats.

4.1.3.2 Switch Actuator safety functions

4.1.3.2.1 Safety priority

The function *Safety priority* can be used to protect electrical loads on the switching output or to switch them in accordance with an installation situation.

Three different safety priorities are available for the Switch Actuator outputs The user can freely select which (if any) of the safety priorities each output should react to.

Each safety priority has its own group object. The group object and the corresponding safety function are enabled in the parameter Enable group object "Safety priority x". Safety priority x is active when

- a telegram with the value 1 is received on the group object Safety priority x .
- no telegram is received on the group object Safety priority x within the interval defined in the parameter Cyclical monitoring interval (0 = cycl. monitoring deactivated).

If a safety priority occurs, the relay assumes the switching position defined in the parameter Switching status for safety priority x.

When the corresponding safety priority is canceled, the relay assumes the switching position defined in the parameter Switching state on cancellation of disabling, forced operation and safety priority.

Note
In case of a safety priority, the output cannot be operated via other group objects, manual operation or the i-bus® Tool until the safety priority is canceled.
Higher-priority safety functions will continue to run.

Note
If cyclical monitoring of the safety priority is used, the monitoring cycle in the device should be at least quadruple the cyclical transmission time of the sender (e.g. motion detector, glass breakage sensor). As a result, the parameterized safety priority will not be triggered immediately if a signal is missing (e.g. due to high bus load).

4.1.3.2.2 Disable

The function *Disable* can be used to define a specific switching position for the output and to disable operation in the parameter Disable. When disabling is canceled, the output's switching position is defined in the parameter Switching state on cancellation of disabling, forced operation and safety priority and operation is enabled.

Note
As long as disabling is active, the relay switching position cannot be changed via group objects, manual operation or the i-bus® Tool.
Higher-priority safety functions will continue to run.

4.1.3.2.3 Forced operation

The function *Forced operation* can be used to set the output to a defined state and disable it. 1-bit or 2-bit forced operation can be used for this purpose.

Note
When the function *Forced operation* is active, the output can no longer be operated via other group objects or manual operation until forced operation has been canceled.
Higher-priority safety functions will continue to run.

A state that is set when forced operation is triggered can be parametrized with 1-bit forced operation. It can additionally be defined whether activation is to take place via the value 1 or 0.

Two states that are set when forced operation is triggered can be parametrized with 2-bit forced operation. The first bit activates forced operation. The second bit switches between the two states.

Bit 1	Bit 0	State of forced operation
0	0	Forced operation inactive
0	1	Forced operation inactive
1	0	Forced operation active, state Off
1	1	Forced operation active, state On

Tab. 32: Coding of 2-bit forced operation

The function *Forced operation* is set in the parameter Forced operation (1 bit / 2 bit).

When forced operation is canceled, the output's switching position is defined in the parameter Switching state on cancellation of disabling, forced operation and safety priority and operation is enabled.

Example:
The function *Forced operation* can be used to ensure that all lighting systems are switched on during a fire alarm and secured against being unintentionally switched off.

4.1.3.2.4 Priority of safety functions

The safety functions *Safety priority x*, *Disable* and *Forced operation* have priority over every other function.

If one of these functions is active, operation of the corresponding output is disabled.

The order of priority of the safety functions cannot be changed, → Priorities, Page 98.

4.1.4 Manual operation

NOTICE
The bus voltage supply must be established to operate the device in *Manual operation* mode.
Manual operation is ended in the event of bus voltage failure. The reaction of outputs to bus voltage failure can be set in the ETS application:
Shutter Actuator → Reaction on bus voltage failure, Page 136
Switch Actuator → Reaction on bus voltage failure, Page 195

Manual operation mode permits on-site operation of the device using a membrane keypad.

The relays of the outputs can be switched manually. The relay switching states or the shutter movement position is additionally displayed in accordance with the selected output function.

The relay status is indicated in groups of four consecutive switching outputs or two consecutive shutter outputs. A mixture of switching and shutter outputs is possible, e.g. two switching outputs and one shutter output.

Depending on the parameterization as a switching output or shutter output, each relay can be operated individually as a switching output or two relays can be operated together as a shutter output. Definition of *Switch Actuator* or *Shutter Actuator* mode is possible exclusively via parameterization in ETS.

In the as-delivered state, all outputs of the device are parameterized for operation as a Shutter Actuator. Manual operation is enabled and can be activated via the *S button* on the membrane keypad.

ⓘ Note
The safety functions (weather alarms as well as the functions *Safety priority*, *Forced operation* and *Disable*) take priority over *Manual operation* mode. An output cannot be operated using the membrane keypad if it is disabled by a safety function. If the safety function is canceled in *Manual operation* mode, the output reacts corresponding to its parameterization.

ⓘ Note
When manual operation is active, the outputs will continue to react to KNX commands until they are switched via manual operation. If an output has been switched via manual operation, incoming KNX commands will be processed in the background and no longer executed until manual operation is deactivated.
More information → State after end of manual operation, Page 112.

After connection to the ABB i-bus® KNX, bus voltage recovery, ETS download or ETS reset, the device is in *KNX operation*. The *Manual operation* LED is off.

More information → Function diagram of Shutter Actuator, Page 76, → Function diagram of Switch Actuator, Page 77.

4.1.4.1 Central switch-off via membrane keypad

All outputs can be jointly switched off via the membrane keypad.

1. Select all outputs with a long button push (< 5 seconds) of the *S button*.
   ⇨ All zone LEDs light up.
2. Press any *Output* (I … IV) button.
   ⇨ All outputs are switched off.

The first output group is selected automatically after the outputs switch off. Manual mode is exited, and the device is in KNX operation.

When switch-off is performed via the membrane keypad, the configuration of the outputs as NC contacts or NO contacts is taken into account.

NO contact:
- Relay contact open
- Status LED Off

NC contact:
- Relay contact closed
- Status LED on

If an output pair is parameterized as a Shutter Actuator, switch-off via the membrane keypad always opens the contacts. If the blind/shutter is moving, it will be stopped.

Note
The safety functions (weather alarms as well as the functions *Safety priority*, *Forced operation* and *Disable*) take priority over *Manual operation* mode. An output cannot be operated using the membrane keypad if it is disabled by a safety function. If the safety function is canceled in *Manual operation* mode, the output reacts corresponding to its parameterization.

4.1.5 Refreshed KNX state

If an output is disabled by device-specific functions (e.g. manual operation, alarms, disabling, forced operation, switching delay, etc.), it will not react to telegrams received via the ABB i-bus® KNX during the disabling.

The device processes these telegrams in the background and performs any active functions (e.g. staircase lighting, logic, position, brightness values, etc.) in the background as well. The current value is forwarded to the output only when the disabling of the output is canceled.

If the output does not receive any telegrams via theABB i-bus® KNX during disabling, the output will assume the state it was in before disabling.

4.1.6 Central group objects

The central group objects of the device can be used to switch several device outputs at the same time.

The following group object is available for central control of the Switch Actuator outputs:
- Switch

Note
In the parameter Switch output reacts to central Switch group object, it can be defined for each Switch Actuator output whether the output reacts to the central group object.

The following group objects are available for central activation of the Shutter Actuator output pairs:
- Move blind/shutter Up-Down
- Slat adjustment/stop Up-Down
- Move to position height
- Move to position slat

Note
In the parameter Output reacts to central shutter group objects, it can be defined for each Shutter Actuator output pair whether the output pair reacts to the central group objects.

One group object is additionally available for joint scene activation:
- Scene 1 … 64

Note
Only outputs for which the retrieved scene was parameterized react to the retrieval.

4.1.7 Function Logic

The function *Logic* can be used to influence the reaction of an output by means of the following logic functions:
- AND
- OR
- Exclusive OR
- GATE

Two input group objects (Connection A , Connection B) and one result group object (Result) are available for each AND, OR, exclusive OR and GATE logic operation.

The result can be inverted, linked with any output within the device or output on the group object Result .

The result depends on the selected logic connection and the values in the corresponding input group objects. Refer to the table below for information about the reaction of the logic functions:

Logic function	Connection A	Connection B	Result	Explanation
AND	0	0	0	The result is 1 if both input values are 1.
	0	1	0	
	1	0	0	
	1	1	1	
OR	0	0	0	The result is 1 if one of the input values is 1.
	0	1	1	
	1	0	1	
	1	1	1	
Exclusive OR	0	0	0	The result is 1 if the input values differ.
	0	1	1	
	1	0	1	
	1	1	0	
GATE	Disabled	0	-	The value of group object Switch is processed only if the GATE is open. The value is ignored if the GATE is closed.
	Enabled	0	0	
	Disabled	1	-	
	Enabled	1	1	

Tab. 33: Values of the group objects

The result is recalculated when a value is received on one of the two input group objects Connection A or Connection B .

4.1.8 Function Threshold

The function *Threshold* is used to compare the value received at the threshold input with the thresholds set in the parameters Upper threshold and Lower threshold.

Depending on the setting in the parameter Data type of group object "Threshold input", one of the following group objects serves as the threshold input:
- Threshold input Percent (DPT 5.001), 0 % … 100 %
- Threshold input Meter pulses (DPT 5.010), 0 … 255
- Threshold input Meter pulses (DPT 7.001), 0 … 65,535
- Threshold input Temperature (DPT 9.001), -100 °C … 250 °C
- Threshold input Lux (DPT 9.004), 0 … 65,535

A result can be defined in the following parameters depending on whether the value of the threshold input is above, below or between the thresholds.
- Result if upper threshold is exceeded
- Result if lower threshold is dropped below
- Result if the input value is between the thresholds

Additionally, a minimum duration for undershooting and overshooting the thresholds can be defined in the following parameters.
- Min. duration of the overshoot
- Min. duration of the undershoot
- Minimum dwell time between the thresholds

The result can be inverted, linked with any output within the device or output on the group object Result .

If, in the Change thresholds via KNX parameter, the *Yes* option was set, the thresholds set in ETS can be changed using the following group objects. The DPT depends on the setting in the parameter Data type of group object "Threshold input".
- Change upper threshold Percent (DPT 5.001), 0 % … 100 %
- Change upper threshold Meter pulses (DPT 5.010), 0 … 255
- Change upper threshold Meter pulses (DPT 7.001), 0 … 65,535
- Change upper threshold Temperature (DPT 9.001), -100 °C … 250 °C
- Change upper threshold Lux (DPT 9.004), 0 … 65,535
- Change lower threshold Percent (DPT 5.001), 0 % … 100 %
- Change lower threshold Meter pulses (DPT 5.010), 0 … 255
- Change lower threshold Meter pulses (DPT 7.001), 0 … 65,535
- Change lower threshold Temperature (DPT 9.001), -100 °C … 250 °C
- Change lower threshold Lux (DPT 9.004), 0 … 65,535

4.1.9 Drive settings

4.1.9.1 Travel times

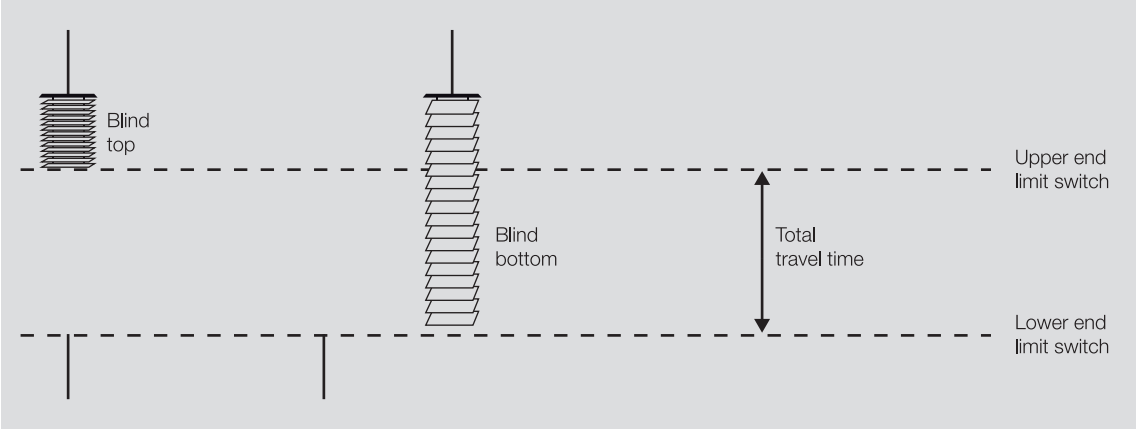


Fig. 29: Function diagram of travel times

The travel time is the time that the blind/shutter requires to move from the lower to the upper end positions (up) or from the upper to the lower end positions (down). Travel times for upward and downward movements can be determined separately and set in ETS.

If the device receives a telegram to travel upwards or downwards, then the appropriate output is switched and the blind/shutter moved in the required direction.

The blind/shutter is moved until the output receives a stop telegram or the end position is reached. The limit switch switches the drive off when the upper or lower end position is reached. The corresponding output contact remains closed until the parameterized travel time elapses.

If the travel time is extended by an overrun time (see parameter Disconnect output from power after), the voltage will be switched off only after this overrun time expires.

If a value unequal to 100 % is set in the parameter Slat position after reaching lower end position (100 % = disabled), the overrun time will not be taken into account. In this case, the output sets the slats according to the parameterized value on reaching the lower end position.

4.1.9.1.1 Travel time determination

To determine the travel time, the travel times are measured from the lower to the upper end positions and vice-versa, e.g. using a stopwatch. The measured values are then entered in the parameters Travel time up and Travel time down.

Note
The travel times are used to determine the current position of the blind/shutter during operation. The travel times should therefore be measured and parameterized as accurately as possible.

For position movements, automatic control or status messages, precise travel times are the basis for exact calculation and positioning of the blind/shutter.

4.1.9.2 Blind/shutter control with slat adjustment

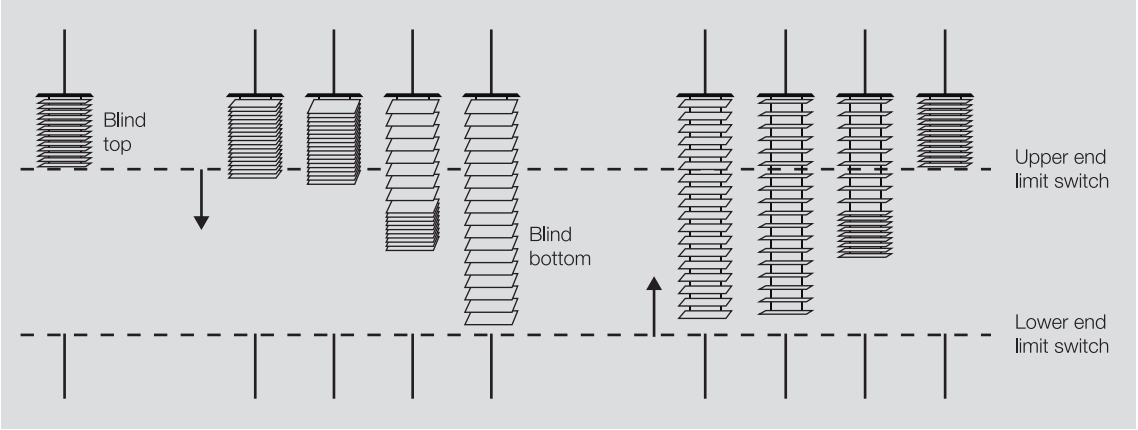


Fig. 30: Blind/shutter control with slat adjustment

After the blind/shutter moves up, the slats are usually open. The slats are closed and the blind/shutter is moved down during a downward movement. The slats are opened and the blind/shutter is moved up during an upward movement.

To adjust the slat angle in a targeted manner, short movements can be executed. The blind/shutter is incrementally moved in the required direction for a time defined in the parameter Duration of slat adjustment (step). Alternatively, in the parameter Determine slat adjustment time, the total duration for slat turning can be used to determine the On duration.

The smaller the duration of slat adjustment is, the more accurately the slat angle can be adjusted.

Note
The device cannot process times shorter than 50 ms. The calculated time (quotient of total duration for slat turning and the number of slat adjustments) must therefore always be longer than 50 ms.

NOTICE
Setting a minimum run time that is too short can damage the connected drive.
- Pay attention to technical data for the connected drive

4.1.9.3 Reference movement

Each output continuously determines the current position of the blind/shutter and the slats based on the individual movements.

Temperature fluctuations and aging processes can cause slight inaccuracies in determining the position. In order to maintain high position accuracy, the position is updated in the device's memory when an end position is reached.

If travel range limits prevent the end positions from being reached, the group object Trigger reference movement can be used to trigger a reference movement to the upper or lower end position. After the reference movement, the blind/shutter is moved to the position defined in the parameter Position after reference movement.

If the reference movement was not completely ended, the position of the blind/shutter or the shutter is unknown and is therefore not displayed. A reference movement is performed automatically on the first movement command after the device is started (download, bus voltage recovery or ETS reset).

If the output is disabled by an alarm, the reference movement will be performed after the alarm is canceled.

If the blind/shutter is moved to an end position by manual operation, this is evaluated as a reference movement.

Stop commands do not trigger a reference movement.

4.1.9.4 Start-up and coasting delay and minimum run time

Some drives attain their full power only after a start-up delay of a few milliseconds or continue moving for a few milliseconds after switch-off (coasting delay). For some applications, it is necessary to compensate delay times during start-up and coasting of the drive, e.g. to position the blinds/shutters exactly. The delay times can be set in the parameters Start-up delay and Coasting delay.

The minimum run time for the drive can be set in the parameter Minimum run time for drive.

Note
If changes are made to these parameters in the user-defined setting, then the technical data of the respective drive manufacturer must be observed.

4.1.10 Blind/slat settings

4.1.10.1 Direct and indirect movement to the position

The parameter Move to position can be used to define how the blind/shutter is to move to the target position in response to a movement command.
- Direct: The blind/shutter is moved directly from its current position to the target position.
- Indirect: The blind/shutter is moved to the target position via the end position. It can be defined whether the blind/shutter is to move to the target position via the upper, lower or closer end position.

Indirect movement to the positions is used to position the blind/shutter. In order to maintain high position accuracy, the position is updated in the device's memory when an end position is reached.

4.1.10.2 Move to position 0 % ... 100 %

The blind/shutter can be moved to any position via the group object Move to position height .

The percentages refer to the position of the blind/shutter between the upper and lower end positions.
- 0 %= upper end position
- 1 % … 99 % = intermediate position
- 100 %= lower end position

In operating mode *Blind/shutter control with slat adjustment*, the slat can additionally be moved to any position via the group object Move to position slat .

The percentages refer to the opening degree of the slats.
- 0 % = fully closed
- 1 % … 99 % intermediate position
- 100 % = fully open

4.1.10.3 Blind/shutter control with slat adjustment

Two methods to control the slats and calculate the adjustment times can be selected in the parameter Determine slat adjustment time:
- *Via duration of slat adjustment (step)*
- *Via total duration for slat turning*

The *Via duration of slat adjustment (step)* method defines the duration and number of slat adjustments to move the slats from fully closed to fully open. The maximum number of slat adjustments is used to determine the current position of the slats during operation. The maximum number of slat adjustments must be counted by the commissioner and entered in the parameter Number of slat adjustments (from 0 % = open to 100 % = closed).

The *Via total duration for slat turning* method involves first determining the time required to move the slats from fully closed to fully open. Then, the desired number of slat adjustments (steps) is entered, with which the slats are to be adjusted from fully closed to fully open. The device uses the adjustment time and the steps to calculate the time for slat adjustment.

4.1.10.4 Travel range limit

The parameter Limit travel range via group object can be used to set a travel range limit for the output.

The *Move blind/shutter Up-Down limited* option is used to enable the group object Move blind/shutter Up-Down limited , which permits the blind/shutter to be moved only in a limited range.

The *Enable limitation* option is used to enable the group object Enable limitation via which the limitation is activated and deactivated. In addition to limitation of the travel range, it is possible to specify whether upper and lower limitation is to be executed for direct telegrams and/or for automatic telegrams.

The parameters Upper limit (0 % = top; 100 % = bottom) and Lower limit (0 % = top; 100 % = bottom) can be used to define the travel range for the blind/shutter.

Direct telegrams can be sent and received on the following central group objects:
- Move blind/shutter Up-Down
- Slat adjustment/stop Up-Down
- Move to position height
- Move to position slat
- Scene 1 … 64

Direct telegrams can be sent and received on the following output group objects:
- Move blind/shutter Up-Down
- Stop Up-Down
- Slat adjustment/stop Up-Down
- Move to position height
- Move to position slat
- Scene 1 … 64

Automatic telegrams can be sent and received on the following output group objects:
- Sun: Move to height
- Sun: Move slat

Example:
The travel range limit can be used to activate windows or skylights as well. The travel range for local operation by the room users is limited to 0 … 20 %, whereas the complete range is available to the janitor.

4.1.10.5 Dead times

With sun protection systems, blind/shutter aging processes such as mechanical loads can lead to dead times in the blind/shutter mechanism. These dead times can prevent the set positions from being reached precisely.

The following parameters are available to compensate for the dead times of the blinds/shutters and the slats:
- Dead time blind/shutter from bottom until moving up
- Dead time of slat from 100 % closed until slat turn
- Slippage of slat on change of direction
- Slippage of blind/shutter on change of direction

Note
Incorrect settings in the parameters can cause malfunctions. Pay attention to technical data for the connected drive when changing these parameters.

4.1.10.6 Tensioning of the blind/shutter / slot positioning

Note
This function is available only if, in the parameter Operating mode, the option *Blind/shutter control without slat adjustment* is selected.

This function can be set in the parameter Tensioning of the blind/shutter / slot positioning. It is used to tauten or tension textile blinds/shutters (e.g. sheet of an articulated arm awning) or to adjust the slot position (e.g. light or ventilation slots) in slatted curtains. The blind/shutter is stopped at the end of a downward movement and then moved in the opposite direction for the time set in the parameter Duration for tensioning.

If tensioning/slot positioning is active, it is triggered by the following movement telegrams:
- Direct telegrams (→ Direct operation, Page 91)
- Automatic telegrams (→ Automatic sun protection, Page 90)
- → Manual operation, Page 82
- → Safety functions of Shutter Actuator, Page 77

The movement telegrams must be present for longer than the set duration for tensioning/slot positioning.

The duration of tensioning/slot positioning must be shorter than the total travel time for the downward movement.

The duration of tensioning/slot positioning influences the calculation of the blind/shutter position and the status group objects. The current blind/shutter position value is reported back to the device after tensioning/slot positioning.

In case of a movement telegram during tensioning/slot positioning, a position value that is reduced by the duration of tensioning/slot positioning will be reported back.

Example:
Calculation of the position value:
- Total downward travel time: 60 s = 100 %
- Duration of movement telegram: 30 s = 50 %
- Duration of tensioning/slot positioning: 0,5 s = (100 % × 0.5 s / 60 s) = 0.8 %
--> Position value: 50 % - 0.8 % = 49.2 %

4.1.11 Automatic sun protection

The function *Automatic sun protection* can be used to implement fully automatic room shading solutions depending on the incident sunlight.

Together with other KNX components (in particular with the Shutter Control Unit JSB/S), the device can be used to establish easy-to-use automatic sun protection control. Automatic sun protection can be activated and parameterized individually for each output.

The blind/shutter and slat positions when the sun is shining can be defined in the parameter Position for sun = 1 (sun).

The blind/shutter and slat positions when the sun is not shining can be defined in the parameter Position for sun = 0 (no sun).

Alternatively, blind/shutter and slat positions can be received via the group objects Sun: Move to height and Sun: Move slat as well.

Sunshine information can be determined using a connected sensor and received via the group object Sun .

Delay times can be defined in the parameters Delay for sun = 1 and Delay for sun = 0 to avoid unnecessary blind/shutter position changes.

4.1.11.1 Activation/deactivation of automatic sun protection

The function *Automatic sun protection* is activated via the group object Activation of automatic sun protection .

The parameter Deactivation of automatic sun protection can be used to set whether the function *Automatic sun protection* is to be ended by receipt of a direct command as well.

In the parameter Automatic reactivation of automatic sun protection, it can be set whether the function *Automatic sun protection* is automatically reactivated after deactivation due to receipt of a direct command.

Activation of the function *Automatic sun protection* can be disabled via the group object Disable automatic sun protection . Changing to *Direct operation* can be disabled via group object Disable direct operation .

More information → Direct operation, Page 91.

4.1.11.2 Direct operation

Direct operation is on-site operation of one or more outputs using local buttons. In *Direct operation*, direct commands are sent to the direct group objects.

Direct group objects are:
- Move blind/shutter Up-Down (central object)
- Slat adjustment/stop Up-Down (central objekt)
- Move to position height (central objekt)
- Move to position slat (central objekt)
- Scene 1 … 64 (central objekt)
- Move blind/shutter Up-Down
- Stop Up-Down
- Slat adjustment/stop Up-Down
- Move to position height
- Move to position slat
- Scene 1 … 64

4.1.12 Scenes

The function *Scenes* can be used to retrieve one of 16 scenes and incorporate additional KNX devices in a scene. Each scene can be retrieved or saved using a single telegram. Additionally, scene assignments 1 … 4 can be retrieved via the group object Retrieve scene assignment x .

Prerequisite: all devices are parameterized with the same scene number and retrieval takes place via the same group address. For this purpose, a certain scene is assigned to the respective outputs in the parameter Scene number. The reaction (e.g. switching on output) on retrieval of this scene is defined in the following ETS parameters.

The advantage of the function *Scene* is that all settings to be made for the devices of a scene are stored in the device. Therefore, only the corresponding scene number must be sent when retrieving a scene via the ABB i-bus® KNX. This considerably reduces the load on the ABB i-bus® and prevents unnecessary telegram traffic. Joint activation of devices/outputs with different input values (e.g. Switch Actuator and Shutter Actuator) becomes possible as well.

4.1.12.1 Structure of scene telegram

A scene telegram contains the scene number (1 … 64) and information about whether to retrieve or save the scene.

Telegram value:

0 … 63 = retrieve scene x (x = 1 … 64)

128 … 191 = save scene x (x = 1 … 64)

More information → Code table 8-bit scene, Page 254.

4.1.13 Time functions

Three time functions are available for each output. One of the time functions can be selected in the parameter Enable function Time:

- → Function Staircase lighting, Page 92
- → Function Delay for switching ON and OFF, Page 94
- → Function Flashing, Page 95

The selected time function will be integrated into the other functions of the output.

More information → Function diagram of Switch Actuator, Page 77.

4.1.13.1 Function Staircase lighting

The function *Staircase lighting* can be used to implement time-controlled lighting (e.g. staircase lighting) or an application with a similar function (e.g. bathroom fan).

If the Reaction of output is defined as an *NO contact*, the contact is closed on receipt of a switch-on value and then opened again after expiry of the Staircase lighting time.

If the Reaction of output is defined as an *NC contact*, the contact is opened on receipt of a switch-on value and then closed again after expiry of the Staircase lighting time.

Depending on the option selected in the parameter Staircase lighting switchable, switching takes place on receipt of the switch-on value 0 or 1:

- on the group object Switch
- on the central group object Switch
- on the group object Scene 1…64
- on the central group object Scene 1 … 64
- as the result of the → Function Logic, Page 84
- as the result of the → Function Threshold, Page 85

The function *Staircase lighting* can announce the imminent end of the Staircase lighting time by opening or closing the contact one or more times (Warning time). Additionally, the end of the Staircase lighting time can be indicated via the group object Warning staircase lighting . The type of warning can be defined in the parameter Warning before switching off the staircase lighting.

The Warning time follows after the Staircase lighting time has elapsed.

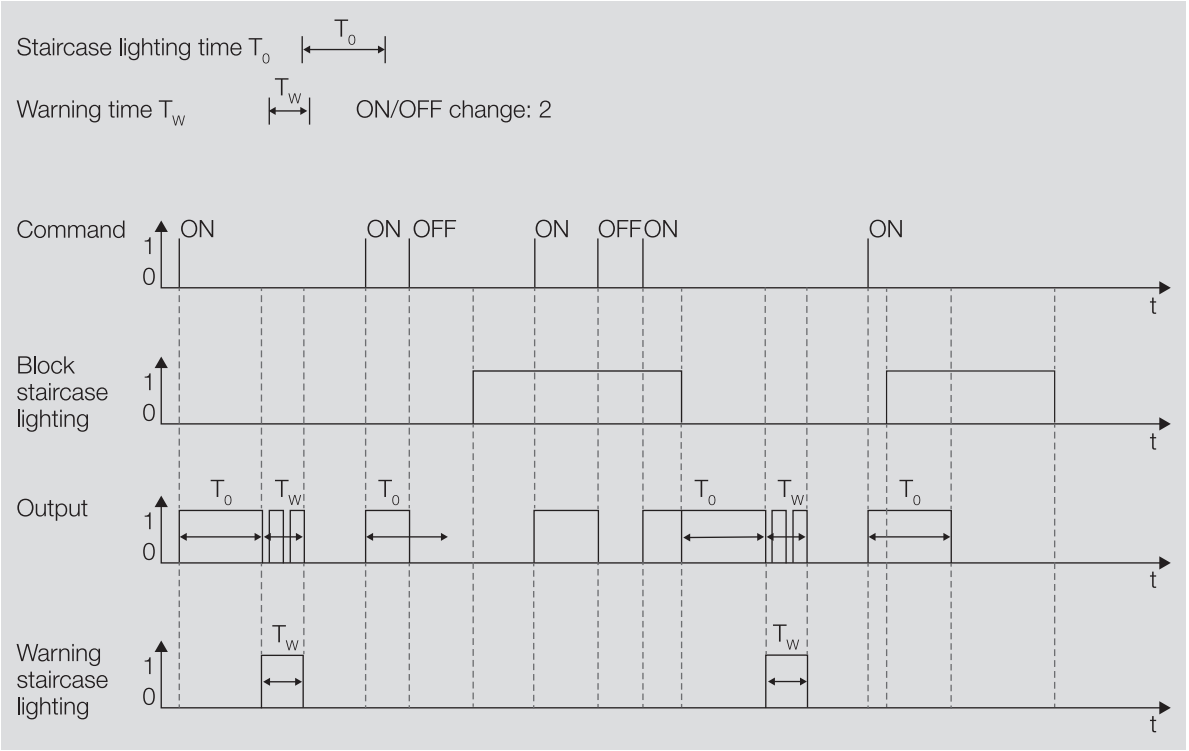


Fig. 31: Switch-on/switch-off reaction of the function Staircase lighting

4.1.13.1.1 Extending staircase lighting time (retriggering/pumping)

The staircase lighting time can be restarted by switching the lighting on again. The following option must be selected in the parameter Staircase lighting can be started again for this purpose: *Yes*.

Retriggering

The staircase lighting time can be restarted by switching on again any number of times if the following option is selected in the parameter Staircase lighting time extendable (pumping): *No, can only be started again*.

Pumping

If one of the parameters “Up to max. x times staircase lighting time” (x = 2 … 5) is selected in the parameter Staircase lighting time extendable (pumping), the staircase lighting time can be extended to max. five times the duration. If another switch-on command is received during the staircase lighting time or during the warning time, the staircase lighting time is extended by an additional staircase lighting time.

The following diagram shows the reaction on extension to quintuple the staircase lighting time:

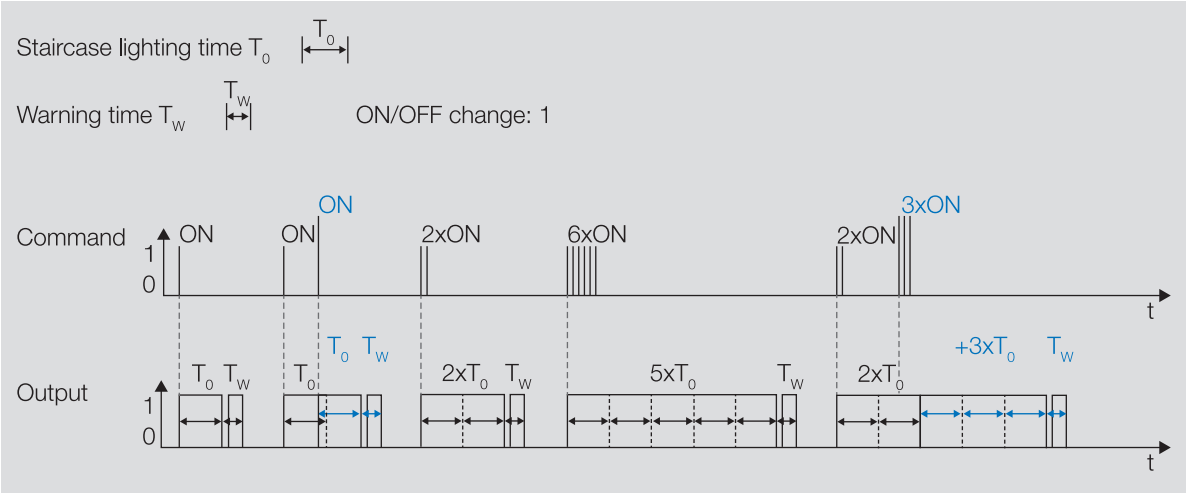


Fig. 32: Extending staircase lighting time (retriggering/pumping)

4.1.13.1.2 Disable staircase lighting

The function *Staircase lighting* can be disabled via the group object Disable staircase lighting . If the function *Staircase lighting* is disabled, the switch-on command is forwarded without time function in the function chain (→ Function diagram of Switch Actuator, Page 77) and the output reacts according to its parameterization.

4.1.13.1.3 Permanent ON

When the function *Staircase lighting* is active, the lighting can be permanently switched on via the group object Staircase lighting permanent ON . The output remains on as long as Permanent ON operation is active. Other functions continue to run in the background, but they do not trigger any switching operation. If Permanent ON operation is deactivated, the output will react to group object Switch .

The parameter Restart staircase lighting after end of permanent ON can be used to define how the lighting reacts after the end of Permanent ON operation.

The state of Permanent ON mode prior to download or bus voltage failure is restored after download or bus voltage recovery.

4.1.13.2 Function Delay for switching ON and OFF

The function *Delay for switching ON and OFF* can be used to switch the output on and off with a delay.

If the *Delay for switching ON* is used, the delay time T_{D1} begins after switch-on.

Switch-on takes place when the value 1 is received:
- on the group object Switch
- on the central group object Switch
- on the group object Scene 1…64
- on the central group object Scene 1 … 64
- as the result of the → Function Logic, Page 84
- as the result of the → Function Threshold, Page 85

If the Delay for switching OFF is used, the delay time T_{D0} begins after switch-off.

Switch-off takes place when the value 0 is received:
- on the group object Switch
- on the central group object Switch
- on the group object Scene 1…64
- on the central group object Scene 1 … 64
- as the result of the → Function Logic, Page 84
- as the result of the → Function Threshold, Page 85

Note
If, when a Scene number is retrieved, a Delay is used, the *Delay for switching ON and OFF* is not taken into account.

If switch-on is repeated during the Delay for switching ON, the Delay for switching ON is restarted.

If switch-off is repeated during the Delay for switching OFF, the Delay for switching OFF is restarted.

If a switch-off occurs during the Delay for switching ON T_{D1} ,switch-on will be rejected.

If a switch-on occurs during the Delay for switching OFF T_{D0}, switch-off will be rejected.

4.1.13.2.1 Disable delay for switching ON and OFF

The function *Delay for switching ON and OFF* can be disabled via the group object Disable delay for switching ON and OFF . If the function *Delay for switching ON and OFF* is disabled, the switch-on command is forwarded without time function in the function chain (→ Function diagram of Switch Actuator, Page 77) and the output reacts according to its parameterization.

4.1.13.3 Function Flashing

If the function *Flashing* is used, the relay is alternately opened and closed after receipt of a switch-on command. The switch-on command is issued via the group object Flashing .

The parameter Flashing if group object Flashing equals can be used to define the value with which a flashing cycle can be stared and prematurely ended.

The number and duration of switching operations can be defined in the following parameters:
- Time for ON
- Time for OFF
- Number of flashing cycles

Each flashing cycle begins with the On state. Whether the relay is opened or closed depends on whether the output is defined as an NC contact or NO contact in the parameter Reaction of output.

Each flashing cycle begins with the Off state. The relay contact position after the flashing cycle is ended can be defined in the parameter Contact position after flashing.

The flashing cycle restarts when a switch-on command is received on the group object Flashing .

Note
If the output is flashing, it will not react to:
- Group object Switch
- central group object Switch
- Group object Scene 1…64
- central group object Scene 1 … 64
- Result of the → Function Logic, Page 84
- Result of the → Function Threshold, Page 85

Note
Pay attention to the service life of the switching contacts when using the function *Flashing*. Refer to the Technical data for more information.

Note
Each relay can perform only a limited number of switching operations per minute. A large number of switching operations per minute can delay switching. Refer to the Technical data for more information.

4.2 Functional overview

	SAH/S 8.X.7.1 SAH/S 16.X.7.1 SAH/S 24.X.7.1	
Type of outputs	Switch Actuator	Shutter Actuator
Manual operation	X	X
Manual operation can be disabled	X	X
Staircase lighting	X	
Staircase lighting advance warning	X	
Switching ON/OFF delay	X	
Flashing	X	
NO contact/NC contact	X	
Blind		X
Shutter		X
Automatic sun function		X
Reversing time		X
Reference movement		X
Function Scene	X	X
Function Threshold	X	X
Function Logic	X	X
Forced operation/Disable	X	X
Safety priorities	X	
Weather alarms		X
Current detection		
Threshold monitoring		
Measured value recording		
Special functions		
Priority during bus voltage failure/recovery	X	X
Status message	X	X
i-bus® Tool	X	X

Note
The interface to i-bus® Tool is not available for Application V1.0. It will be implemented with the next version.

4.3 Functions of the inputs

This chapter is not relevant for this device.

4.4 Functions of the outputs

Note
A device with 24 channels (A … X) is described below.

The device outputs can be used individually to switch electrical loads or in pairs to activate 230 V AC blind and shutter drives. Switch, shutter and blind outputs can be mixed in the device.

Function	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Switch	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Shutter	x		x		x		x		x		x		x		x		x		x		x		x	

Tab. 34: Functions of the outputs

4.5 Integration into the i-bus® Tool

The device possesses an interface to the i-bus® Tool.
The i-bus® Tool can be used to read the device data and test the functions. In addition, values can be simulated for test purposes. If there is no connection between the device and i-bus® Tool, the values will be simulated but will not be output on the ABB i-bus®.
The device's physical inputs and outputs can be tested via the i-bus® Tool.
The i-bus® Tool can be downloaded for free from our website (www.abb.com/knx).
A description of the functions is provided in the i-bus® Tool online help.

Note
The interface to i-bus® Tool is not available for Application V1.0. It will be implemented with the next version.

4.6 Special operating states

4.6.1 Reaction on bus voltage failure/recovery, download and ETS reset

The device's reaction on bus voltage failure, after bus voltage recovery, after ETS download and ETS reset can be set in the device parameters.

4.6.1.1 Bus voltage failure

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

The reaction of the Switch Actuator outputs can be defined in the Parameter window Basic settings, in the parameter Reaction on bus voltage failure.

The reaction of the Shutter Actuator output pairs can be defined in the Parameter window Basic settings, in the parameter Reaction on bus voltage failure.

4.6.1.2 Bus voltage recovery

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

The time set in the parameter Sending and switching delay after bus voltage recovery elapses before the device performs an action.

The reaction of the Switch Actuator outputs can be defined in the Parameter window Basic settings, in the parameter Reaction after bus voltage recovery.

The reaction of the Shutter Actuator output pairs can be defined in the Parameter window Basic settings, in the parameter Reaction after bus voltage recovery.

4.6.1.3 ETS reset

During a ETS reset, the device reacts the same way as during bus voltage failure.

The reaction of the Shutter Actuator output pairs can be defined in the Parameter window Basic settings, in the parameter Reaction on bus voltage failure.

The reaction of the Switch Actuator outputs can be defined in the Parameter window Basic settings, in the parameter Reaction on bus voltage failure.

4.6.1.4 Download

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

Reaction of the Shutter Actuator output pairs:

When the download begins, the blind/shutter stops any movements it may have started and remains in its current position. The reaction after download can be defined in the Parameter window Basic settings, in the parameter Reaction after ETS download.

Reaction of the Switch Actuator outputs:

The relay contact position is frozen when downloading begins. The reaction after download can be defined in the Parameter window Basic settings, in the parameter Reaction after ETS download.

Note
The device will no longer operate after the application is uninstalled or after an interrupted download.
- ▶ Download again.

4.7 Priorities

4.7.1 Priorities for Shutter Actuator

a) Bus voltage failure
b) Safety functions:
   Weather alarms (device)
   Forced operation (output)
   Disable (output)
   The order of priority of the safety functions can be defined individually for each output in the parameter → Order of priority of weather alarm, disabling and forced operation, Page 170. Additionally, the order of weather alarms can be defined for the overall device in the parameter → Order of priority for weather alarms, Page 114.
c) i-bus® Tool
d) Operating mode *Manual operation*
e) Operating mode *KNX operation*
f) Bus voltage recovery

More information → Function diagram of Shutter Actuator, Page 76.

4.7.2 Priorities for Switch Actuator

a) Bus voltage failure
b) Safety functions:
   Safety priority 1 (device)
   Forced operation (output)
   Safety priority 2 (device)
   Safety priority 3 (device)
   Disable (output)
   The order of priority of the safety functions cannot be changed.
c) i-bus® Tool
d) Operating mode *Manual operation*
e) Operating mode *KNX operation*
f) Bus voltage recovery

More information → Function diagram of Switch Actuator, Page 77.

5 Mounting and installation

5.1 Information about mounting

The device can be mounted in any position as required on a 35 mm mounting rail.

The electrical connection to the loads is made using screw terminals. The connection to the ABB i-bus® KNX is made using the bus connection terminal supplied. The terminal assignment is located on the housing.

Note

The maximum permissible current 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.

DANGER - Severe injuries due to touch voltage

Feedback from differing phase conductors can produce touch voltages and lead to severe injuries.

- Operate the device only in a closed housing (distribution board).
- Disconnect all phases before working on the electrical connection.

5.2 Mounting on DIN rail

Note

No additional tools are required for mounting on a DIN rail.

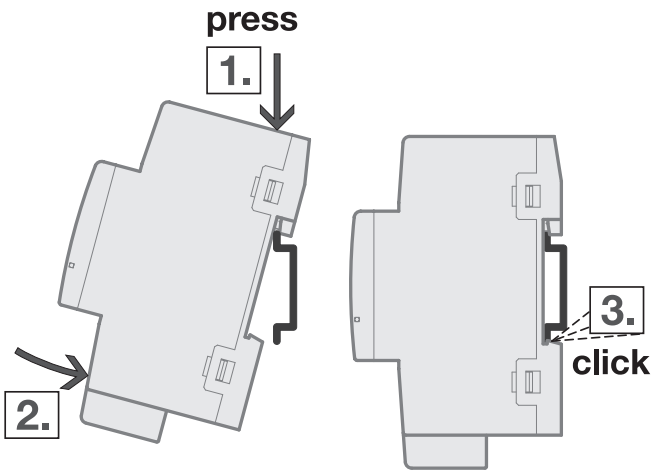


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Fig. 33: Mounting on DIN rail

1. Place the DIN rail holder on the upper edge of the DIN rail and push down.
2. Push the lower part of the device toward the DIN rail until the DIN rail holder engages.
   ⇨ The device is now mounted on the DIN rail.
3. Relieve the pressure on the top of the housing.

6 Commissioning

6.1 Prerequisites for commissioning

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

- Required ETS version: 5.6 or newer
- Product-specific application installed

6.2 Commissioning overview

After activating the bus voltage for the first time, the following factory settings will be selected automatically:

- Operating mode of outputs: Shutter Actuator (in pairs)
- Switching contact position: open
- Manual operation: enabled
- Physical address of the device: 15.15.255
- ETS application preloaded

Reprogramming can only take place using ETS.

Note

The complete ETS application can be downloaded again if required. Downloads may take longer after an application is uninstalled or when changing applications.

6.3 Putting device into operation

NOTICE

Damage to the shutter/blind motor

Transport could have changed the relays' contact positions. Undefined contact positions can simultaneously energize the Up and Down contacts. The connected shutter/blind motor will be destroyed.

► Switch on KNX bus voltage to establish a defined state of the relays.

NOTICE

The outputs on the device are not interlocked mechanically. The connection of shutter/blind motors to Switch Actuator outputs will result in damage to the shutter/blind motor.

► Connect shutter/blind motors only to Shutter Actuator output pairs.

► Do not drop below the switching/reversing time for the shutter/blind motor connected.

1. Connect the device to the ABB i-bus® KNX.
2. Switch on KNX bus voltage.
   ⇨ All switching contacts are open.
3. Switch on power supply of the connected loads.

⇨ Device is ready for operation.

6.4 Assignment of the physical address

The physical address is assigned by ETS.

- ▶ Press *Programming* button.
  - ⇨ *Programming* LED lights up.

⇨ If the physical address is assigned, the LED goes out.

Pressing the *Programming* button again cancels the programming process. The physical address is saved. The LED goes off.

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

6.5 Software/application

Note
The interface to i-bus® Tool is not available for Application V1.0. It will be implemented with the next version.

6.5.1 Download reaction

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

Depending on the PC used, it may take up to 90 seconds after a download is started for the progress bar to appear.

6.5.2 Copying, exchanging and converting

The ETS app *ABB Update Copy Convert* ETS can be used to copy/exchange parameter settings and convert the application version. The ETS app is available free of charge from the KNX online shop.

The following functions are available in the ETS app:
- *Update*: Changes the application program to a later or earlier version while retaining current configurations
- *Convert*: Transfers/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

7 Parameters

7.1 General

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

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

The default values of the parameters are underlined, e.g.:

No (checkbox cleared)

Yes (checkbox ticked)

Note
The screenshots show an application for devices with manual operation.

Note
A device with 24 channels (A … X) is described below.

7.2 Parameter window Configuration

The following settings can be made in the Parameter window Configuration:

- Activate outputs in pairs
- Activate Logic and Threshold functions
- Limit number of telegrams

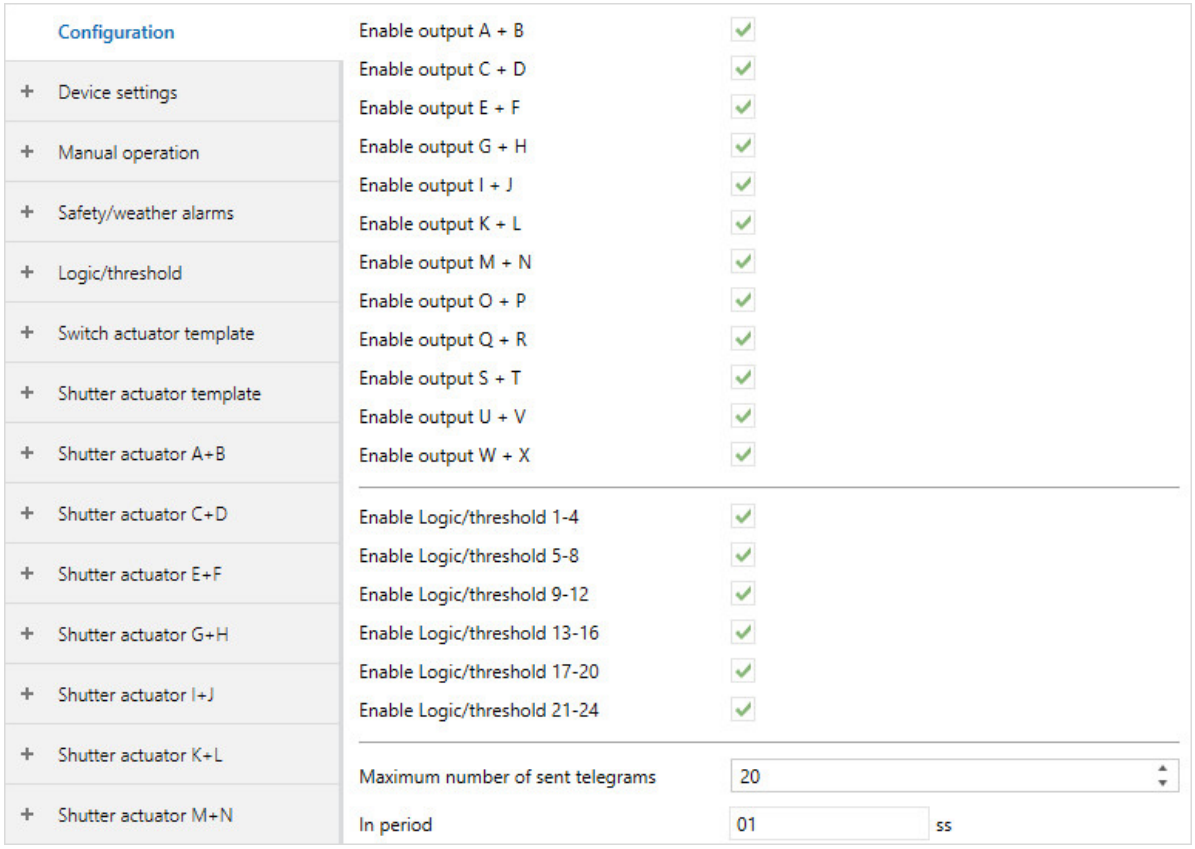

Fig. 34: Parameter window Configuration

Parameter

- Enable output X + Y
- Enable Logic/Threshold X-Y
- Maximum number of sent telegrams
- In period

7.2.1 Enable output X + Y

These parameters can be used to enable the output pairs. The enabled output pairs are configured as output pairs or as a Switch Actuator or Shutter Actuator in the Parameter window Switch Actuator A or in the Parameter window Shutter Actuator A+B .

In the interest of a clear ETS structure, parameter windows and group objects of inactive outputs are hidden.

Note

All outputs are set as Shutter Actuator output pairs in the factory setting.

- In order to use an output pair as Shutter Actuator outputs, open Parameter window Shutter Actuator A+B \ Parameter window Functions and select the following option for the parameter Application: *Switch Actuator*.

Options	
No	The output pair is not enabled.
Yes	The output pair is enabled, and the corresponding parameter window with the associated group objects opens.

7.2.2 Enable Logic/Threshold X-Y

This parameter can be used to enable the Logic and Threshold functions in groups of four.

The logic and threshold functions are configured in Parameter window Logic/Threshold 1.

In the interest of a clear ETS structure, parameter windows and group objects of the inactive logic and threshold functions are hidden.

The logic and threshold functions can be used independently or linked with an output.

More information → Function Logic, Page 84, → Function Threshold, Page 85.

Note

The default option shown here does not apply to all Logic/Threshold groups.

Options	
No	The logic and threshold functions are not enabled.
Yes	The logic and threshold functions are enabled, and the corresponding parameter window with the associated group objects opens.

7.2.3 Maximum number of sent telegrams

This parameter can be used to define the number of telegrams sent within a period that can be set (telegram rate limit).
The bus load generated by the device can be limited using the telegram rate limit. The Limit refers to all telegrams sent from the device.

Options
1 … 20 … 100

7.2.4 In period

This parameter can be used to set the period during which the Maximum number of sent telegrams is sent. The telegrams are sent as quickly as possible at the start of the period.

Note
The telegram rate limit is deactivated when the value 0 is selected. The device will always attempt to send the telegrams as quickly as possible.

Options
0 … 1 … 59 s

7.3 Parameter window Device settings

The following settings can be made in the Parameter window Device settings:

- Setting sending and switching delay
- Activate i-bus® Tool access
- Enable group object Request status values
- Enable central group objects

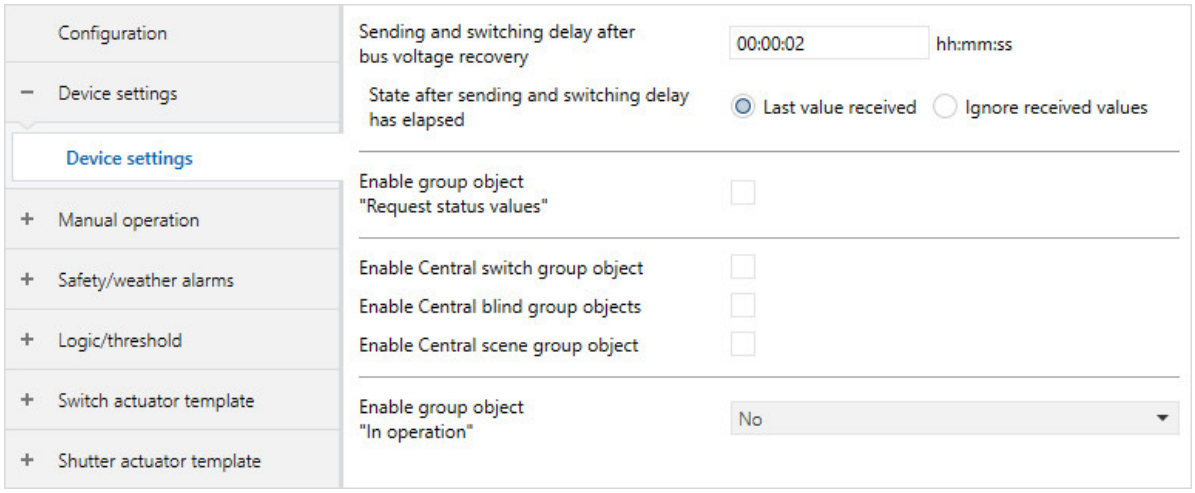

Fig. 35: Parameter window Device settings

Parameter

- Sending and switching delay after bus voltage recovery
- State after sending and switching delay has expired
- i-bus® Tool access
- Enable group object "Request status values"
- Enable central Switch group object
- Enable central Shutter group objects
- Enable central Scene group object
- Enable group object "In operation"
  - Sending cycle

7.3.1 Sending and switching delay after bus voltage recovery

This parameter can be used to set the sending and switching delay after bus voltage recovery.

During the sending and switching delay, telegrams are only received. No telegrams are sent on the product ABB i-bus® KNX. The state of the outputs remains unchanged.

Telegrams are sent again after the sending and switching delay expires. The state of the outputs is set in accordance with the parameterization or the group object values.

If group objects are read (e.g. from visual display systems) via the product ABB i-bus® KNX during the sending and switching delay, these requests are stored and answered after expiry of the sending and switching delay.

The sending and switching delay includes an initialization time of around two seconds. The initialization time is the time that the processor requires before it is ready to function.

After bus voltage recovery, telegrams are sent on the product ABB i-bus® KNX after expiry of the sending and switching delay.

Note
The device draws energy for switching the outputs via the product ABB i-bus® KNX. After bus voltage is applied, it takes about 10 to 30 seconds before sufficient energy is available to switch all contacts simultaneously.
The first contact is not switched until the device has stored sufficient energy to switch all outputs to the set switching state in case of bus voltage failure.

Options
00:00:02 … 00:04:15 hh:mm:ss

7.3.2 State after sending and switching delay has expired

This parameter can be used to define whether values that were received during the transmission and switching delays will be processed.

Options	
Last value received	The last value received during the sending and switching delay is processed.
Ignore received values	Values received during the sending and switching delay are ignored.

7.3.3 i-bus® Tool access

This parameter can be used to limit or deactivate access of the i-bus® Tool.

Note
The interface to i-bus® Tool is not available for Application V1.0. It will be implemented with the next version.

Options	
Full access	The values can be displayed and changed in the i-bus® Tool.
Deactivated	Access of the i-bus® Tool is deactivated.
Value display only	The values can only be displayed in the i-bus® Tool. The values cannot be changed.

7.3.4 Enable group object "Request status values"

All status messages of the device can be requested with the group object Request status values .

In order to send the status values, one of the following options must be defined for the sending behavior of the status group objects:
- *On request*
- *After change or on request*

Enabling of status group objects and further information:
- → Feedback of switching state via group object "Status switch", Page 194
- → Enable group object "Status information", Page 183
- → Parameter window Status messages, Page 178

Options	
No	The group object is not enabled.
Yes	The group object is enabled.

7.3.5 Enable central Switch group object

This parameter can be used to enable the central Switch group object Switch . All assigned outputs can be activated together with the central Switch group object.

Observe the maximum number of switching cycles per minute when using the central switching group object → Technical data.

Options	
No	The group object is not enabled.
Yes	The group object is enabled.

7.3.6 Enable central Shutter group objects

This parameter can be used to enable the central Shutter group objects:
- Move blind/shutter Up-Down
- Slat adjustment/stop Up-Down
- Move to position height
- Move to position slat

All assigned outputs can be activated together with the central Shutter group objects.

Observe the maximum number of switching cycles per minute when using the central shutter group objects → Technical data.

Options	
No	The group objects will not be enabled.
Yes	The group objects will be enabled.

7.3.7 Enable central Scene group object

This parameter can be used to enable the central Scene group object Scene 1 … 64 . All outputs assigned to the scene can be activated together with the central Scenes group object.

Observe the maximum number of switching cycles per minute when using the central Scenes group object → Technical data.

Options	
No	The group object is not enabled.
Yes	The group object is enabled.

7.3.8 Enable group object "In operation"

This parameter can be used to enable the group object In operation . The group object reports the presence of the device on the ABB i-bus® KNX and can be monitored by an external device. If a telegram is not received, the device may be defective or the bus cable to the transmitting device may be interrupted. The dependent parameter Sending cycle can be used to set the cycle during which the group object sends a telegram.

Options	
No	The group object is not enabled.
Yes, send value 0 cyclically	The group object is enabled and cyclically sends the value 0. • Sending cycle
Yes, send value 1 cyclically	The group object is enabled and cyclically sends the value 1. • Sending cycle

7.3.8.1 —

DEPENDENT PARAMETER

Sending cycle

This parameter can be used to define the cycle during which group object In operation sends a telegram.

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

Condition for visibility:
Parameter window Device settings \ Parameter Enable group object "In operation" \ Option *Yes, send value 0 cyclically*

7.4 Parameter window Manual operation

The following settings can be made in the Parameter window Manual operation:
- Enable operating state *Manual operation*
- Automatically reset the device to *KNX operation*

More information → Manual operation, Page 242.

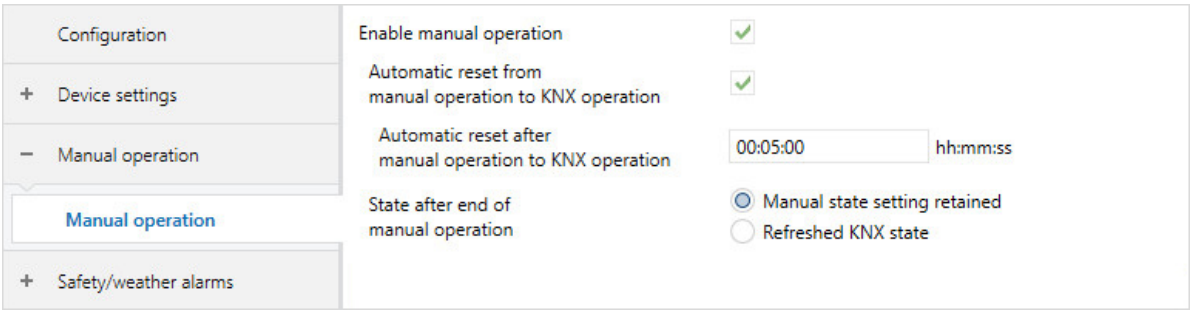

Fig. 36: Parameter window Manual operation

Parameter
- Enable manual operation
  - Automatically reset from manual operation to KNX operation
    - Automatic reset after
  - State after end of manual operation

7.4.1 Enable manual operation

This parameter can be used to enable the operating state *Manual operation*.

Options	
No	The operating state *Manual operation* is disabled. The device cannot be operated using the membrane keypad.
Yes	The device can be operated using the membrane keypad. The operating states *Manual operation* and *KNX operation* can be switched via the *Manual operation* button or via the group object Enable/ disable manual operation . The following group objects will be enabled: • Status Manual operation • Enable/disable manual operation • End manual operation • Automatically reset from manual operation to KNX operation • State after end of manual operation

7.4.1.1 —

DEPENDENT PARAMETER

Automatically reset from manual operation to KNX operation

This parameter can be used to define whether the device is automatically reset from the operating state *Manual operation* to the operating state *KNX operation* after an adjustable time.

Options	
No	Automatic reset is disabled. The operating state can be changed only by using the *Manual operation* button.
Yes	The device is automatically reset to the operating state *KNX operation* after the set time. • Automatic reset after

Condition for visibility:
Parameter window Manual operation \ Parameter Enable manual operation \ Option *Yes*

7.4.1.1.1 —

DEPENDENT PARAMETER

Automatic reset after

This parameter can be used to set the time after which the device is automatically reset to the operating state *KNX operation*.

After the *Manual operation* button is pressed, the device remains in *Manual operation* mode until the button is pressed again or the parameterized time elapses.

Options
00:00:30 ... 00:05:00 ... 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Manual operation \ Parameter Enable manual operation \ Option *Yes* \ Parameter Automatically reset from manual operation to KNX operation \ Option *Yes*

7.4.1.2 —

DEPENDENT PARAMETER

State after end of manual operation

This parameter can be used to define the state of the output after the end of manual operation.

Options	
Manually set state retained	The manually set state remains active.
Refreshed KNX state	Manually set states are overwritten. The refreshed KNX state is used. More information → Refreshed KNX state, Page 83.

Condition for visibility:
Parameter window Manual operation \ Parameter Enable manual operation \ Option *Yes*

7.5 Parameter window Safety/Weather alarms

The safety and weather alarms can be activated and set in Parameter window Safety/Weather alarms.

The safety/weather alarms apply to the entire device, but each output can react differently to receipt of a safety/weather alarm. The reaction of the individual outputs can be defined in the respective parameter windows.

More information → Safety functions, Page 77.

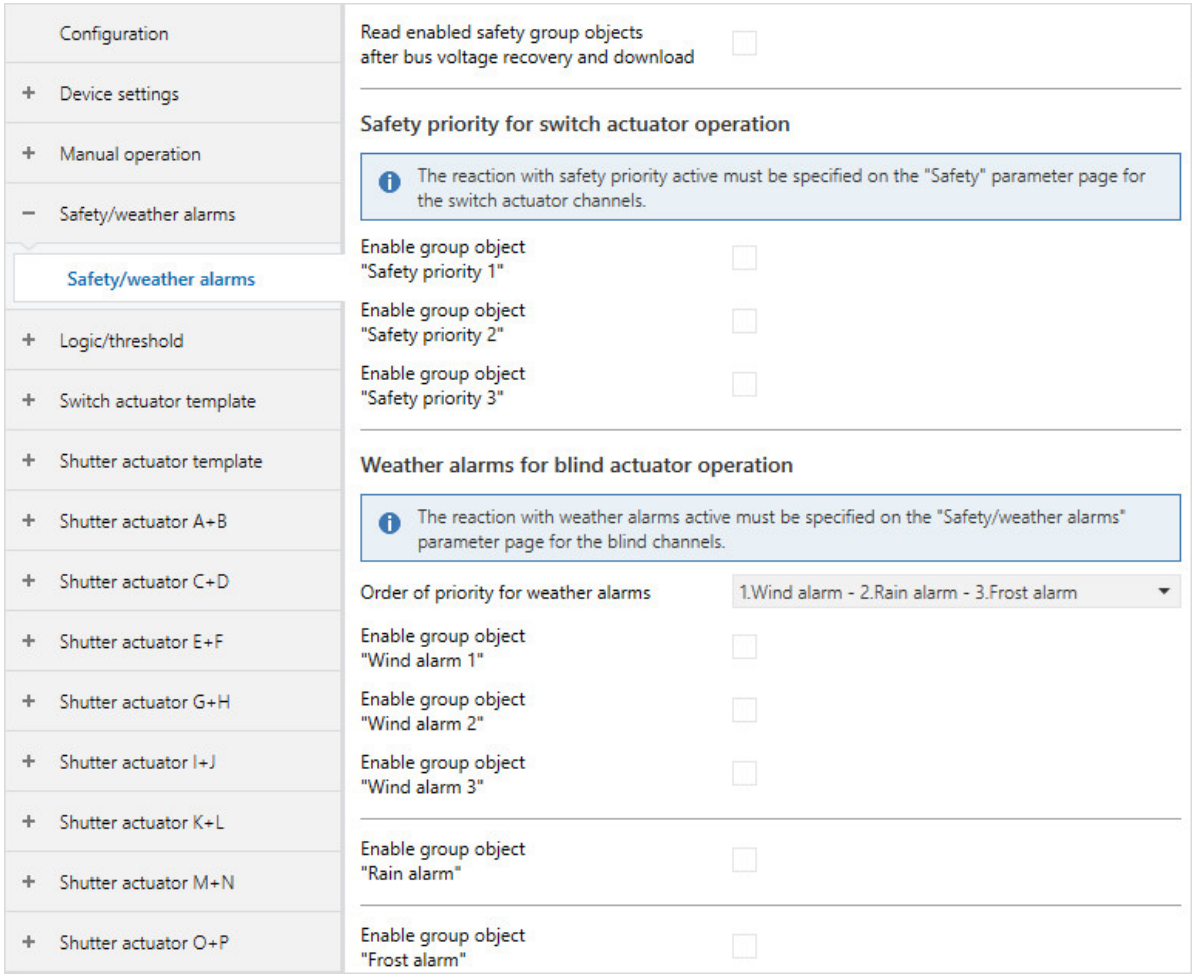

Fig. 37: Parameter window Safety/Weather alarms

Parameter

- Read enabled safety group objects after bus voltage recovery and download
- Enable group object "Safety priority x"
  - Cyclical monitoring interval (0 = cycl. monitoring deactivated)
- Order of priority for weather alarms
- Enable group object "Wind alarm x"
  - Cyclical monitoring interval (0 = cycl. monitoring deactivated)
- Enable group object "Rain alarm"
  - Cyclical monitoring interval (0 = cycl. monitoring deactivated)
- Enable group object "Frost alarm"
  - Cyclical monitoring interval (0 = cycl. monitoring deactivated)

7.5.1 Read enabled safety group objects after bus voltage recovery and download

This parameter can be used to define whether the enabled safety group objects (Safety priority x , Wind alarm x , Rain alarm and Frost alarm) are read after bus voltage recovery. If alarms are present, the parameterized events take place.

Note
The read flags must be set for the corresponding group objects of the sending device.

Options	
No	
Yes	The read flags must be set for the corresponding group objects of the sending device.

7.5.2 Enable group object "Safety priority x"

These parameters can be used to enable the group objects Safety priority x (x = 1, 2, 3). The group objects apply to the entire device, but each output can react differently to receipt of a safety priority. The reaction of the respective output can be set in the Parameter window Safety.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Cyclical monitoring interval (0 = cycl. monitoring deactivated)

7.5.2.1 —

DEPENDENT PARAMETER

Cyclical monitoring interval (0 = cycl. monitoring deactivated)

This parameter can be used to define the monitoring cycle in the device.

The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

Options
00:00:00 … 12:00:00 hh:mm:ss

Condition for visibility:
Parameter window Safety/Weather alarms \ Parameter Enable group object "Safety priority x" \ Option *Yes*

7.5.3 Order of priority for weather alarms

This parameter can be used to define the order of priority of the weather alarms. If several weather alarms are received at the same time, only the weather alarm with the highest priority is executed.

Options
1.Wind alarm – 2.Rain alarm – 3.Frost alarm
1.Wind alarm – 2.Frost alarm – 3.Rain alarm
1.Rain alarm - 2.Wind alarm - 3.Frost alarm
1.Rain alarm - 2.Frost alarm - 3.Wind alarm
1.Frost alarm - 2.Wind alarm - 3.Rain alarm
1.Frost alarm - 2.Rain alarm - 3.Wind alarm

7.5.4 Enable group object "Wind alarm x"

These parameters can be used to enable the group objects Wind alarm x (x = 1, 2, 3). The group objects apply to the entire device, but each output can react differently to receipt of a wind alarm. The reaction of the respective output can be set in the Parameter window Safety/Weather.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Cyclical monitoring interval (0 = cycl. monitoring deactivated)

7.5.4.1 —

DEPENDENT PARAMETER

Cyclical monitoring interval (0 = cycl. monitoring deactivated)

This parameter can be used to define the monitoring cycle in the device.

The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

Options
00:00:00 … 12:00:00 hh:mm:ss

Condition for visibility:
Parameter window Safety/Weather alarms \ Parameter Enable group object "Wind alarm x" \ Option *Yes*

7.5.5 Enable group object "Rain alarm"

This parameter can be used to enable the group object Rain alarm . The group object applies to the entire device, but each output can react differently to receipt of a rain alarm. The reaction of the respective output can be set in the Parameter window Safety/Weather.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Cyclical monitoring interval (0 = cycl. monitoring deactivated)

7.5.5.1 —

DEPENDENT PARAMETER

Cyclical monitoring interval (0 = cycl. monitoring deactivated)

This parameter can be used to define the monitoring cycle in the device.

The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

Options
00:00:00 … 12:00:00 hh:mm:ss

Condition for visibility:
Parameter window Safety/Weather alarms \ Parameter Enable group object "Rain alarm" \ Option *Yes*

7.5.6 Enable group object "Frost alarm"

This parameter can be used to enable the group object Frost alarm . The group object applies to the entire device, but each output can react differently to receipt of a frost alarm. The reaction of the respective output can be set in the Parameter window Safety/Weather.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Cyclical monitoring interval (0 = cycl. monitoring deactivated)

7.5.6.1 —

DEPENDENT PARAMETER

Cyclical monitoring interval (0 = cycl. monitoring deactivated)

This parameter can be used to define the monitoring cycle in the device.

The monitoring cycle in the device should be at least four times as large as the cyclic transmission time of the sensor. As a result, the parameterized alarm reactions will not be triggered immediately if a signal is missing (e.g. due to high bus load).

Options
00:00:00 … 12:00:00 hh:mm:ss

Condition for visibility:
Parameter window Safety/Weather alarms \ Parameter Enable group object "Frost alarm" \ Option *Yes*

7.6 Parameter window Logic/Threshold 1

Note
The parameter windows and the structure of the parameters are identical for all Logic/Threshold functions. Therefore, only one parameter window will be described below by way of example.

Note
This parameter window is visible only if, in the Parameter window Configuration, the following option is set for the parameter Enable Logic/Threshold X-Y: *Yes*.

The Parameter window Logic/Threshold 1 can be used to make all settings for the *Logic/Threshold* functions.

The *Logic/Threshold* functions can be used independently of the other device functions. The result of the *Logic/Threshold* function can be internally linked with any output and/or sent on the ABB i-bus® KNX.

More information → Function Logic, Page 84, → Function Threshold, Page 85.

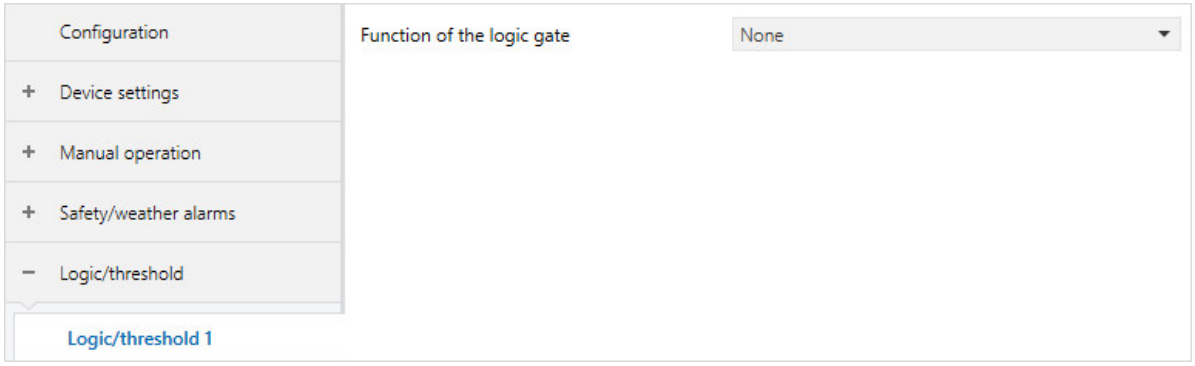

Fig. 38: Parameter window Logic/Threshold 1

Parameter

- Function of the logic gate
  - Group object "Connection A" after bus voltage recovery
  - Group object "Connection B" after bus voltage recovery
  - Invert result
  - Send result on KNX
    - Send value of group object
    - Send value of group object
    - Send value of group object
  - GATE disables if group object "Connection A" equals
    - Send value of group object
  - Data type of group object "Threshold input"
  - Upper threshold
  - Lower threshold
  - Change thresholds via KNX
  - Result if upper threshold is exceeded
  - Min. duration of the overshoot
  - Result if the input value is between the thresholds
  - Minimum dwell time between the thresholds
  - Result if lower threshold is dropped below
  - Min. duration of the undershoot
  - Update result after each overshoot/undershoot
  - Send result on KNX
    - Send value of group object

7.6.1 Function of the logic gate

This parameter can be used to define whether a logic function or the threshold function is used.

Options	
None	The logic gate is not used.
AND	The logic function *AND* is used. If the value 1 is present on both inputs, the result = 1. The result can be inverted, linked with any output within the device or output on the group object Result . The following group objects will be enabled: • Connection A • Connection B • Group object "Connection A" after bus voltage recovery • Group object "Connection B" after bus voltage recovery • Invert result • Send result on KNX
OR	The logic function *OR* is used. If the value 1 is present on at least one input, the result = 1. The result can be inverted, linked with any output within the device or output on the group object Result . The following group objects will be enabled: • Connection A • Connection B • Group object "Connection A" after bus voltage recovery • Group object "Connection B" after bus voltage recovery • Invert result • Send result on KNX
Exclusive OR	The logic function *exclusive OR* is used. If different values are present on both inputs, the result = 1. The result can be inverted, linked with any output within the device or output on the group object Result . The following group objects will be enabled: • Connection A • Connection B • Group object "Connection A" after bus voltage recovery • Group object "Connection B" after bus voltage recovery • Invert result • Send result on KNX
GATE	The logic function *GATE* is used. As long as GATE is activated, the most recent value sent to the input (Connection B) remains as the result. After disabling (Connection A), the value that the result had before disabling is retained. After enabling, the result remains unchanged until the input (Connection B) receives a new value. The result can be inverted, linked with any output within the device or output on the group object Result . The following group objects will be enabled: • Connection A • Connection B • GATE disables if group object "Connection A" equals • Group object "Connection A" after bus voltage recovery • Group object "Connection B" after bus voltage recovery • Invert result • Send result on KNX
Threshold	The function *Threshold* is used. More information → Function Threshold, Page 85. • Data type of group object "Threshold input" • Upper threshold • Lower threshold • Change thresholds via KNX • Result if upper threshold is exceeded • Min. duration of the overshoot • Result if the input value is between the thresholds • Minimum dwell time between the thresholds • Result if lower threshold is dropped below • Min. duration of the undershoot • Update result after each overshoot/undershoot • Send result on KNX

7.6.1.1 —

DEPENDENT PARAMETER

Group object "Connection A" after bus voltage recovery

This parameter can be used to define the value that will be written to the group object Connection A after bus voltage recovery.

Options	
1	The value 1 is written to the group object, but does not pass through the function *Logic*. Writing the group object does not affect the result of the function *Logic*.
0	The value 0 is written to the group object, but does not pass through the function *Logic*. Writing the group object does not affect the result of the function *Logic*.

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND*

7.6.1.2 —

DEPENDENT PARAMETER

Group object "Connection B" after bus voltage recovery

This parameter can be used to define the value that will be written to the group object Connection B after bus voltage recovery.

Options	
1	The value 1 is written to the group object, but does not pass through the function *Logic*. Writing the group object does not affect the result of the function *Logic*.
0	The value 0 is written to the group object, but does not pass through the function *Logic*. Writing the group object does not affect the result of the function *Logic*.

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND*

7.6.1.3 —

DEPENDENT PARAMETER

Invert result

This parameter can be used to define whether the result of the function *Logic* will be output inverted.

Options
No
Yes

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND*

7.6.1.4 —

DEPENDENT PARAMETER

Send result on KNX

This parameter can be used to define whether the result of the function *Logic* will be written to the group object Result .

Options	
No	The result is not output on the ABB i-bus® KNX.
Yes	The result is output on the ABB i-bus® KNX. The group object Result is enabled. The group object sending behavior can be defined in the parameter Send value of group object. • Send value of group object

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND*

7.6.1.4.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND* \ Parameter Send result on KNX \ Option *Yes*

7.6.1.5 —

DEPENDENT PARAMETER

GATE disables if group object "Connection A" equals

This parameter can be used to define the value on the group object Connection A at which the GATE will be disabled. If the GATE is disabled, telegrams received on the group object Connection B are ignored.

Options
1
0

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *GATE*

7.6.1.6 —

DEPENDENT PARAMETER

Data type of group object "Threshold input"

This parameter can be used to define the data type that is received via the group object Threshold input and evaluated.

Depending on the option selected, one of the following group objects is enabled:
- Threshold input (DPT 5.001)
- Threshold input (DPT 5.010)
- Threshold input (DPT 7.001)
- Threshold input (DPT 9.001)
- Threshold input (DPT 9.004)

Options
Percent (DPT5.001)
Meter pulses (DPT5.010)
Meter pulses (DPT7.001)
Temperature (DPT9.001)
Lux (DPT9.004)

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.7 —

DEPENDENT PARAMETER

Upper threshold

This parameter is used to define the upper threshold. Default values and units depend on the option selected in the Data type of group object "Threshold input" parameter.

Options
0 ... 50 ... 100 %
0 ... 200 ... 255
0 ... 40000 ... 65535
0 ... 22 ... 250 °C
0 ... 400 ... 100,000 lux

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.8 —

DEPENDENT PARAMETER

Lower threshold

This parameter is used to define the lower threshold. Default values and units depend on the option selected in the Data type of group object "Threshold input" parameter.

Options
0 ... 20 ... 100 %
0 ... 100 ... 255
0 ... 10000 ... 65535
0 ... 18 ... 250 °C
0 ... 100 ... 100,000 lux

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.9 —

DEPENDENT PARAMETER

Change thresholds via KNX

This parameter defines whether the thresholds set in ETS can be changed via the ABB i-bus® KNX.

Options	
No	Upper and lower thresholds can be set only in ETS.
Yes	The upper and lower thresholds can be changed via the ABB i-bus® KNX. The following group objects are enabled depending on the settings in the parameter Data type of group object "Threshold input": • Change upper threshold (DPT 5.001) • Change upper threshold (DPT 5.010) • Change upper threshold (DPT 7.001) • Change upper threshold (DPT 9.001) • Change upper threshold (DPT 9.004) • Change lower threshold (DPT 5.001) • Change lower threshold (DPT 5.010) • Change lower threshold (DPT 7.001) • Change lower threshold (DPT 9.001) • Change lower threshold (DPT 9.004)

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.10 —

DEPENDENT PARAMETER

Result if upper threshold is exceeded

This parameter can be used to define the result of the function *Threshold* when the value received at the threshold input exceeds the upper threshold. The result can be linked with any output within the device or output on the group object Result .

Options	
Unchanged	The result of the function *Threshold* remains unchanged.
1	The result of the function *Threshold* is 1.
0	The result of the function *Threshold* is 0.

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.11 —

DEPENDENT PARAMETER

Min. duration of the overshoot

This parameter can be used to set how long the value received at the threshold input must exceed the threshold before the result of the function *Threshold* is updated.

Options
00:00:00 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.12 —

DEPENDENT PARAMETER

Result if the input value is between the thresholds

This parameter can be used to define the result of the function *Threshold* when the value received at the threshold input lies between the upper and lower thresholds. The result can be linked with any output within the device or output on the group object Result .

Options	
Unchanged	The result of the function *Threshold* remains unchanged.
1	The result of the function *Threshold* is 1.
0	The result of the function *Threshold* is 0.

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.13 —

DEPENDENT PARAMETER

Minimum dwell time between the thresholds

This parameter can be used to define how long the value received at the threshold input must remain between the upper and lower thresholds before the result of the function *Threshold* is updated.

Options
00:00:00 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.14 —

DEPENDENT PARAMETER

Result if lower threshold is dropped below

This parameter can be used to define the result of the function *Threshold* when the value received at the threshold input falls below the lower threshold. The result can be linked with any output within the device or output on the group object Result .

Options	
Unchanged	The result of the function *Threshold* remains unchanged.
1	The result of the function *Threshold* is 1.
0	The result of the function *Threshold* is 0.

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.15 —

DEPENDENT PARAMETER

Min. duration of the undershoot

This parameter can be used to define how long the value received at the threshold input must fall below the threshold before the result of the function *Threshold* is updated.

Options
00:00:00 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.16 —

DEPENDENT PARAMETER

Update result after each overshoot/undershoot

This parameter can be used to define whether the result of the function *Threshold* is updated whenever the value received at the threshold input exceeds or falls below a threshold.

Options	
No	The result of the function *Threshold* is updated only if the received value triggers a result change.
Yes	The result of the function *Threshold* is updated when the received value exceeds or falls below a threshold.

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.17 —

DEPENDENT PARAMETER

Send result on KNX

This parameter can be used to define whether the result of the function *Threshold* will be written to the group object Result .

Options	
No	The result is not output on the ABB i-bus® KNX.
Yes	The result is output on the ABB i-bus® KNX. The group object Result is enabled. The group object sending behavior can be defined in the parameter Send value of group object. • Send value of group object

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*

7.6.1.17.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* \ Parameter Send result on KNX \ Option *Yes*

7.7 Parameter window Switch Actuator template

The functions can be set for all Switch Actuator outputs in the Parameter window Switch Actuator template.

It can be decided for each Switch Actuator output whether parameterization from the template is used. The individual setting of a Switch Actuator output is made in the respective Parameter window Switch Actuator A.

As the Parameter window Switch Actuator template and Parameter window Switch Actuator A are nearly identical in structure, the individual parameters will be described in the Parameter window Switch Actuator A.

7.8 Parameter window Shutter Actuator template

The functions can be set for all Shutter Actuator output pairs in the Parameter window Shutter Actuator template.

It can be decided for each Shutter Actuator output pair whether parameterization from the template is used. The individual setting of a Shutter Actuator output pair is made in the respective Parameter window Shutter Actuator A+B.

As the Parameter window Shutter Actuator template and Parameter window Shutter Actuator A+B are nearly identical in structure, the individual parameters will be described in the Parameter window Shutter Actuator A+B.

7.9 Parameter window Shutter Actuator A+B

Note
The parameter windows and the structure of the parameters are identical for all output pairs. Therefore, only one output pair will be described below by way of example.

Note
If, in Parameter window Switch Actuator A \ Parameter window Functions, the parameter Application was set to the Switch Actuator option, the Parameter window Shutter Actuator A+B is not visible.

The functions can be set individually for each Shutter Actuator output pair in the Parameter window Shutter Actuator A+B and the subordinate parameter windows.

Note
If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

7.9.1 Parameter window Functions

The following settings can be made in the Parameter window Functions:
- Selection of application
- Selection of operating mode
- Enabling of functions

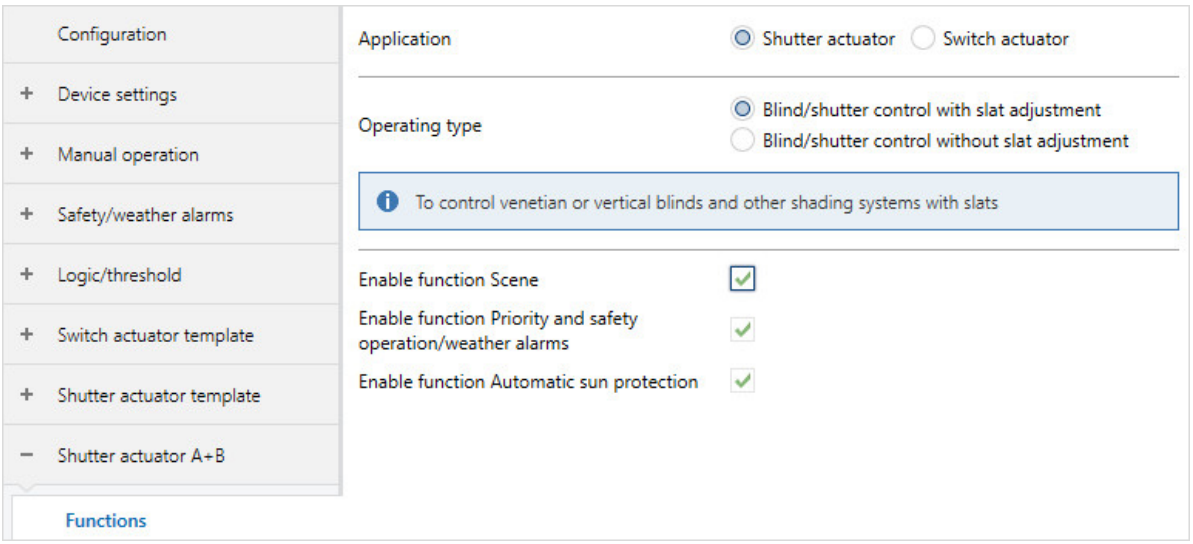

Fig. 39: Parameter window Functions

Parameter
- Application
  - Operating mode
  - Enable function Scenes
  - Enable function Safety/Weather alarms
  - Enable function Automatic sun protection

7.9.1.1 Application

This parameter can be used to define whether the output pair is used as a Shutter Actuator output pair or as two separate Shutter Actuator outputs.

Options
Switch Actuator
Shutter Actuator

7.9.1.1.1 —

DEPENDENT PARAMETER

Operating mode

This parameter can be used to set the operating mode of the Shutter Actuator output pair. The Parameter window Blind/Shutter differs according to the operating mode.

Options	
Blind/shutter control with slat adjustment	To control shutters, vertical blinds and other shading systems with slats, etc.
Blind/shutter control without slat adjustment	To control blinds, awnings and other products without slats, as well as window and door drives, etc.

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*

7.9.1.1.2 —

DEPENDENT PARAMETER

Enable function Scenes

This parameter can be used to enable the function *Scenes*, the associated Parameter window Scene assignments and the group object Scene 1 … 64 .

The scene assignments and the reaction on scene retrieval are defined in Parameter window Scene assignments.

Options
No
Yes

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*

7.9.1.1.3 —

DEPENDENT PARAMETER

Enable function Safety/Weather alarms

This parameter can be used to enable the *Safety/Weather alarms* function and the associated Parameter window Safety/Weather.

The output response is defined in Parameter window Safety/Weather.

Options
No
Yes

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*

7.9.1.1.4 —

DEPENDENT PARAMETER

Enable function Automatic sun protection

This parameter can be used to enable the function *Automatic sun protection* and the associated Parameter window Automatic sun protection.

The output response is defined in Parameter window Automatic sun protection.

Options
No
Yes

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*

7.9.2 Parameter window Basic settings

The following settings can be made in the Parameter window Basic settings:

- Connection with the central shutter group objects
- Link with the function *Logic/Threshold*
- Reaction on bus voltage failure, bus voltage recovery and download

> **Note**
> If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

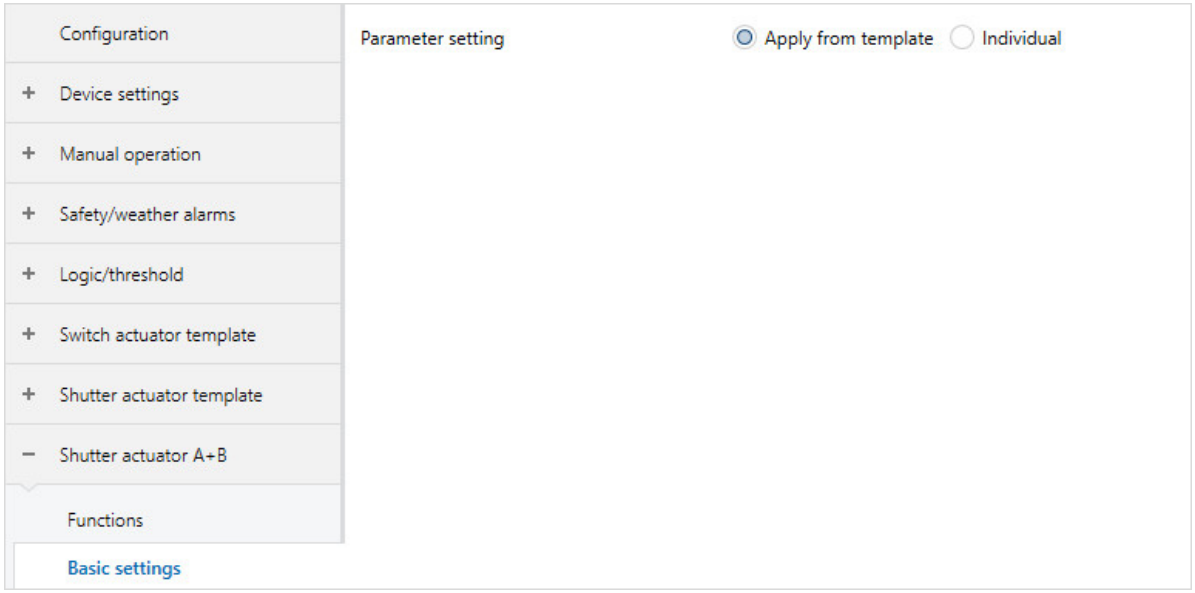

Fig. 40: Parameter window Basic settings

Parameter

- Parameter setting
  - Output reacts to central shutter group objects
  - Output reacts to
    - Reaction on result "0"
      - Scene assignment
      - Position height (0 % = top; 100 % = bottom)
      - Position slat (0 % = open; 100 % = closed)
    - Reaction on result "1"
      - Scene assignment
      - Position height (0 % = top; 100 % = bottom)
      - Position slat (0 % = open; 100 % = closed)
  - Reaction on bus voltage failure
  - Reaction after bus voltage recovery
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Reaction after ETS download
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)

7.9.2.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Output reacts to central shutter group objects • Output reacts to • Reaction on bus voltage failure • Reaction after bus voltage recovery • Reaction after ETS download

7.9.2.1.1 —

DEPENDENT PARAMETER

Output reacts to central shutter group objects

This parameter can be used to define whether the Shutter Actuator output pair can be switched via the central Shutter group objects.

Note
This parameter is visible only if, in the Parameter window Device settings, the following option was set for the parameter Enable central Shutter group objects: *Yes*.

Options
No
Yes

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.9.2.1.2 —

DEPENDENT PARAMETER

Output reacts to

This parameter can be used to define whether the output is influenced by the result of a *Logic* or *Threshold* function.

More information → Function Logic, Page 84, → Function Threshold, Page 85.

Options	
No Logic/Threshold function	The output does not react to a *Logic* or *Threshold* function.
Logic/Threshold x	The output reacts to the *Logic* or *Threshold* function x (x = 1 … 24). • Reaction on result "0" • Reaction on result "1"

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.9.2.1.2.1 —

DEPENDENT PARAMETER

Reaction on result "0"

This parameter can be used to define how the blind/shutter reacts when the result of the *Logic* or *Threshold* function is 0.

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed. • Scene assignment
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x*

7.9.2.1.2.1.1 —

DEPENDENT PARAMETER

Scene assignment

This parameter can be used to define which scene number is retrieved.

Note
The scene assignment must be defined in Parameter window Scene assignments, in the parameter Enable scene assignment x.

Options
1 … 16

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x* \ Parameter Reaction on result "0" \ Option *Scene assignment*

7.9.2.1.2.1.2 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 ... 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x* \ Parameter Reaction on result "0" \ Option *Individual position*

7.9.2.1.2.1.3 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 ... 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x* \ Parameter Reaction on result "0" \ Option *Individual position*

7.9.2.1.2.2 —

DEPENDENT PARAMETER

Reaction on result "1"

This parameter can be used to define how the blind/shutter reacts when the result of the *Logic* or *Threshold* function is 1.

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Unchanged (disable)	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The blind/shutter is then disabled in this position.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed. • Scene assignment
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x*

7.9.2.1.2.2.1 —

DEPENDENT PARAMETER

Scene assignment

This parameter can be used to define which scene number is retrieved.

Note
The scene assignment must be defined in Parameter window Scene assignments, in the parameter Enable scene assignment x.

Options
1 … 16

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x* \ Parameter Reaction on result "1" \ Option *Scene assignment*

7.9.2.1.2.2.2 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 ... 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x* \ Parameter Reaction on result "1" \ Option *Individual position*

7.9.2.1.2.2.3 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 ... 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x* \ Parameter Reaction on result "1" \ Option *Individual position*

7.9.2.1.3 —

DEPENDENT PARAMETER

Reaction on bus voltage failure

This parameter can be used to define the blind/shutter reaction on bus voltage failure.

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.9.2.1.4 —

DEPENDENT PARAMETER

Reaction after bus voltage recovery

This parameter can be used to define the blind/shutter reaction after bus voltage recovery.

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Activation of automatic sun protection	The function *Automatic sun protection* is activated.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.9.2.1.4.1 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 … 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Reaction after bus voltage recovery \ Option *Individual position*

7.9.2.1.4.2 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Reaction after bus voltage recovery \ Option *Individual position*

7.9.2.1.5 —

DEPENDENT PARAMETER

Reaction after ETS download

This parameter can be used to define the blind/shutter reaction after an ETS download.

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Activation of automatic sun protection	The function *Automatic sun protection* is activated.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.9.2.1.5.1 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 … 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Reaction after ETS download \ Option *Individual position*

7.9.2.1.5.2 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Reaction after ETS download \ Option *Individual position*

7.9.3 Parameter window Drive

The following settings can be made in the Parameter window Drive:

- Setting the blind/shutter travel time
- Trigger reference movement
- Setting reversing time for drive
- Setting delay time for drive

More information → Drive settings, Page 86.

Note

If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

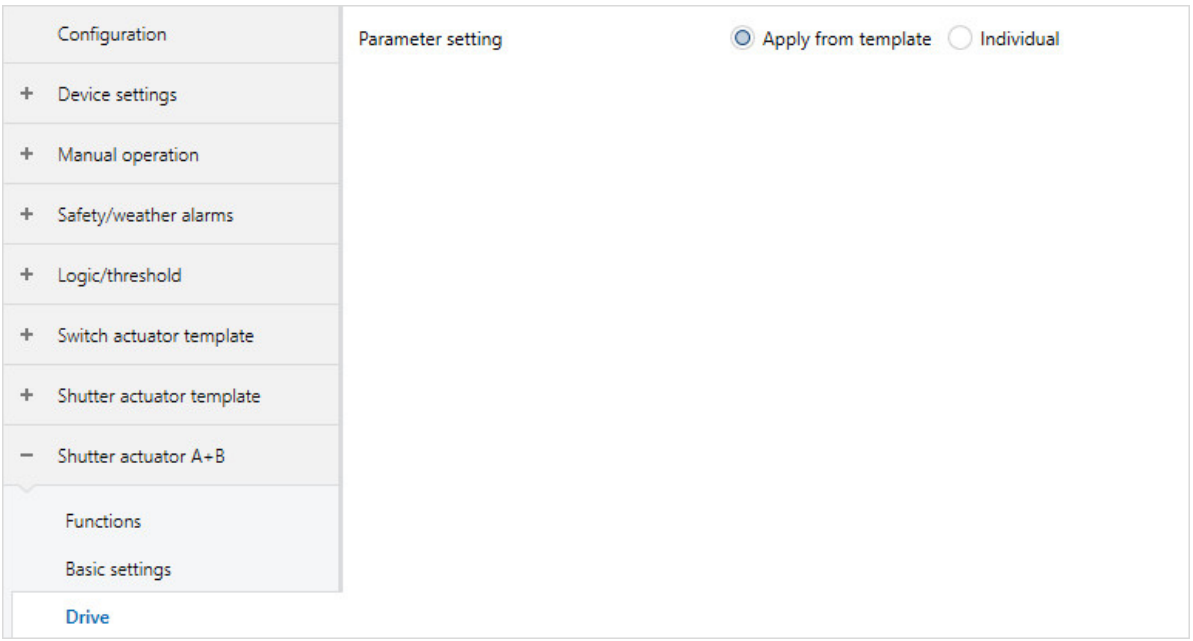

Fig. 41: Parameter window Drive

Parameter

- Parameter setting
  - Travel time up
  - Travel time down
  - Disconnect output from power after
  - Enable group object "Trigger reference movement"
    - Position after reference movement
  - Reversing time
  - Delay time for drive
    - Start-up delay
    - Coasting delay
    - Minimum run time for drive

7.9.3.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Travel time up • Travel time down • Disconnect output from power after • Enable group object "Trigger reference movement" • Reversing time • Delay time for drive

7.9.3.1.1 —

DEPENDENT PARAMETER

Travel time up

This parameter can be used to define how long the blind/shutter takes to move from the lower to the upper end positions. The travel time must first be measured manually.

Note
Physical and weather-related circumstances (frost, UV radiation, long-term use or use of heavy blind/shutter types) mean that differing total travel times may result for a complete movement from the lower end position to the upper end position (up) and from the upper end position to the lower end position (down). The total travel times can be set separately to permit exact positioning of the blind/shutter.

Options
00:01:00 … 00:10:00 hh:mm:ss

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual*

7.9.3.1.2 —

DEPENDENT PARAMETER

Travel time down

This parameter can be used to define how long the blind/shutter takes to move from the upper to the lower end positions. The travel time must first be measured manually.

Note
Physical and weather-related circumstances (frost, UV radiation, long-term use or use of heavy blind/shutter types) mean that differing total travel times may result for a complete movement from the lower end position to the upper end position (up) and from the upper end position to the lower end position (down). The total travel times can be set separately to permit exact positioning of the blind/shutter.

Options
00:01:00 … 00:10:00 hh:mm:ss

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual*

7.9.3.1.3 —

DEPENDENT PARAMETER

Disconnect output from power after

This parameter can be used to define when the output is deenergized after the upper or lower end position is reached.

Note
The drive deenergizes itself off by means of the integrated limit switches after reaching the upper or lower limit position. An overrun time can be set in the parameter Delay time for drive so that the end position is reliably reached. When the drive is switched off, the voltage remains applied for a short time so as to move the drive to the end position in a defined manner. The position calculated in the device is the basis for determining the end position.

Options
End position, no overrun
End position + 2 % overrun
End position + 5 % overrun
End position + 10 % overrun
End position + 20 % overrun
Total travel time + 10% overrun

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual*

7.9.3.1.4 —

DEPENDENT PARAMETER

Enable group object "Trigger reference movement"

This parameter can be used to enable the group object Trigger reference movement .

More information → Reference movement, Page 87.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Position after reference movement

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual*

7.9.3.1.4.1 —

DEPENDENT PARAMETER

Position after reference movement

This parameter can be used to define the blind/shutter position after a reference movement.

Options	
No reaction; remain in reference position	The blind/shutter remains in the upper end position or lower end position as the reference position.
Move to position before reference movement	The blind/shutter is moved to the position it was in before the reference movement.

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Trigger reference movement" \ Option *Yes*

7.9.3.1.5 —

DEPENDENT PARAMETER

Reversing time

This parameter can be used to define the duration of the reversing time.
The reversing time is the required pause while the blind/shutter changes direction. The device must be deenergized during this period.

NOTICE
Setting a reversing time that is too short can damage the connected drive.
► Pay attention to technical data for the connected drive

Note
A reversing tim of 1 second is always used on bus voltage failure. The parameterized value applies during operation with appplied bus voltage.

Options
50 … 500 … 5,000 ms

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual*

7.9.3.1.6 —

DEPENDENT PARAMETER

Delay time for drive

This parameter can be used to define whether the default delay times or the user-defined delay times are to be used.

More information → Start-up and coasting delay and minimum run time, Page 88.

Options	
Default	The following values are used: • Start-up delay: 0 ms • Coasting delay: 0 ms • Minimum run time for drive: 50 ms
Custom	The values can be set individually. The default settings need to be changed only if the blind/shutter is to be positioned very exactly. • Start-up delay • Coasting delay • Minimum run time for drive

Options	
Default	
Custom	If changes are made to these parameters in the user-defined setting, then the technical data of the respective drive manufacturer must be observed. • Start-up delay • Coasting delay • Minimum run time for drive

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual*

7.9.3.1.6.1 —

DEPENDENT PARAMETER

Start-up delay

This parameter can be used to define the duration of start-up delay.

Options
0 … 999 ms

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual* \ Parameter Delay time for drive \ Option *Custom*

7.9.3.1.6.2 —

DEPENDENT PARAMETER

Coasting delay

This parameter can be used to define the duration of the coasting delay.

Options
0 … 999 ms

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual* \ Parameter Delay time for drive \ Option *Custom*

7.9.3.1.6.3 —

DEPENDENT PARAMETER

Minimum run time for drive

This parameter can be used to define the minimum run time for the drive.

NOTICE
Setting a minimum run time that is too short can damage the connected drive.
- ► Pay attention to technical data for the connected drive

Options
40 … 50 … 600 ms

Condition for visibility:
Parameter window Drive \ Parameter Parameter setting \ Option *Individual* \ Parameter Delay time for drive \ Option *Custom*

7.9.4 Parameter window Blind/Shutter

The following settings can be made in the Parameter window Blind/Shutter:

- Move to position
- Enable group objects "Move to pos. height/Move to pos. slat"
- Determine slat adjustment time
- Setting travel range limit
- Set dead times

More information → Blind/slat settings, Page 88.

Note

If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

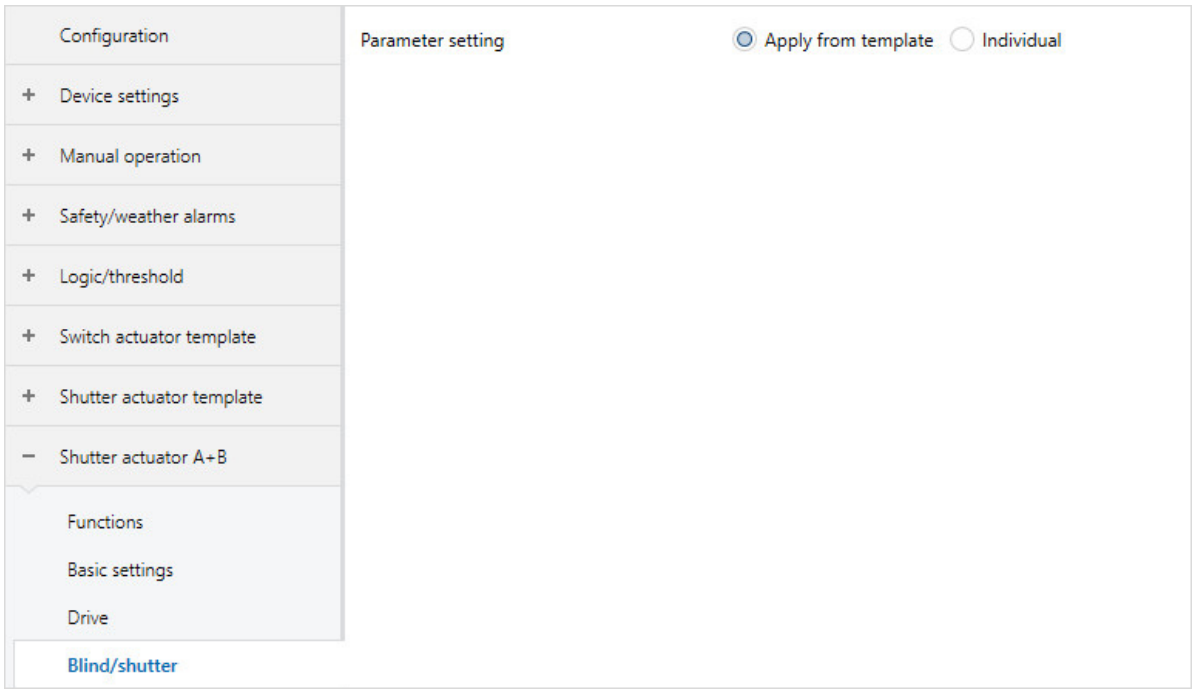

Fig. 42: Parameter window Blind/Shutter

Note

All functions, parameters and group objects in the following section that refer to slat settings are available only in Operating mode *Blind/shutter control with slat adjustment*.

Parameter

- Parameter setting
  - Move to position
  - Enable group objects "Move to pos. height/Move to pos. slat"
  - Determine slat adjustment time
    - Duration of slat adjustment (step)
    - Total duration for slat turning from 0 % - 100 %
  - Number of slat adjustments (from 0 % = open to 100 % = closed)
  - Limit step commands to number of slat adjustments
  - Total turning of slats after downward movement
  - Slat position after reaching lower end position (100 % = disabled)
  - Limit travel range via group object
    - Upper limit (0 % = top; 100 % = bottom)
    - Lower limit (0 % = top; 100 % = bottom)
    - Upper limit valid for automatic sun protection commands
    - Upper limit valid for direct commands
    - Lower limit valid for automatic sun protection commands
    - Lower limit valid for direct commands
  - Set dead times
    - Dead time blind/shutter from bottom until moving up
    - Dead time of slat from 100 % closed until slat turn
    - Slippage of slat on change of direction
    - Slippage of blind/shutter on change of direction
  - Tensioning of the blind/shutter / slot positioning
    - Duration for tensioning

7.9.4.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Move to position • Enable group objects "Move to pos. height/Move to pos. slat" • Determine slat adjustment time • Number of slat adjustments (from 0 % = open to 100 % = closed) • Limit step commands to number of slat adjustments • Total turning of slats after downward movement • Slat position after reaching lower end position (100 % = disabled) • Limit travel range via group object • Set dead times • Tensioning of the blind/shutter / slot positioning

7.9.4.1.1 —

DEPENDENT PARAMETER

Move to position

This parameter can be used to define how the blind/shutter moves to the target position.

More information → Direct and indirect movement to the position, Page 88

Options	
Direct	The target position is approached directly.
Indirectly via upper end position	The blind/shutter moves to the upper end position first, then to the target position.
Indirectly via lower end position	The blind/shutter moves to the lower end position first, then to the target position.
Indirectly via shortest way	The blind/shutter moves to the closer end position, then to the target position.

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.2 —

DEPENDENT PARAMETER

Enable group objects "Move to pos. height/Move to pos. slat"

This parameter can be used to enable the group objects Move to position height and Move to position slat .

Note
The group object Move to position slat is available only in the Operating mode *Blind/shutter control with slat adjustment*.

Options	
No	The group objects will not be enabled.
Yes	The group objects will be enabled.

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.3 —

DEPENDENT PARAMETER

Determine slat adjustment time

This parameter can be used to define how the slat adjustment time is determined.

The slat adjustment time is the time required to open or close the slats completely.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options	
Via duration of slat adjustment (step)	The slat adjustment time is calculated using the duration of a single slat adjustment (step) and the number of slat adjustments. Refer to the motor's data sheet for the duration of a single slat adjustment. The duration of a single slat adjustment multiplied by the number of slat adjustments results in the slat adjustment time. • Duration of slat adjustment (step)
Via total duration for slat turning	The slat adjustment time is determined via the total duration for slat turning and the number of slat adjustments. The total duration for slat turning must be determined manually. • Total duration for slat turning from 0 % - 100 %

Options	
Via duration of slat adjustment (step)	• Duration of slat adjustment (step)
Via total duration for slat turning	The device cannot process times shorter than 50 ms. The calculated time (quotient of total duration for slat turning and the number of slat adjustments) must therefore always be longer than 50 ms. • Total duration for slat turning from 0 % - 100 %

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.3.1 —

DEPENDENT PARAMETER

Duration of slat adjustment (step)

This parameter can be used to define the duration of a single slat adjustment (Step).

Options
50 … 200 … 1,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Determine slat adjustment time \ Option *Via duration of slat adjustment (step)*

7.9.4.1.3.2 —

DEPENDENT PARAMETER

Total duration for slat turning from 0 % - 100 %

The total duration for slat turning can be defined with this parameter.

Options
50 … 1,500 … 60,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Determine slat adjustment time \ Option *Via total duration for slat turning*

7.9.4.1.4 —

DEPENDENT PARAMETER

Number of slat adjustments (from 0 % = open to 100 % = closed)

This parameter can be used to define the number of slat adjustments required to move the slats from fully closed to fully open.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
1 … 7 … 60

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.5 —

DEPENDENT PARAMETER

Limit step commands to number of slat adjustments

This parameter can be used to define whether Step commands are limited to the set number of slat adjustments.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options	
No	The number of slat adjustments (steps) is not limited to the value in the parameter Number of slat adjustments (from 0 % = open to 100 % = closed).
Yes	The number of slat adjustments (steps) is limited to the value in the parameter Number of slat adjustments (from 0 % = open to 100 % = closed).

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.6 —

DEPENDENT PARAMETER

Total turning of slats after downward movement

This parameter can be used to release slats that became stuck during a movement. This function is required mainly for slats between the panes of a window.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options	
No	The slats are not adjusted after a downward movement.
Yes	The slats are fully adjusted once (closed – open – closed) after a downward movement. The slats are not adjusted if a downward movement is interrupted by a stop command.

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.7 —

DEPENDENT PARAMETER

Slat position after reaching lower end position (100 % = disabled)

The slats are normally closed when the blind/shutter reaches the lower end position. This parameter can be used to define the slat position that the blind/shutter is to assume after reaching the lower end position.

- 100 %: The slats are closed
- 1 … 99 %: The slats will be moved to the corresponding intermediate position
- 0 %: The slats are fully open

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.8 —

DEPENDENT PARAMETER

Limit travel range via group object

This parameter can be used to limit the travel range of blind/shutter, e.g. to prevent the blind/shutter from moving all the way down when a terrace door is open.

More information → Travel range limit, Page 89.

Options	
No	The travel range is not limited.
Move blind/shutter Up-Down limited	The group object Move blind/shutter Up-Down limited is enabled. The limit applies to: • Group object Move blind/shutter Up-Down limited • Group object Scene 1 … 64 The limit does not apply to: • Group object Move blind/shutter Up-Down • Group object Move to position height • → Central group objects, Page 83 • → Reaction on bus voltage failure/recovery, download and ETS reset, Page 97 • → Safety functions of Shutter Actuator, Page 77 • → Manual operation, Page 242 • → Automatic sun protection, Page 90 • Settings in the parameter Move to position • → Reference movement, Page 87 • → Travel time determination, Page 86 • Upper limit (0 % = top; 100 % = bottom) • Lower limit (0 % = top; 100 % = bottom)
Enable limitation	The group object Enable limitation is enabled. The limit does not apply to: • → Reaction on bus voltage failure/recovery, download and ETS reset, Page 97 • → Safety functions of Shutter Actuator, Page 77 • → Manual operation, Page 242 • Move to position • → Reference movement, Page 87 • → Travel time determination, Page 86 • Upper limit (0 % = top; 100 % = bottom) • Lower limit (0 % = top; 100 % = bottom) • Upper limit valid for automatic sun protection commands • Upper limit valid for direct commands • Lower limit valid for automatic sun protection commands • Lower limit valid for direct commands

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.8.1 —

DEPENDENT PARAMETER

Upper limit (0 % = top; 100 % = bottom)

This parameter can be used to define the upper limit of the travel range.

Options
0 … 100 %

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Move blind/shutter Up-Down limited*

7.9.4.1.8.2 —

DEPENDENT PARAMETER

Lower limit (0 % = top; 100 % = bottom)

This parameter can be used to define the lower limit of the travel range.

Options
0 … 100 %

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Move blind/shutter Up-Down limited*

7.9.4.1.8.3 —

DEPENDENT PARAMETER

Upper limit valid for automatic sun protection commands

This parameter can be used to define whether the upper travel range limit applies to automatic commands.

More information → Automatic sun protection, Page 90

Options
No
Yes

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Enable limitation*

7.9.4.1.8.4 —

DEPENDENT PARAMETER

Upper limit valid for direct commands

This parameter can be used to define whether the upper travel range limit applies to direct commands.

More information → Direct operation, Page 91

Options
No
Yes

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Enable limitation*

7.9.4.1.8.5 —

DEPENDENT PARAMETER

Lower limit valid for automatic sun protection commands

This parameter can be used to define whether the lower travel range limit applies to automatic commands.

More information → Automatic sun protection, Page 90

Options
No
Yes

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Enable limitation*

7.9.4.1.8.6 —

DEPENDENT PARAMETER

Lower limit valid for direct commands

This parameter can be used to define whether the upper travel range limit applies to direct commands.

More information → Direct operation, Page 91

Options
No
Yes

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Enable limitation*

7.9.4.1.9 —

DEPENDENT PARAMETER

Set dead times

This parameter can be used to define whether the default dead times or user-defined dead times are to be used.

More information → Dead times, Page 89.

Note
Incorrect settings in the parameters can cause malfunctions. Pay attention to technical data for the connected drive when changing these parameters.

Options	
Default	• The following values are used: • Blind/shutter dead time: 0 ms • Slat dead time: 0 ms • Slippage of blind/shutter on change of direction: 0 ms
Custom	The values can be set individually. • Dead time blind/shutter from bottom until moving up • Dead time of slat from 100 % closed until slat turn • Slippage of slat on change of direction • Slippage of blind/shutter on change of direction

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.9.1 —

DEPENDENT PARAMETER

Dead time blind/shutter from bottom until moving up

This parameter can be used to set the dead time that the blind/shutter requires between a movement telegram and the first upward movement.

Example:
The slatted curtain is in the lower end position (= 100% down). An Up telegram is received. The motor shaft starts turning. However, the slatted curtain remains unchanged in its lower end position and begins to move up again only after the dead time elapses.

Options
0 … 5,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Set dead times \ Option *Custom*

7.9.4.1.9.2 —

DEPENDENT PARAMETER

Dead time of slat from 100 % closed until slat turn

This parameter can be used to set the dead time that is required for a slat adjustment from fully closed (100%) to the first adjustment of the slat after receipt of a telegram for slat adjustment.

Example:
The slats are fully closed (= 100 %). The Slat adjustment Up telegram is received. The motor shaft starts turning. However, the slats stay closed and adjustment begins only after the dead time expires.

Options
0 … 5,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Set dead times \ Option *Custom*

7.9.4.1.9.3 —

DEPENDENT PARAMETER

Slippage of slat on change of direction

This parameter can be used to set the time required to compensate for the slat play after a change of direction.

Example:
The slats are open (position 50 %). The Slat adjustment Down telegram is received. The slats close to 60 %.
A Slat adjustment Up telegram (=direction change) is received next. Owing to the slat play during a change of direction, the slats will open only to 55% instead of returning to the slat open position (= 50%).
In order to position the slats exactly, the slat play during a change of direction must be compensated.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 5,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Set dead times \ Option *Custom*

7.9.4.1.9.4 —

DEPENDENT PARAMETER

Slippage of blind/shutter on change of direction

This parameter can be used to set the time required to compensate for the blind/shutter play after a change of direction.

Example:
The blind/shutter is in position 50 %. A Down telegram is received. The blind/shutter closes to 60 %. An Up telegram (=direction change) is received next. Owing to the blind/shutter play during a change of direction, the blind/shutter will open only to 55% instead of returning to the 50% position.
In order to position the blind/shutter exactly, the blind/shutter play during a change of direction must be compensated.

Note
This parameter is available only in Operating mode *Blind/shutter control without slat adjustment*.

Options
0 … 5,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Set dead times \ Option *Custom*

7.9.4.1.10 —

DEPENDENT PARAMETER

Tensioning of the blind/shutter / slot positioning

This parameter can be used to define whether to tension the blind/shutter or position the slots.

More information → Tensioning of the blind/shutter / slot positioning, Page 90.

Note
This parameter is available only in Operating mode *Blind/shutter control without slat adjustment*.

Options	
No	
After each down command	Tensioning/slot positioning is performed after each downward movement. • Duration for tensioning
Only after reaching lower end position	Tensioning/slot positioning is performed only after a downward movement to the lower end position. • Duration for tensioning

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual*

7.9.4.1.10.1 —

DEPENDENT PARAMETER

Duration for tensioning

This parameter can be used to set the time for which the blind/shutter is to move in the opposite direction after moving down.

Options
0 … 5,000 ms

Condition for visibility:
Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Tensioning of the blind/shutter / slot positioning \ Option *After each down command*

7.9.5 Parameter window Safety/Weather

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Safety/Weather alarms: *Yes*.

The following settings can be made in the Parameter window Safety/Weather:
- Reaction of the Shutter Actuator output pair and the blind/shutter to weather alarms
- Disable and forced operation of the Shutter Actuator output pair
- Blind/shutter position after cancellation of disabling, forced operation and weather alarms
- Order of priority for weather alarms

More information → Safety functions of Shutter Actuator, Page 77.

Note
If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

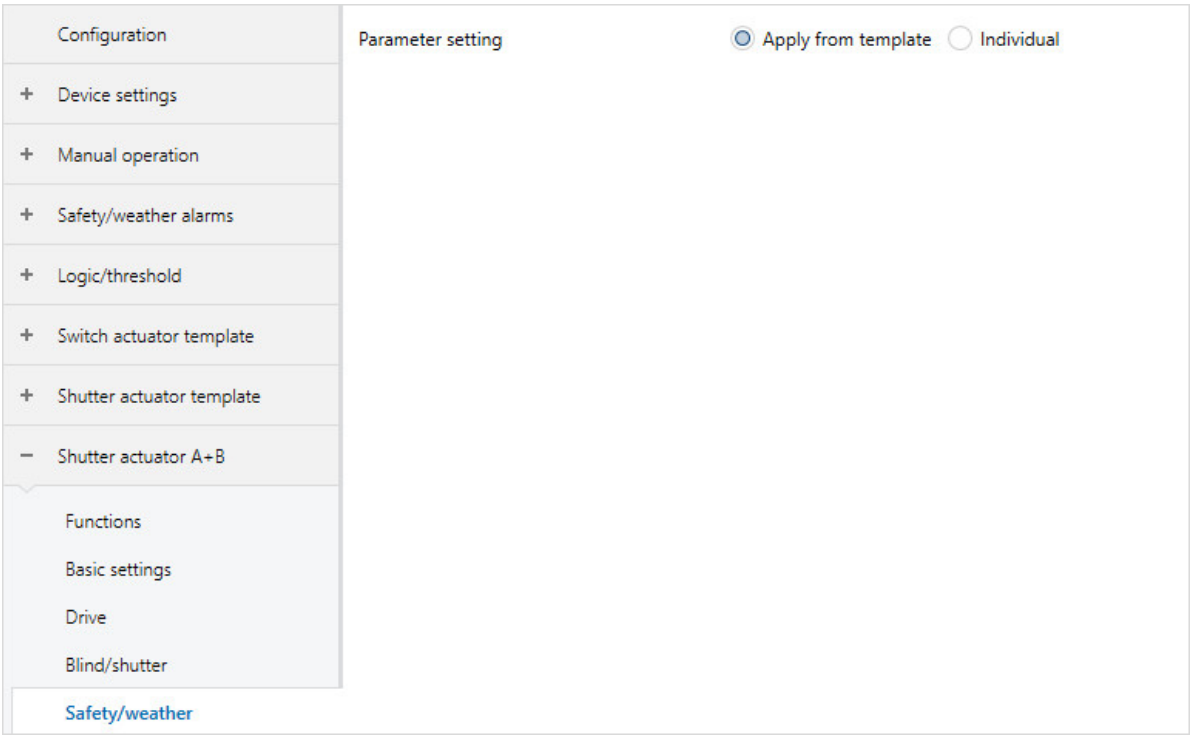

Fig. 43: Parameter window Safety/Weather

Parameter

- Parameter setting
  - Output reacts to wind alarm x
    - Position on wind alarm
      - Scene assignment
      - Position height (0 % = top; 100 % = bottom)
      - Position slat (0 % = open; 100 % = closed)
  - Position for rain alarm
    - Scene assignment
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Position for frost alarm
    - Scene assignment
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Position on disabling
    - Scene assignment
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Forced operation (1 bit / 2 bit)
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
    - Forced operation active ON
      - Position height (0 % = top; 100 % = bottom)
      - Position slat (0 % = open; 100 % = closed)
    - Forced operation active OFF
      - Position height (0 % = top; 100 % = bottom)
      - Position slat (0 % = open; 100 % = closed)
  - Position on cancellation of weather alarm, disabling and forced operation
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Automatic sun protection on cancellation of weather alarms, disabling and forced operation
  - Order of priority of weather alarm, disabling and forced operation

7.9.5.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Output reacts to wind alarm x • Position for rain alarm • Position for frost alarm • Position on disabling • Forced operation (1 bit / 2 bit) • Position on cancellation of weather alarm, disabling and forced operation • Automatic sun protection on cancellation of weather alarms, disabling and forced operation • Order of priority of weather alarm, disabling and forced operation

7.9.5.1.1 —

DEPENDENT PARAMETER

Output reacts to wind alarm x

This parameter can be used to define whether the Shutter Actuator output pair reacts to the group objects Wind alarm x (x = 1, 2, or 3).
The values of the assigned group objects are linked by a logic OR.

Options
No
Yes

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.1.1 —

DEPENDENT PARAMETER

Position on wind alarm

This parameter can be used to define the blind/shutter position during a wind alarm.

Note
In case of a weather alarm, the blind/shutter cannot be operated via other group objects, manual operation or the i-bus® Tool until the weather alarm is canceled. Travel range limits are not taken into account with weather alarms.

Options	
No reaction/deactivated	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The Shutter Actuator output pair does not react to the alarm.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Unchanged (disable)	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The blind/shutter is then disabled in this position.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed. • Scene assignment
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to wind alarm x \ Option *Yes*

7.9.5.1.1.1.1 —

DEPENDENT PARAMETER

Scene assignment

This parameter can be used to define which scene number is retrieved.

Note
The scene assignment must be defined in Parameter window Scene assignments, in the parameter Enable scene assignment x.

Options
1 ... 16

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to wind alarm x \ Option *Yes* \ Parameter Position on wind alarm \ Option *Scene assignment*

7.9.5.1.1.1.2 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to wind alarm x \ Option *Yes* \ Parameter Position on wind alarm \ Option *Individual position*

7.9.5.1.1.1.3 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to wind alarm x \ Option *Yes* \ Parameter Position on wind alarm \ Option *Individual position*

7.9.5.1.2 —

DEPENDENT PARAMETER

Position for rain alarm

This parameter can be used to define the blind/shutter reaction during a rain alarm.

> **Note**
> In case of a weather alarm, the blind/shutter cannot be operated via other group objects, manual operation or the i-bus® Tool until the weather alarm is canceled. Travel range limits are not taken into account with weather alarms.

Options	
No reaction/deactivated	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The Shutter Actuator output pair does not react to the alarm.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Unchanged (disable)	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The blind/shutter is then disabled in this position.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed. • Scene assignment
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.2.1 —

DEPENDENT PARAMETER

Scene assignment

This parameter can be used to define which scene number is retrieved.

> **Note**
> The scene assignment must be defined in Parameter window Scene assignments, in the parameter Enable scene assignment x.

Options
1 … 16

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for rain alarm \ Option *Scene assignment*

7.9.5.1.2.2 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for rain alarm \ Option *Individual position*

7.9.5.1.2.3 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for rain alarm \ Option *Individual position*

7.9.5.1.3 —

DEPENDENT PARAMETER

Position for frost alarm

This parameter can be used to define the blind/shutter reaction during a frost alarm.

Note
In case of a weather alarm, the blind/shutter cannot be operated via other group objects, manual operation or the i-bus® Tool until the weather alarm is canceled. Travel range limits are not taken into account with weather alarms.

Options	
No reaction/deactivated	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The Shutter Actuator output pair does not react to the alarm.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Unchanged (disable)	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The blind/shutter is then disabled in this position.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed. • Scene assignment
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.3.1 —

DEPENDENT PARAMETER

Scene assignment

This parameter can be used to define which scene number is retrieved.

Note
The scene assignment must be defined in Parameter window Scene assignments, in the parameter Enable scene assignment x.

Options
1 … 16

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for frost alarm \ Option *Scene assignment*

7.9.5.1.3.2 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for frost alarm \ Option *Individual position*

7.9.5.1.3.3 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for frost alarm \ Option *Individual position*

7.9.5.1.4 —

DEPENDENT PARAMETER

Position on disabling

This parameter can be used to define the blind/shutter reaction upon receipt of the value 1 on the group object Disable . The blind/shutter is moved to the defined position and disabled in this position.

Note
If the blind/shutter is disabled in its position, it cannot be operated via other group objects, manual operation or the i-bus® Tool until disabling is canceled. Travel range limits are not taken into account during disabling.
Higher-priority safety functions will continue to run.

Options	
No reaction/deactivated	The Shutter Actuator output pair is not disabled; the function *Disable* is deactivated.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Unchanged (disable)	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged. The blind/shutter is then disabled in this position.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed. • Scene assignment
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.4.1 —

DEPENDENT PARAMETER

Scene assignment

This parameter can be used to define which scene number is retrieved.

Note
The scene assignment must be defined in Parameter window Scene assignments, in the parameter Enable scene assignment x.

Options
1 … 16

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position on disabling \ Option *Scene assignment*

7.9.5.1.4.2 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position on disabling \ Option *Individual position*

7.9.5.1.4.3 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 ... 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position on disabling \ Option *Individual position*

7.9.5.1.5 —

DEPENDENT PARAMETER

Forced operation (1 bit / 2 bit)

This parameter can be used to define whether 1-bit or 2-bit forced operation is used.

More information → Forced operation, Page 79.

Note
When the function *Forced operation* is active, the output can no longer be operated via other group objects or manual operation until forced operation has been canceled.
Higher-priority safety functions will continue to run.

Options	
Deactivated	The function *Forced operation* is deactivated.
Activated 1 bit – 0 active	1-bit forced operation is used and is activated when the value 0 is received. The group object Forced operation, 1-bit is enabled. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Activated 1 bit – 1 active	1-bit forced operation is used and is activated when the value 1 is received. The group object Forced operation, 1-bit is enabled. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Activated 2 bit	2-bit forced operation is used. The group object Forced operation, 2-bit is enabled. The value of the group object determines the switching state. • Forced operation active ON • Forced operation active OFF

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.5.1 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 … 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 1 bit – 0 active*

7.9.5.1.5.2 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 1 bit – 0 active*

7.9.5.1.5.3 —

DEPENDENT PARAMETER

Forced operation active ON

The parameters Position height (0 % = top; 100 % = bottom) and Position slat (0 % = open; 100 % = closed) can be used to define the position of the blind/shutter and the slats if 2-bit forced operation is in the *Active ON* state.

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 2 bit*

7.9.5.1.5.4 —

DEPENDENT PARAMETER

Forced operation active OFF

The parameters Position height (0 % = top; 100 % = bottom) and Position slat (0 % = open; 100 % = closed) can be used to define the position of the blind/shutter and the slats if 2-bit forced operation is in the *Active OFF* state.

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 2 bit*

7.9.5.1.6 —

DEPENDENT PARAMETER

Position on cancellation of weather alarm, disabling and forced operation

This parameter can be used to define the blind/shutter reaction after cancellation of weather alarms or the functions *Disable* and *Forced operation*.

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed.
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Refreshed KNX state	The blind/shutter moves to the position defined by the refreshed KNX state. More information → Refreshed KNX state, Page 83. Telegrams that were received during an active weather alarm or the functions *Disable* and *Forced operation* on the group objects Move blind/shutter Up-Down and Slat adjustment/stop Up-Down .

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.6.1 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 … 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position on cancellation of weather alarm, disabling and forced operation \ Option *Individual position*

7.9.5.1.6.2

—

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position on cancellation of weather alarm, disabling and forced operation \ Option *Individual position*

7.9.5.1.7

—

DEPENDENT PARAMETER

Automatic sun protection on cancellation of weather alarms, disabling and forced operation

This parameter can be used to define whether the *Automatic sun protection* function is deactivated after the cancellation of weather alarms or the *Disable* and *Forced operation* functions.

Note
This parameter is visible only if, in the Parameter window Functions, the following option was set for the parameterEnable function Automatic sun protection: *Yes*.

Options
No
Yes

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.5.1.8

—

DEPENDENT PARAMETER

Order of priority of weather alarm, disabling and forced operation

This parameter can be used to define the order of priority of the safety functions. If more than one safety function is active at the same time, only the safety function with the highest priority is executed.

Options
1.Weather alarm - 2.Disable - 3.Forced operation
1.Weather alarm – 2.Forced operation – 3.Disable
1.Disable – 2.Weather alarm – 3.Forced operation
1.Disable – 2.Forced operation – 3.Weather alarm
1.Forced operation - 2.Weather alarm - 3.Disable
1.Forced operation - 2.Disable - 3.Weather alarm

Condition for visibility:
Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual*

7.9.6 Parameter window Automatic sun protection

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Automatic sun protection: *Yes*.

The following settings can be made in the Parameter window Automatic sun protection:
- Settings for automatic sun protection control
- Switchover between *Automatic operation* and *Direct operation*
- Reaction of the blind/shutter to sunlight

More information → Automatic sun protection, Page 90.

Note
If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

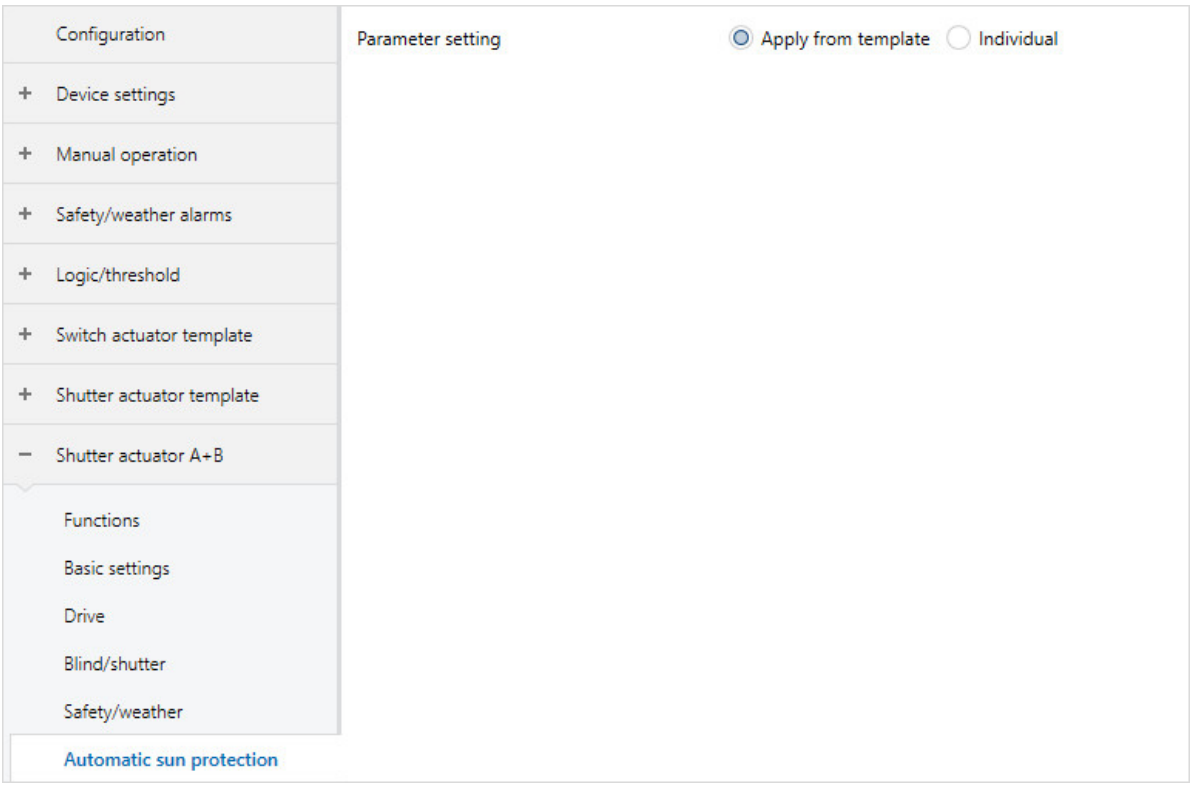

Fig. 44: Parameter window Automatic sun protection

Parameter

- Parameter setting
  - Deactivation of automatic sun protection
    - Automatic reactivation of automatic sun protection
      - Time for automatic reactivation of automatic sun protection
  - Enable group object "Disable automatic sun protection"
  - Enable group object "Disable direct operation"
  - Position for sun = 1 (sun)
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Delay for sun = 1
  - Position for sun = 0 (no sun)
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)
  - Delay for sun = 0
  - Read activated automatic sun protection group objects after bus voltage recovery and download

7.9.6.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Deactivation of automatic sun protection • Enable group object "Disable automatic sun protection" • Enable group object "Disable direct operation" • Position for sun = 1 (sun) • Delay for sun = 1 • Position for sun = 0 (no sun) • Delay for sun = 0 • Read activated automatic sun protection group objects after bus voltage recovery and download

7.9.6.1.1 —

DEPENDENT PARAMETER

Deactivation of automatic sun protection

This parameter can be used to define when the *Automatic sun protection* is deactivated.

If the function *Automatic sun protection* is activated, telegrams received on the direct group objects (→ Direct operation, Page 91) are ignored. After deactivation of automatic sun protection, the blind/shutter remains in its current position and can be activated via the direct group objects.

Reference movements can be performed even while automatic sun protection is active.

Options	
Via group object	Automatic sun protection is activated (1) or deactivated (0) exclusively by a telegram on the group object Activation of automatic sun protection .
Via group object and direct command	Automatic sun protection is activated (1) or deactivated (0) by a telegram on the group object Activation of automatic sun protection . Additionally, telegrams received on the direct group objects lead to deactivation of automatic sun protection. • Automatic reactivation of automatic sun protection

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.1.1 —

DEPENDENT PARAMETER

Automatic reactivation of automatic sun protection

If automatic sun protection is deactivated via one of the direct group objects, automatic control can be reactivated automatically after a selectable time.

Options
No
Yes

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Deactivation of automatic sun protection \ Option *Via group object and direct command*

7.9.6.1.1.1.1 —

DEPENDENT PARAMETER

Time for automatic reactivation of automatic sun protection

Options
00:10:00 … 05:00:00 … 99:59:59 hh:mm:ss

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Deactivation of automatic sun protection \ Option *Via group object and direct command* \ Parameter Automatic reactivation of automatic sun protection \ Option *Yes*

7.9.6.1.2 —

DEPENDENT PARAMETER

Enable group object "Disable automatic sun protection"

This parameter can be used to define whether the group object Disable automatic sun protection is enabled. This group object can be used to disable changing to automatic operation.

Options	
No	The group object is not enabled.
Yes	The group object is enabled.

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.3 —

DEPENDENT PARAMETER

Enable group object "Disable direct operation"

This parameter can be used to define whether the group object Disable direct operation is enabled. This group object can be used to disable changing to direct operation.

Options	
No	The group object is not enabled.
Yes	The group object is enabled.

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.4 —

DEPENDENT PARAMETER

Position for sun = 1 (sun)

This parameter can be used to define how the blind/shutter reacts when the value 1 is received on group object Sun .

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed.
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Receive height and slat via group objects	The required blind/shutter and slat positions are received via the group objects Sun: Move to height and Sun: Move slat .
Receive only slat via group object	The required slat position is received via the group object Sun: Move slat .

Options	
No reaction	
Up	
Down	
Stop	
Scene assignment	
Individual position	• Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Receive height and slat via group objects	The group object Sun: Move slat is available only in the Operating mode *Blind/shutter control with slat adjustment*.
Receive only slat via group object	The group object Sun: Move slat is available only in the Operating mode *Blind/shutter control with slat adjustment*.

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.4.1 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 … 100 %

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for sun = 1 (sun) \ Option *Individual position*

7.9.6.1.4.2 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for sun = 1 (sun) \ Option *Individual position*

7.9.6.1.5 —

DEPENDENT PARAMETER

Delay for sun = 1

This parameter can be used to set the delay time after which the blind/shutter moves into position when the sun shines. This can serve to avoid unnecessary position changes due to brief periods of sunshine on cloudy days.

Options
00:00:00 … 01:40:00 hh:mm:ss

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.6 —

DEPENDENT PARAMETER

Position for sun = 0 (no sun)

This parameter can be used to define how the blind/shutter reacts when the value 0 is received on group object Sun .

Options	
No reaction	If the blind/shutter is moving, it will continue until reaching the target position. If the blind/shutter is at rest, its position will remain unchanged.
Up	The blind/shutter moves to the upper end position
Down	The blind/shutter moves to the lower end position
Stop	If the blind/shutter is moving, it will be stopped. If the blind/shutter is at rest, its position will remain unchanged.
Scene assignment	The scene assigned to the Shutter Actuator output pair is performed.
Individual position	The required positions of the blind/shutter and slats (depending on operating mode) can be defined. • Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Receive height and slat via group objects	The required blind/shutter and slat positions are received via the group objects Sun: Move to height and Sun: Move slat .
Receive only slat via group object	The required slat position is received via the group object Sun: Move slat .

Options	
No reaction	
Up	
Down	
Stop	
Scene assignment	
Individual position	• Position height (0 % = top; 100 % = bottom) • Position slat (0 % = open; 100 % = closed)
Receive height and slat via group objects	The group object Sun: Move slat is available only in the Operating mode *Blind/shutter control with slat adjustment*.
Receive only slat via group object	The group object Sun: Move slat is available only in the Operating mode *Blind/shutter control with slat adjustment*.

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.6.1 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

The position will be approached only with deactivated automatic sun protection.

Options
0 … 100 %

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for sun = 0 (no sun) \ Option *Individual position*

7.9.6.1.6.2 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

The position will be approached only with deactivated automatic sun protection.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 … 100 %

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Position for sun = 0 (no sun) \ Option *Individual position*

7.9.6.1.7 —

DEPENDENT PARAMETER

Delay for sun = 0

This parameter can be used to set the delay time after which the blind/shutter moves into position when the sun does not shine. This can serve to avoid unnecessary position changes due to brief periods of cloud shadowing.

Options
00:00:00 … 01:40:00 hh:mm:ss

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.6.1.8 —

DEPENDENT PARAMETER

Read activated automatic sun protection group objects after bus voltage recovery and download

This parameter can be used to define whether the active automatic group objects are read after bus voltage recovery.

Note
The read flags must be set for the corresponding group objects of the sending device.

Options
No
Yes

Condition for visibility:
Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual*

7.9.7 Parameter window Status messages

The Parameter window Status messages can be used to enable group objects for status messages and to define their sending behavior.

Note
If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

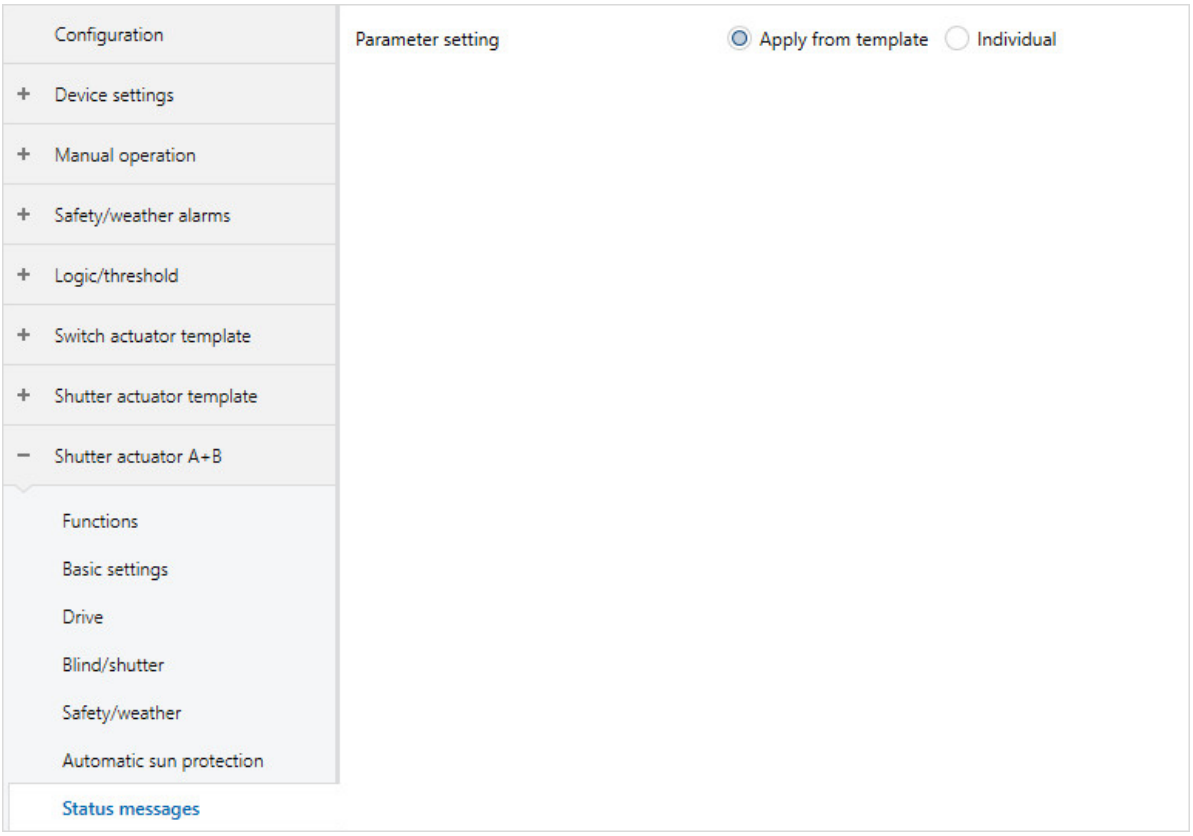

Fig. 45: Parameter window Status messages

Parameter

- Parameter setting
  - Enable group objects "Status Height/Slat"
    - Send value of group object
  - Enable group objects "Status Upper/Lower end pos."
    - Send value of group object
  - Enable group object "Status Operability"
    - Send value of group object
  - Enable group object "Status Automatic sun protection"
    - Send value of group object
  - Enable group object "Status information"
    - Send value of group object

7.9.7.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Enable group objects "Status Height/Slat" • Enable group objects "Status Upper/Lower end pos." • Enable group object "Status Operability" • Enable group object "Status Automatic sun protection" • Enable group object "Status information"

7.9.7.1.1 —

DEPENDENT PARAMETER

Enable group objects "Status Height/Slat"

This parameter can be used to enable the group objects Status Height and Status Slat.

The output sends the relative blind/shutter position and the slat position on two separate group objects. Each position is sent as a 1-byte value (0 % … 100 %).

The following applies to the blind/shutter position: The value 0% corresponds to the upper end position; the value 100% corresponds to the lower end position.

The following applies to slat position: The value 0% corresponds to the open slat position; the value 100% corresponds to the closed slat position.

Note
The group object Status Slat is available only in the Operating mode *Blind/shutter control with slat adjustment*.

Options	
No	The group objects will not be enabled.
Yes	The group objects will be enabled. • Send value of group object

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual*

7.9.7.1.1.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Status Height/Slat" \ Option *Yes*

7.9.7.1.2 —

DEPENDENT PARAMETER

Enable group objects "Status Upper/Lower end pos."

This parameter can be used to enable the group objects Status Upper end position and Status Lower end position .

The output sends the value 1 on these group objects when the blind/shutter is in the respective end position. The blind/shutter is in an intermediate position if the value 0 is sent on both group objects.

These communication objects can be used for mutual interlocking of individual outputs by means of a logical connection.

Example:
An awning must not be moved when the window is open. Conversely, a drive must not open the window when the awning is down.

Options	
No	The group objects will not be enabled.
Yes	The group objects will be enabled. • Send value of group object

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual*

7.9.7.1.2.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Status Upper/Lower end pos." \ Option *Yes*

7.9.7.1.3 —

DEPENDENT PARAMETER

Enable group object "Status Operability"

This parameter can be used to enable the group object Status Operability . This group object indicates whether KNX operation of the output is enabled or disabled.

KNX operation is disabled under the following conditions:
- Safety functions active (weather alarm, disabling or forced operation)
- Operating mode *Manual operation* active
- KNX operation is disabled via group objects (Disable automatic sun protection and Disable direct operation)

This group object can be used to have an LED on the button indicate to the user that operation of the output is not possible using this button and that automatic control cannot be activated either.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Send value of group object

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual*

7.9.7.1.3.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status Operability" \ Option *Yes*

7.9.7.1.4 —

DEPENDENT PARAMETER

Enable group object "Status Automatic sun protection"

This parameter can be used to enable the group object Status Automatic sun protection . This group object indicates whether automatic control of the output is activated or deactivated.

This group object can be used to have an LED on the button to indicate the status of automatic control to the user.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Send value of group object

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual*

7.9.7.1.4.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status Automatic sun protection" \ Option *Yes*

7.9.7.1.5 —

DEPENDENT PARAMETER

Enable group object "Status information"

This parameter can be used to enable the group object Status information . This group object can be used to send or request the device's status.

More information → Code table for 8-bit status byte (Switch), Page 251.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Send value of group object

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual*

7.9.7.1.5.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status information" \ Option *Yes*

7.9.8 Parameter window Scene assignments

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Scenes: *Yes*.

Up to 64 different scenes can be created and assigned to the Shutter Actuator output pair in the Parameter window Scene assignments.

More information → Scenes, Page 92.

Note
If several Shutter Actuator output pairs are to be set to the same values, parameterization can be performed in Parameter window Shutter Actuator template.

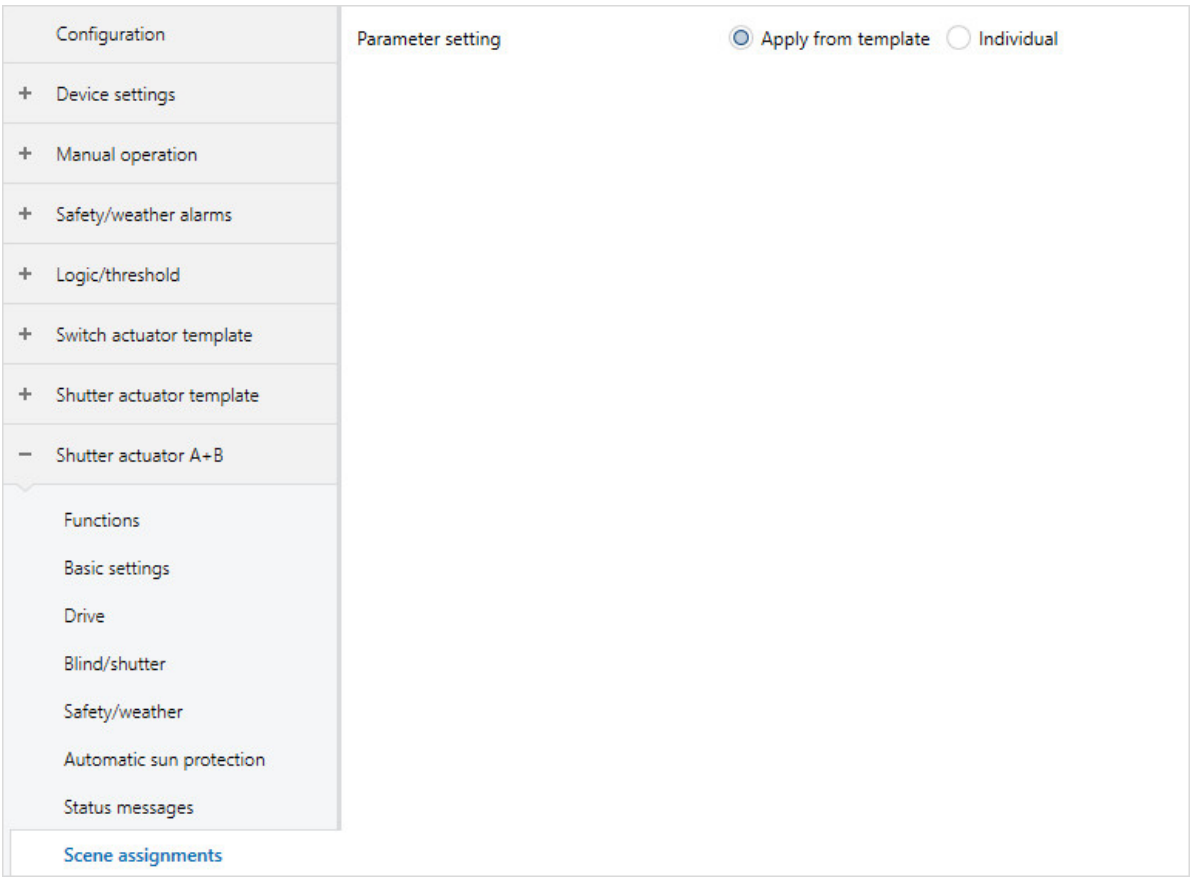

Fig. 46: Parameter window Scene assignments

Parameter

- Parameter setting
  - Overwrite scenes on download
  - Enable scene assignment x
    - Scene retrieval additionally via group object
    - Scene number
    - Delay
    - Position height (0 % = top; 100 % = bottom)
    - Position slat (0 % = open; 100 % = closed)

7.9.8.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Overwrite scenes on download • Enable scene assignment x

7.9.8.1.1 —

DEPENDENT PARAMETER

Overwrite scenes on download

This parameter can be used to define whether the scenes in the device are overwritten during a download.

Options
No
Yes

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual*

7.9.8.1.2 —

DEPENDENT PARAMETER

Enable scene assignment x

This parameter can be used to enable scene x (x = 1 … 64) and assign it to the Shutter Actuator output pair.

Note
The default value for scene assignment 2 … 16 is No. Scenes 2 … 16 can be enabled only one after the other.

Options
No
Yes

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual*

7.9.8.1.2.1 —

DEPENDENT PARAMETER

Scene retrieval additionally via group object

This parameter can be used to define whether retrieval of the scene assignment is additionally possible via the group object Retrieve scene assignment x .

Options
No
Yes

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.9.8.1.2.2 —

DEPENDENT PARAMETER

Scene number

The scene number (1 … 64) can be created and assigned to the output using this parameter.

Options
1 … 64

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.9.8.1.2.3 —

DEPENDENT PARAMETER

Delay

This parameter can be used to define the delay with which the associated reaction takes place after scene retrieval.

Note
The delay can be disabled with the group object Disable delay for switching ON and OFF .

Options
00:00:00 … 12:00:00 hh:mm:ss

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.9.8.1.2.4 —

DEPENDENT PARAMETER

Position height (0 % = top; 100 % = bottom)

This parameter can be used to define the position to which the blind/shutter is moved.

Options
0 …50…100 %

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.9.8.1.2.5 —

DEPENDENT PARAMETER

Position slat (0 % = open; 100 % = closed)

This parameter can be used to define the position to which the blind/shutter slats are moved.

Note
This parameter is available only in Operating mode *Blind/shutter control with slat adjustment*.

Options
0 …50…100 %

Condition for visibility:
Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.10 Parameter window Switch Actuator A

Note
The parameter windows and the structure of the parameters are identical for all outputs. Therefore, only one output will be described below by way of example.

Note
All outputs are set as Shutter Actuator output pairs in the factory setting.
- In order to use an output pair as Shutter Actuator outputs, open Parameter window Shutter Actuator A+B \ Parameter window Functions and select the following option for the parameter Application: *Switch Actuator*.

The functions can be set individually for each Shutter Actuator output inParameter window Switch Actuator A and the subordinate parameter windows.

Note
If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

7.10.1 Parameter window Functions

The following settings can be made in the Parameter window Functions:
- Selection of application
- Selection of operating mode
- Enabling of functions

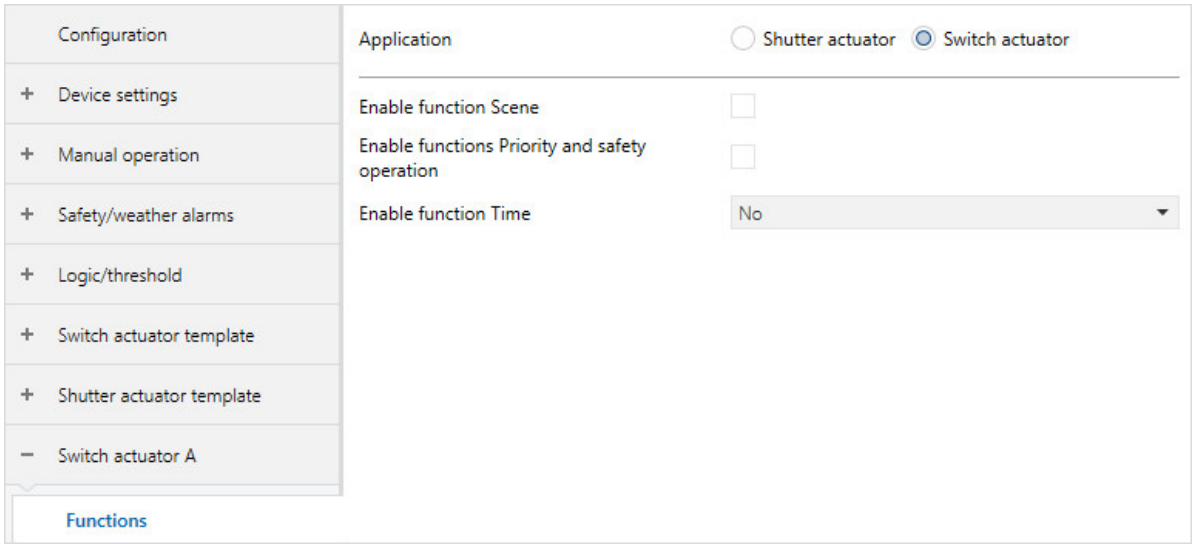

Fig. 47: Parameter window Functions

Parameter
- Application
  - Enable function Scenes
    - Visibility of Switch Actuator
  - Enable function Safety
    - Visibility of Switch Actuator
  - Enable function Time
    - Visibility of Switch Actuator

7.10.1.1 Application

This parameter can be used to define whether the output pair is used as a Shutter Actuator output pair or as two separate Shutter Actuator outputs.

Options
Switch Actuator
Shutter Actuator

7.10.1.1.1 —

DEPENDENT PARAMETER

Enable function Scenes

This parameter can be used to enable the function *Scenes*, the associated Parameter window Scene assignment and the group object Scene 1…64 . The scene assignments and the reaction on scene retrieval are defined in Parameter window Scene assignment.

Options
No
Yes

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Switch Actuator*

7.10.1.1.2 —

DEPENDENT PARAMETER

Enable function Safety

This parameter can be used to enable the function *Safety* and the associated Parameter window Safety. The output response is defined in Parameter window Safety.

Options
No
Yes

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Switch Actuator*

7.10.1.1.3 —

DEPENDENT PARAMETER

Enable function Time

This parameter can be used to enable one of the following time functions:
- Staircase lighting
- Delay for switching ON and OFF
- Flashing

Depending on the selected function, Parameter window Staircase lighting is enabled with the group object Staircase lighting permanent ON and the Parameter window Delay for switching ON and OFF or the Parameter window Flashing with the group objectFlashing . The output response is defined in the corresponding parameter window.

Options	
No	No time function is used for this output.
Staircase lighting	The *Staircase lighting* time function is used for this output. The Parameter window Staircase lighting and the group object Staircase lighting permanent ON are enabled.
Delay for switching ON and OFF	The time function *Delay for switching ON and OFF* is used for this output. The Parameter window Delay for switching ON and OFF is enabled.
Flashing	The *Flashing* time function is used for this output. The Parameter window Flashing and the group object Flashing are enabled.

Condition for visibility:
Parameter window Functions \ Parameter Application \ Option *Switch Actuator*

7.10.2 Parameter window Basic settings

The following settings can be made in the Parameter window Basic settings:

- Reaction of output
- Connection with the central group object Switch
- Link with the function *Logic/Threshold*
- Feedback of switching state
- Enabling of group object Status information
- Reaction on bus voltage failure, bus voltage recovery and download

> **Note**
> If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

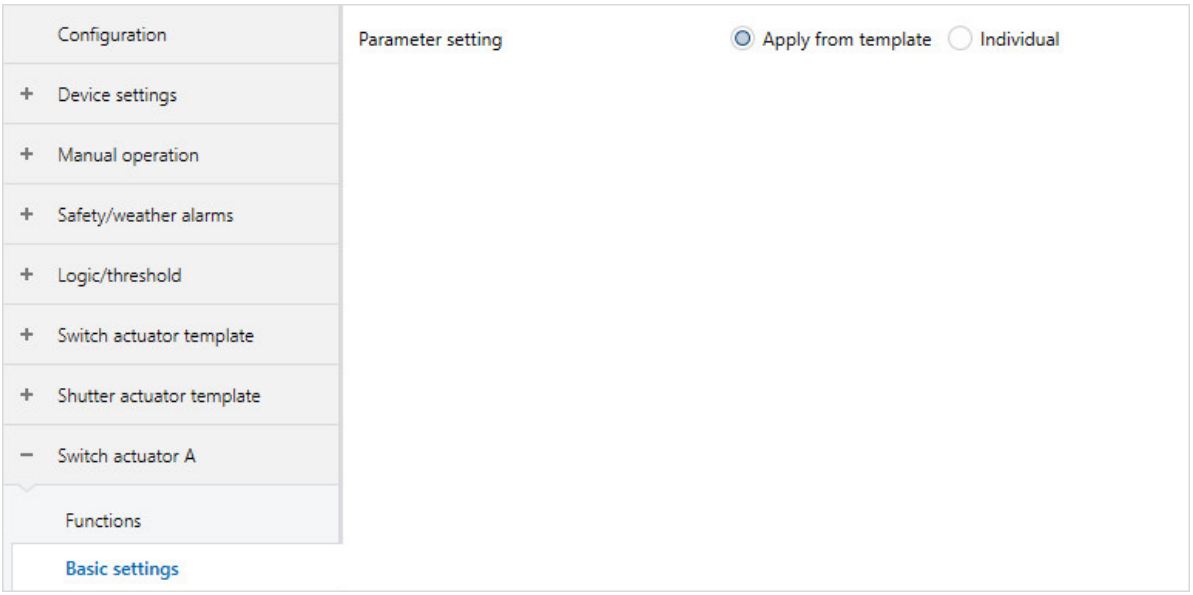

Fig. 48: Parameter window Basic settings

Parameter

- Parameter setting
  - Reaction of output
  - Switch output reacts to central Switch group object
  - Output reacts to
    - Reaction on result "0"
    - Reaction on result "1"
  - Feedback of switching state via group object "Status switch"
    - Value of group object "Status switch"
    - Send value of group object
  - Enable group object "Status information"
    - Send value of group object
  - Reaction on bus voltage failure
  - Reaction after bus voltage recovery
  - Reaction after ETS download

7.10.2.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Reaction of output • Switch output reacts to central Switch group object • Output reacts to • Feedback of switching state via group object "Status switch" • Enable group object "Status information" • Reaction on bus voltage failure • Reaction after bus voltage recovery • Reaction after ETS download

7.10.2.1.1 —

DEPENDENT PARAMETER

Reaction of output

This parameter can be used to set how the output reacts on receipt of a switching telegram on the group object Switch .

Options	
NC contact	The contact is opened with an On telegram (1) and closed with an Off telegram (0).
NO contact	The contact is closed with an On telegram (1) and opened with an Off telegram (0).

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.2 —

DEPENDENT PARAMETER

Switch output reacts to central Switch group object

This parameter can be used to define whether the output can be switched via the central group object Switch

Note
This parameter is visible only if, in the Parameter window Device settings, the following option was set for the parameter Enable central Switch group object: *Yes*.

Options
No
Yes

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.3 —

DEPENDENT PARAMETER

Output reacts to

This parameter can be used to define whether the output is influenced by the result of a *Logic* or *Threshold* function.

More information → Function Logic, Page 84, → Function Threshold, Page 85.

Options	
No Logic/Threshold function	The output does not react to a *Logic* or *Threshold* function.
Logic/Threshold x	The output reacts to the *Logic* or *Threshold* function x (x = 1 … 24). • Reaction on result "0" • Reaction on result "1"

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.3.1 —

DEPENDENT PARAMETER

Reaction on result "0"

This parameter can be used to define how the output reacts when the result of the *Logic* or *Threshold* function is 0.

Options	
No reaction	The relay switching position remains unchanged.
ON	The result acts like an On telegram on the group object Switch . The relay contact position depends on the setting of the output as an *NC contact* or *NO contact*.
OFF	The result acts like an Off telegram on the group object Switch . The relay contact position depends on the setting of the output as an *NC contact* or *NO contact*.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x*

7.10.2.1.3.2 —

DEPENDENT PARAMETER

Reaction on result "1"

This parameter can be used to define how the output reacts when the result of the *Logic* or *Threshold* function is 1.

Options	
No reaction	The relay switching position remains unchanged.
ON	The result acts like an On telegram on the group object Switch . The relay contact position depends on the setting of the output as an *NC contact* or *NO contact*.
OFF	The result acts like an Off telegram on the group object Switch . The relay contact position depends on the setting of the output as an *NC contact* or *NO contact*.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Output reacts to \ Option *Logic/Threshold x*

7.10.2.1.4 —

DEPENDENT PARAMETER

Feedback of switching state via group object "Status switch"

This parameter can be used to define whether the relay contact position is signaled via the group object Status Switch .

Options	
No	The group object Status Switch is not enabled.
Yes	The group object Status Switch is enabled. • Value of group object "Status switch" • Send value of group object

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.4.1 —

DEPENDENT PARAMETER

Value of group object "Status switch"

This parameter can be used to define the value that the group object Status Switch assumes depending on the relay switching state. This can serve to invert the value of the group object.

Options	
1: closed, 0: open	The group object has the value 1 when the relay contact is closed. The group object has the value 0 when the relay contact is open.
0: closed, 1: open	The group object has the value 0 when the relay contact is closed. The group object has the value 1 when the relay contact is open.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Feedback of switching state via group object "Status switch" \ Option *Yes*

7.10.2.1.4.2 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Feedback of switching state via group object "Status switch" \ Option *Yes*

7.10.2.1.5 —

DEPENDENT PARAMETER

Enable group object "Status information"

This parameter can be used to enable the group object Status information . This group object can be used to send or request the device's status.

More information → Code table for 8-bit status byte (Switch), Page 251.

Options	
No	The group object is not enabled.
Yes	The group object is enabled. • Send value of group object

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.5.1 —

DEPENDENT PARAMETER

Send value of group object

This parameter can be used to define whether the value of the group object will be sent to the ABB i-bus® KNX.

Options	
No, update only	The value of the group object is updated but not sent.
After change	The value of the group object is sent after every change.
On request	The value of the group object is sent on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .
After change or on request	The value of the group object is sent after a change or on request. A request can be triggered by sending the value 0 or 1 on the group object Request status values .

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status information" \ Option *Yes*

7.10.2.1.6 —

DEPENDENT PARAMETER

Reaction on bus voltage failure

This parameter can be used to define the reaction of the output in case of bus voltage failure.

Options	
Contact unchanged	The relay contact position remains unchanged.
Contact open	The relay contact is opened.
Contact closed	The relay contact is closed.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.7 —

DEPENDENT PARAMETER

Reaction after bus voltage recovery

This parameter can be used to define which value (if any) is written to the group object Switch and affects the output reaction after bus voltage recovery.

Note
With the Logic/Threshold, Disable and Forced Operation functions or the safety priority, writing the group object Switch does not necessarily result in a changed contact position.
The value of group object Switch can be read correctly only after a new value has been received via the ABB i-bus® KNX.

Options	
Write group object "Switch" with 0	The value of the group object Switch is overwritten with the value 0.
Write group object "Switch" with 1	The value of the group object Switch is overwritten with the value 1.
Do not write group object "Switch"	The value of group object Switch is not overwritten.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.2.1.8 —

DEPENDENT PARAMETER

Reaction after ETS download

This parameter can be used to define which value (if any) is written to the group object Switch and affects the output reaction after an ETS download.

Note
With the Logic/Threshold, Disable and Forced Operation functions or the safety priority, writing the group object Switch does not necessarily result in a changed contact position.
The value of group object Switch can be read correctly only after a new value has been received via the ABB i-bus® KNX.

Options	
Write group object "Switch" with 0	The value of the group object Switch is overwritten with the value 0.
Write group object "Switch" with 1	The value of the group object Switch is overwritten with the value 1.
Do not write group object "Switch"	The value of group object Switch is not overwritten.

Condition for visibility:
Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual*

7.10.3 Parameter window Safety

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Safety: *Yes*.

The following settings can be made in the Parameter window Safety:
- Reaction to safety priorities
- Reaction on *Disable* and *Forced operation* functions
- Switching state after cancellation of the *Disable* and *Forced operation* functions and safety priorities

The order of priority of safety functions is as shown in the parameter window and cannot be changed:
a) Safety priority 1
b) Forced operation
c) Safety priority 2
d) Safety priority 3
e) Disable

More information → Switch Actuator safety functions, Page 80.

Note
If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

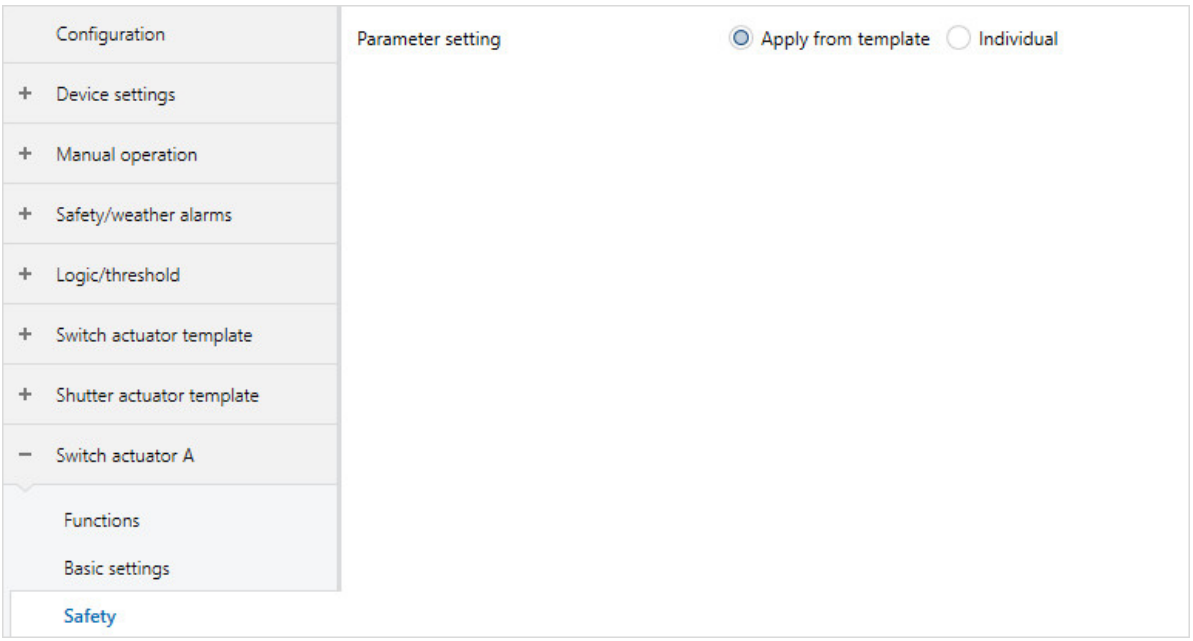

Fig. 49: Parameter window Safety

Parameter
- Parameter setting
  - Switching status for safety priority x
  - Forced operation (1 bit / 2 bit)
    - Switching status during forced operation
  - Disable
  - Switching state on cancellation of disabling, forced operation and safety priority

7.10.3.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Switching status for safety priority x • Forced operation (1 bit / 2 bit) • Disable • Switching state on cancellation of disabling, forced operation and safety priority

7.10.3.1.1 —

DEPENDENT PARAMETER

Switching status for safety priority x

This parameter can be used to define the relay switching position in case of safety priority.

More information → Safety priority, Page 80.

Note
This parameter is visible only if, in the Parameter window Safety/Weather alarms, the following option was set for the parameter Enable group object "Safety priority x": *Yes*.

Note
In case of a safety priority, the output cannot be operated via other group objects, manual operation or the i-bus® Tool until the safety priority is canceled.
Higher-priority safety functions will continue to run.

Options	
No reaction/deactivated	The relay switching position remains unchanged. The output does not react to the safety priority.
ON	The relay switching position is On.
OFF	The relay switching position is Off.
Unchanged (disable)	The relay switching position remains unchanged and is disabled in this position.

Options	
No reaction/deactivated	
ON	
OFF	
Unchanged (disable)	As long as disabling is active, the relay switching position cannot be changed via group objects, manual operation or the i-bus® Tool. Higher-priority safety functions will continue to run.

Condition for visibility:
Parameter window Safety \ Parameter Parameter setting \ Option *Individual*

7.10.3.1.2 —

DEPENDENT PARAMETER

Forced operation (1 bit / 2 bit)

This parameter can be used to define whether 1-bit or 2-bit forced operation is used.

More information → Forced operation, Page 81.

> **Note**
> When the function *Forced operation* is active, the output can no longer be operated via other group objects or manual operation until forced operation has been canceled.
> Higher-priority safety functions will continue to run.

Options	
Deactivated	The function *Forced operation* is deactivated.
Activated 1 bit – 0 active	1-bit forced operation is used and is activated when the value 0 is received. The group object Forced operation, 1-bit is enabled. • Switching status during forced operation
Activated 1 bit – 1 active	1-bit forced operation is used and is activated when the value 1 is received. The group object Forced operation, 1-bit is enabled. • Switching status during forced operation
Activated 2 bit	2-bit forced operation is used. The group object Forced operation, 2-bit is enabled. The value of the group object determines the switching state.

Condition for visibility:
Parameter window Safety \ Parameter Parameter setting \ Option *Individual*

7.10.3.1.2.1 —

DEPENDENT PARAMETER

Switching status during forced operation

This parameter can be used to define the relay switching position during forced operation.

Options	
ON	The relay switching position is On.
OFF	The relay switching position is Off.
Unchanged (disable)	The relay switching position remains unchanged and is disabled in this position.

Options	
ON	
OFF	
Unchanged (disable)	As long as disabling is active, the relay switching position cannot be changed via group objects, manual operation or the i-bus® Tool. Higher-priority safety functions will continue to run.

Condition for visibility:
Parameter window Safety \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 1 bit – 0 active*

7.10.3.1.3 —

DEPENDENT PARAMETER

Disable

This parameter can be used to enable the group object Disable and define the relay switching position when the value 1 is received on the group object Disable.

Note
As long as disabling is active, the relay switching position cannot be changed via group objects, manual operation or the i-bus® Tool.
Higher-priority safety functions will continue to run.

Options	
No reaction	The function *Disable* is not used.
ON	The group object Disable is enabled. The relay is disabled in switching position On when the value 1 is received.
OFF	The group object Disable is enabled. The relay is disabled in switching position Off when the value 1 is received.
Unchanged (disable)	The group object Disable is enabled. The relay is disabled when the value 1 is received. The switching position is not changed.

Condition for visibility:
Parameter window Safety \ Parameter Parameter setting \ Option *Individual*

7.10.3.1.4 —

DEPENDENT PARAMETER

Switching state on cancellation of disabling, forced operation and safety priority

This parameter can be used to define the switching position that the relay assumes after cancellation of a safety priority or the *Disable* or *Forced operation* function.

Options	
No reaction	The relay switching position remains unchanged.
ON	The relay switching position is On.
OFF	The relay switching position is Off.
Refreshed KNX state	The refreshed KNX state is used. More information → Refreshed KNX state, Page 83.

Condition for visibility:
Parameter window Safety \ Parameter Parameter setting \ Option *Individual*

7.10.4 Parameter window Staircase lighting

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Time: *Staircase lighting*.

The following settings can be made in the Parameter window Staircase lighting:
- Duration and switching reaction of the function *Staircase lighting*
- Warning before the staircase lighting is switched off
- Disable function *Staircase lighting*
- Reaction after the function *Permanent ON* and bus voltage recovery

More information → Function Staircase lighting, Page 92.

Note
If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

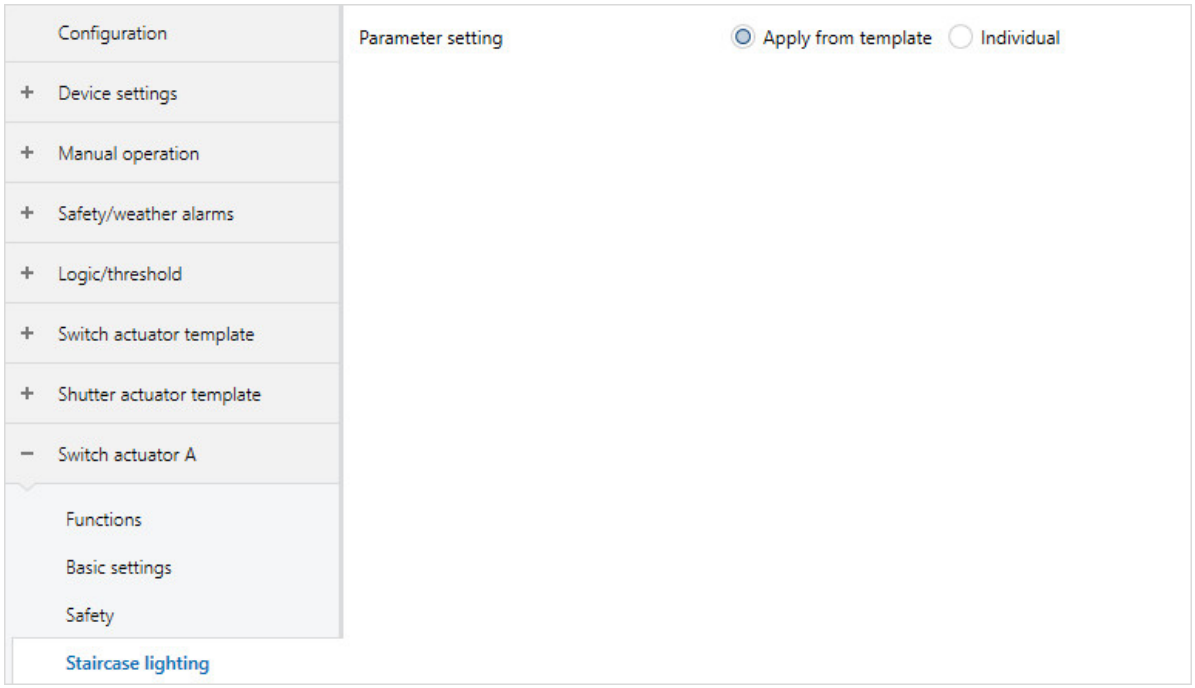

Fig. 50: Parameter window Staircase lighting

Parameter
- Parameter setting
  - Staircase lighting time
  - Staircase lighting can be started again
    - Staircase lighting time extendable (pumping)
  - Staircase lighting switchable
  - Warning before switching off the staircase lighting
    - Warning time
    - Quantity of Off/On changes
  - Disable staircase lighting via group object
    - Disable staircase lighting after bus voltage recovery
  - Change staircase lighting time via group object
  - Restart staircase lighting after end of permanent ON

7.10.4.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Staircase lighting time • Staircase lighting can be started again • Staircase lighting switchable • Warning before switching off the staircase lighting • Disable staircase lighting via group object • Change staircase lighting time via group object • Restart staircase lighting after end of permanent ON

7.10.4.1.1 —

DEPENDENT PARAMETER

Staircase lighting time

This parameter can be used to define how long the lighting remains switched on after an On telegram.

Options
00:00:00 … 00:05:00 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.4.1.2 —

DEPENDENT PARAMETER

Staircase lighting can be started again

This parameter can be used to define whether the staircase lighting time is extended by additional On telegrams.

Options	
No	Additional On telegrams will be ignored. The staircase lighting time will not be extended.
Yes	The staircase lighting time will be extended by additional On telegrams. The number of extensions can be set in the parameter Staircase lighting time extendable (pumping). More information → Function Staircase lighting, Page 92. • Staircase lighting time extendable (pumping)

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.4.1.2.1 —

DEPENDENT PARAMETER

Staircase lighting time extendable (pumping)

This parameter can be used to define how often the staircase lighting time can be extended.

Options	
No, can only be started again	The staircase lighting time can be restarted any number of times by switching the lighting on again.
Up to max. 2x staircase lighting time	The staircase lighting time can be extended up to twice the duration. Extension occurs when additional switch-on commands are received after switch-on.
Up to max. 3x staircase lighting time	The staircase lighting time can be extended to three times the duration. Extension occurs when additional switch-on commands are received after switch-on.
Up to max. 4x staircase lighting time	The staircase lighting time can be extended to four times the duration. Extension occurs when additional switch-on commands are received after switch-on.
Up to max. 5x staircase lighting time	The staircase lighting time can be extended to five times the duration. Extension occurs when additional switch-on commands are received after switch-on.

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Staircase lighting can be started again \ Option *Yes*

7.10.4.1.3 —

DEPENDENT PARAMETER

Staircase lighting switchable

This parameter can be used to define the telegram value with which the lighting is switched on and prematurely switched off.

Options	
ON with "1" and OFF with "0"	The lighting is switched on with the telegram value "1" and off with the telegram value "0".
ON with "1" no action for "0"	The lighting is switched on with the telegram value "1". Premature switch-off is not possible.
ON with "1" or with "0", no switch OFF	The lighting is switched on independently of the telegram value. Premature switch-off is not possible.

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.4.1.4 —

DEPENDENT PARAMETER

Warning before switching off the staircase lighting

This parameter can be used to define whether the user will be warned before the lighting is switched off.

Options	
No	The user is not warned before the lighting is switched off.
Via group object	The group object Warning staircase lighting is enabled. The group object is set to the value 1 at the beginning of the Warning time. The group object is set to the value 0 when the warning time elapses. The group object can be used to switch a warning light. • Warning time
Via quick switching OFF/ON	The lighting is briefly switched off and then back on during the Warning time. The number of Off/On changes can be set in the parameter Quantity of Off/On changes. The first Off/On change takes place at the beginning of the warning time. Additional Off/On changes are uniformly distributed over the remaining warning time. • Quantity of Off/On changes • Warning time
Via object and quick switching ON/OFF	The user is warned before the lighting is switched off: • *Via group object* • *Via quick switching OFF/ON* • Quantity of Off/On changes • Warning time

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.4.1.4.1 —

DEPENDENT PARAMETER

Warning time

This parameter can be used to set the duration of the warning time. The warning time is added to the Staircase lighting time.

Options
00:00:10 … 00:00:45 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Warning before switching off the staircase lighting \ Option *Via group object*

7.10.4.1.4.2 —

DEPENDENT PARAMETER

Quantity of Off/On changes

This parameter can be used to define the number of Off/On changes during the Warning time.

Options
1 … 2 … 5

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Warning before switching off the staircase lighting \ Option *Via quick switching OFF/ON*

7.10.4.1.5 —

DEPENDENT PARAMETER

Disable staircase lighting via group object

This parameter can be used to define whether the function *Staircase lighting* can be disabled via the group object Disable staircase lighting . If the function *Staircase lighting* is disabled, the switch-on command is forwarded without time function in the function chain and the output reacts according to its parameterization.

Options	
No	The function *Staircase lighting* cannot be disabled.
Yes	The function *Staircase lighting* can be disabled. The group object Disable staircase lighting is enabled. • Disable staircase lighting after bus voltage recovery

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.4.1.5.1 —

DEPENDENT PARAMETER

Disable staircase lighting after bus voltage recovery

This parameter can be used to define whether the function *Staircase lighting* is disabled after bus voltage recovery.

Options
No
Yes

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Disable staircase lighting via group object \ Option *Yes*

7.10.4.1.6 —

DEPENDENT PARAMETER

Change staircase lighting time via group object

This parameter can be used to define whether the Staircase lighting time can be changed via the group object Staircase lighting time .

Note
Once it has begun, the function *Staircase lighting* is initially completed without change. The changed staircase lighting time is used only the next time the function *Staircase lighting* is retrieved.

Options	
No	The staircase lighting time cannot be changed via the group object.
Yes	The staircase lighting time can be changed via the group object. The group object Staircase lighting time is enabled.

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.4.1.7 —

DEPENDENT PARAMETER

Restart staircase lighting after end of permanent ON

This parameter can be used to define how the function *Staircase lighting* reacts after the function *Permanent ON* is ended.

Options	
No	The lighting is switched off after the function *Permanent ON* is ended.
Yes	After the function *Permanent ON* is ended, the Staircase lighting time is started and the lighting remains switched on.

Condition for visibility:
Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual*

7.10.5 Parameter window Delay for switching ON and OFF

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Time: *Delay for switching ON and OFF*.

The Parameter window Delay for switching ON and OFF can be used to set the reaction of the function *Delay for switching ON and OFF*.

More information → Function Delay for switching ON and OFF, Page 94.

Note
If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

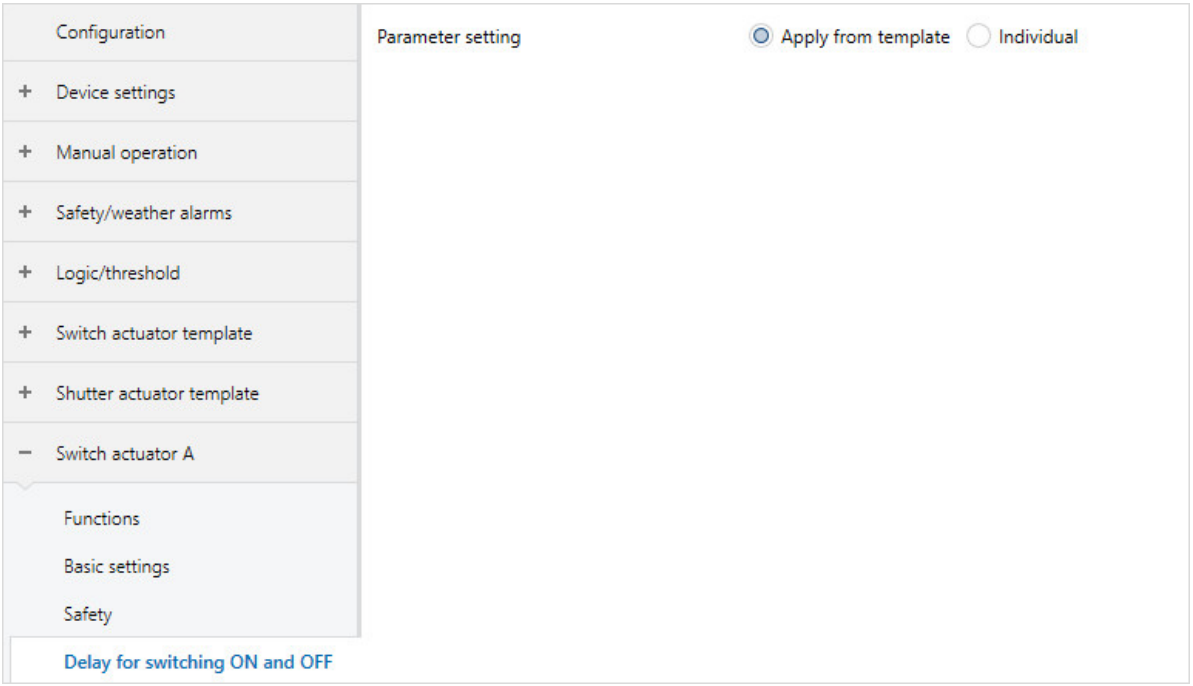

Fig. 51: Parameter window Delay for switching ON and OFF

Parameter

- Parameter setting
  - Delay for switching ON
  - Delay for switching OFF
  - Disable delay for switching ON and OFF via group object
    - Disable delay for switching ON and OFF after bus voltage recovery

7.10.5.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Delay for switching ON • Delay for switching OFF • Disable delay for switching ON and OFF via group object

7.10.5.1.1 —

DEPENDENT PARAMETER

Delay for switching ON

This parameter can be used to define the switch-on delay for the output after an On telegram is received.

NOTICE
If a delay is set for a scene assignment, the delay set here is not effective.

NOTICE
The delay parameterized here influences the result of the function *Logic/Threshold*.

More information → Function Delay for switching ON and OFF, Page 94

Options
00:00:00 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Delay for switching ON and OFF \ Parameter Parameter setting \ Option *Individual*

7.10.5.1.2 —

DEPENDENT PARAMETER

Delay for switching OFF

This parameter can be used to define the switch-off delay for the output after an Off telegram is received.

NOTICE
If a delay is set for a scene assignment, the delay set here is not effective.

NOTICE
The delay parameterized here influences the result of the function *Logic/Threshold*.

More information → Function Delay for switching ON and OFF, Page 94

Options
00:00:00 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Delay for switching ON and OFF \ Parameter Parameter setting \ Option *Individual*

7.10.5.1.3 —

DEPENDENT PARAMETER

Disable delay for switching ON and OFF via group object

This parameter can be used to define whether the function *Delay for switching ON and OFF* can be disabled via the group object Disable delay for switching ON and OFF . If the function *Delay for switching ON and OFF* is disabled, the switch-on command is forwarded without time function in the function chain and the output reacts according to its parameterization. Disabling remains in effect after a download.

Options	
No	The Delay for switching ON and OFF cannot be disabled via the group object Disable delay for switching ON and OFF .
Yes	The Delay for switching ON and OFF can be disabled via the group object Disable delay for switching ON and OFF ; the group object is enabled. • Disable delay for switching ON and OFF after bus voltage recovery

Condition for visibility:
Parameter window Delay for switching ON and OFF \ Parameter Parameter setting \ Option *Individual*

7.10.5.1.3.1 —

DEPENDENT PARAMETER

Disable delay for switching ON and OFF after bus voltage recovery

This parameter can be used to define whether the delay for switching ON and OFF is disabled after bus voltage recovery.

Options	
No	The delay for switching ON and OFF is not disabled after bus voltage recovery.
Yes	The delay for switching ON and OFF is disabled after bus voltage recovery.

Condition for visibility:
Parameter window Delay for switching ON and OFF \ Parameter Parameter setting \ Option *Individual* \ Parameter Disable delay for switching ON and OFF via group object \ Option *Yes*

7.10.6 Parameter window Flashing

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Time: *Flashing*.

The following settings can be made in the Parameter window Flashing:
- Duration and reaction of the *Flashing* function

More information → Function Flashing, Page 95.

Note
If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

Note
Each relay can perform only a limited number of switching operations per minute. A large number of switching operations per minute can delay switching. Refer to the Technical data for more information.

Note
Pay attention to the service life of the switching contacts when using the function *Flashing*. Refer to the Technical data for more information.

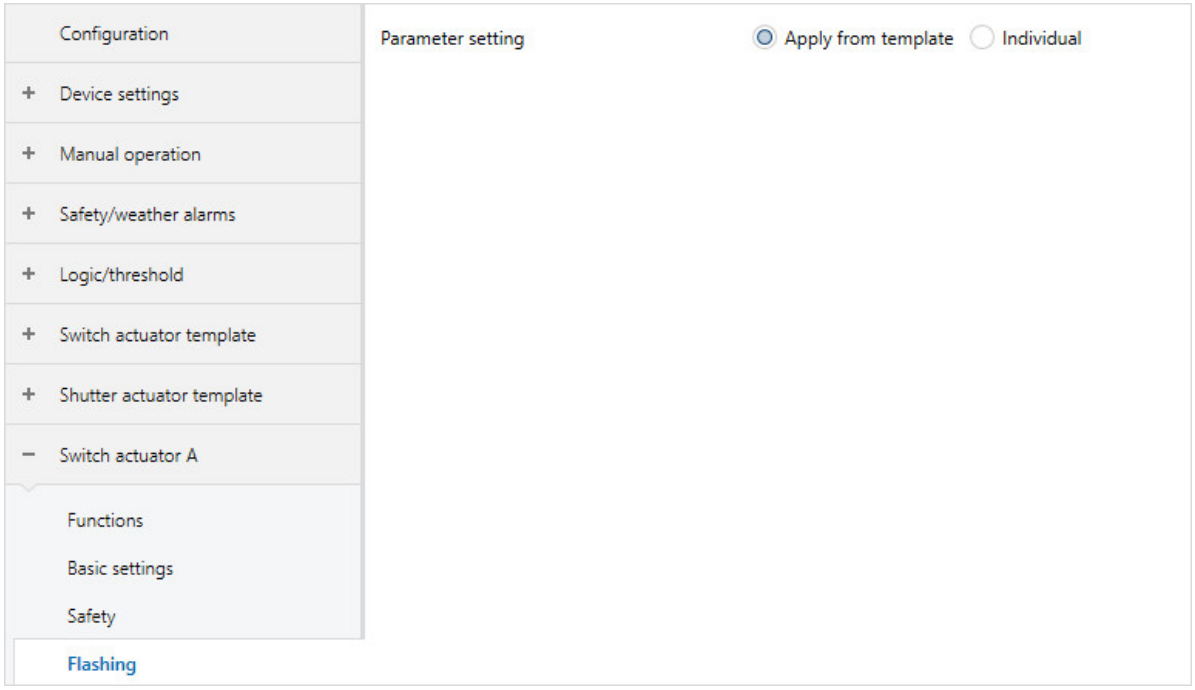

Fig. 52: Parameter window Flashing

Parameter
- Parameter setting
  - Flashing if group object Flashing equals
  - Time for ON
  - Time for OFF
  - Number of flashing cycles
  - Contact position after flashing

7.10.6.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Flashing if group object Flashing equals • Time for ON • Time for OFF • Number of flashing cycles • Contact position after flashing

7.10.6.1.1 —

DEPENDENT PARAMETER

Flashing if group object Flashing equals

This parameter can be used to define the telegram value on the group object Flashing at which the *Flashing* function is activated.

Options	
ON (1) or OFF (0)	A telegram with the value 1 or 0 triggers flashing. Flashing cannot be ended prematurely.
ON (1)	A telegram with the value 1 triggers flashing. A telegram with the value 0 ends flashing.
OFF (0)	A telegram with the value 0 triggers flashing. A telegram with the value 1 ends flashing.

Condition for visibility:
Parameter window Flashing \ Parameter Parameter setting \ Option *Individual*

7.10.6.1.2 —

DEPENDENT PARAMETER

Time for ON

This parameter can be used to define how long the output is switched on during an On/Off change.

Options
00:00:01 … 00:00:05 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Flashing \ Parameter Parameter setting \ Option *Individual*

7.10.6.1.3 —

DEPENDENT PARAMETER

Time for OFF

This parameter can be used to define how long the output is switched off during an On/Off change.

Options
00:00:01 … 00:00:05 … 18:12:15 hh:mm:ss

Condition for visibility:
Parameter window Flashing \ Parameter Parameter setting \ Option *Individual*

7.10.6.1.4 —

DEPENDENT PARAMETER

Number of flashing cycles

This parameter can be used to set the number of On/Off changes.

Options
0 … 5 … 100

Condition for visibility:
Parameter window Flashing \ Parameter Parameter setting \ Option *Individual*

7.10.6.1.5 —

DEPENDENT PARAMETER

Contact position after flashing

This parameter can be used to define the switching position the relay assumes after flashing.

Options	
OFF	The relay switching position is Off.
ON	The relay switching position is On.
Refreshed KNX state	The refreshed KNX state is used. More information → Refreshed KNX state, Page 83.

Condition for visibility:
Parameter window Flashing \ Parameter Parameter setting \ Option *Individual*

7.10.7 Parameter window Scene assignment

Note
This parameter window is visible only if, in the Parameter window Functions, the following option is set for the parameter Enable function Scenes: *Yes*.

Up to 16 different scenes can be created and assigned to the output in the Parameter window Scene assignment.

More information → Scenes, Page 92.

Note
If several Shutter Actuator outputs are to be set to the same values, parameterization can be performed in Parameter window Switch Actuator template.

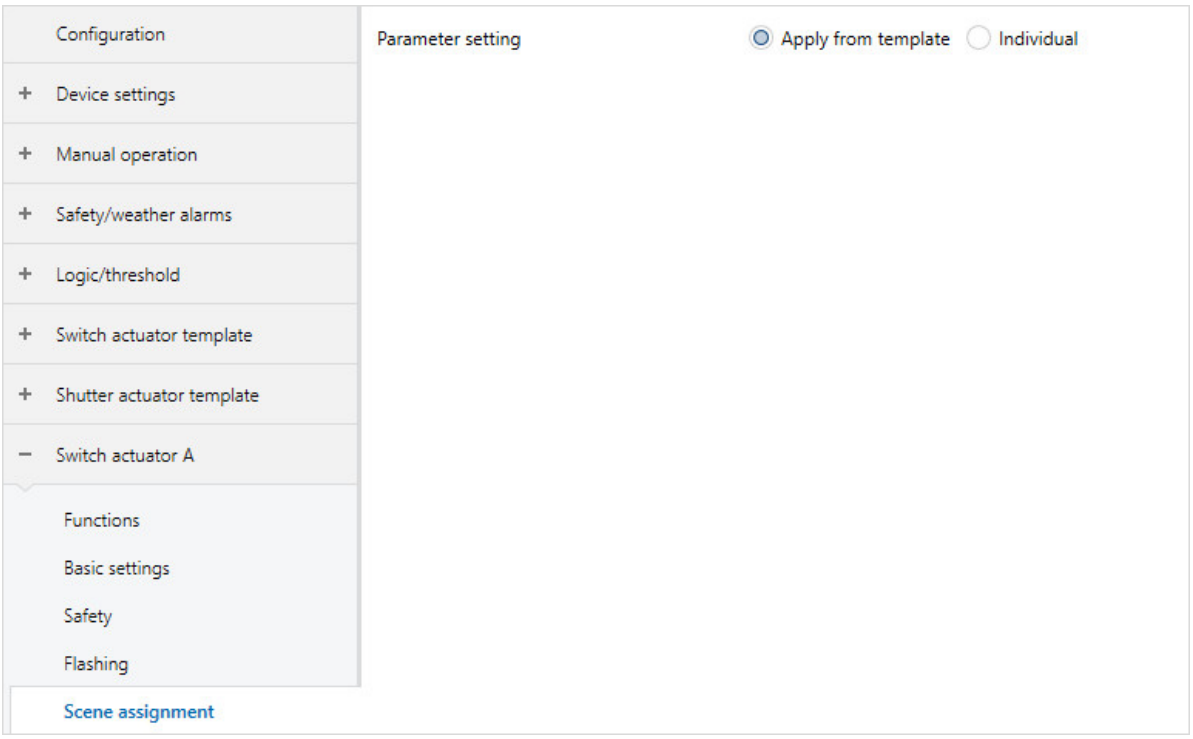

Fig. 53: Parameter window Scene assignment

Parameter

- Parameter setting
  - Overwrite scenes on download
  - Enable scene assignment x
    - Scene retrieval additionally via group object
    - Scene number
    - Delay
    - Action for scene

7.10.7.1 Parameter setting

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

Options	
Apply from template	The parameterization is adopted from the template for each parameter.
Individual	Parameters can be set individually. • Overwrite scenes on download • Enable scene assignment x

7.10.7.1.1 —

DEPENDENT PARAMETER

Overwrite scenes on download

This parameter can be used to define whether the scenes in the device are overwritten during a download.

Options
No
Yes

Condition for visibility:
Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual*

7.10.7.1.2 —

DEPENDENT PARAMETER

Enable scene assignment x

This parameter can be used to define whether the scene assignment x (x = 1 … 16) is used.

Note
The default value for scene assignment 2 … 16 is No. Scenes 2 … 16 can be enabled only one after the other.

Options
No
Yes

Condition for visibility:
Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual*

7.10.7.1.2.1 —

DEPENDENT PARAMETER

Scene retrieval additionally via group object

This parameter is available only for scene assignment 1 … 4.

This parameter can be used to define whether the scene assignment can be retrieved via the group object Retrieve scene assignment x as well.

Options
No
Yes

Condition for visibility:
Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.10.7.1.2.2 —

DEPENDENT PARAMETER

Scene number

The scene number (1 … 64) can be created and assigned to the output using this parameter.

Options
1 … 64

Condition for visibility:
Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.10.7.1.2.3 —

DEPENDENT PARAMETER

Delay

This parameter can be used to define the delay with which the associated reaction takes place after scene retrieval.

Note
The delay can be disabled with the group object Disable delay for switching ON and OFF .

Options
00:00:00 … 12:00:00 hh:mm:ss

Condition for visibility:
Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

7.10.7.1.2.4 —

DEPENDENT PARAMETER

Action for scene

This parameter can be used to define the relay switching position when the scene is retrieved.

Options	
ON	The relay switching position is On.
OFF	The relay switching position is Off.

Condition for visibility:
Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes*

8 Group objects

8.1 Overview of group objects

No.	Function	Group Object Name	Data Point Type	Length	Flags
1	*In operation*	Central: General	DPT 1.002	1 bit	C R T
2	*Request status values*	Central: General	DPT 1.017	1 bit	C W
3	*Switch*	Central: Switch	DPT 1.001	1 bit	C W
4	*Move blind/shutter Up-Down*	Central: Shutter	DPT 1.008	1 bit	C W
5	*Slat adjustment/stop Up-Down*	Central: Shutter	DPT 1.007	1 bit	C W
6	*Move to position height*	Central: Shutter	DPT 5.001	1 byte	C W
7	*Move to position slat*	Central: Shutter	DPT 5.001	1 byte	C W
8	*Scene 1 … 64*	Central: Scene	DPT 18.001	1 byte	C W
12	*Status Manual operation*	Device: Manual operation	DPT 1.011	1 bit	C R T
13	*Enable/disable manual operation*	Device: Manual operation	DPT 1.003	1 bit	C W
14	*End manual operation*	Device: Manual operation	DPT 1.003	1 bit	C W
15 … 17	*Safety priority x*	Safety: Switch	DPT 1.005	1 bit	C W T A
18 … 20	*Wind alarm x*	Safety: Shutter	DPT 1.005	1 bit	C W T A
21	*Rain alarm*	Safety: Shutter	DPT 1.005	1 bit	C W T A
22	*Frost alarm*	Safety: Shutter	DPT 1.005	1 bit	C W T A
23	*Connection A*	Logic/Threshold 1: Logic	DPT 1.021	1 bit	C W
23	*Threshold input*	Logic/Threshold 1: Threshold	DPT 5.001	1 byte	C W
23	*Threshold input*	Logic/Threshold 1: Threshold	DPT 5.010	1 byte	C W
23	*Threshold input*	Logic/Threshold 1: Threshold	DPT 7.001	2 bytes	C W
23	*Threshold input*	Logic/Threshold 1: Threshold	DPT 9.001	2 bytes	C W
23	*Threshold input*	Logic/Threshold 1: Threshold	DPT 9.004	2 bytes	C W
24	*Change upper threshold*	Logic/Threshold 1: Threshold	DPT 5.001	1 byte	C W
24	*Change upper threshold*	Logic/Threshold 1: Threshold	DPT 5.010	1 byte	C W
24	*Change upper threshold*	Logic/Threshold 1: Threshold	DPT 7.001	2 bytes	C W
24	*Change upper threshold*	Logic/Threshold 1: Threshold	DPT 9.001	2 bytes	C W
24	*Change upper threshold*	Logic/Threshold 1: Threshold	DPT 9.004	2 bytes	C W
24	*Connection B*	Logic/Threshold 1: Logic	DPT 1.021	1 bit	C W
25	*Change lower threshold*	Logic/Threshold 1: Threshold	DPT 5.001	1 byte	C W
25	*Change lower threshold*	Logic/Threshold 1: Threshold	DPT 5.010	1 byte	C W
25	*Change lower threshold*	Logic/Threshold 1: Threshold	DPT 7.001	2 bytes	C W
25	*Change lower threshold*	Logic/Threshold 1: Threshold	DPT 9.001	2 bytes	C W
25	*Change lower threshold*	Logic/Threshold 1: Threshold	DPT 9.004	2 bytes	C W
26	*Result*	Logic/Threshold 1: Logic	DPT 1.011	1 bit	C R T
26	*Result*	Logic/Threshold 1: Threshold	DPT 1.011	1 bit	C W
27 … 30		Logic/Threshold 2			
31 … 34		Logic/Threshold 3			
35 … 38		Logic/Threshold 4			
39 … 42		Logic/Threshold 5			
43 … 46		Logic/Threshold 6			
47 … 50		Logic/Threshold 7			
51 … 54		Logic/Threshold 8			
55 … 58		Logic/Threshold 9			
59 … 62		Logic/Threshold 10			
63 … 66		Logic/Threshold 11			
67 … 70		Logic/Threshold 12			
71 … 74		Logic/Threshold 13			
75 … 78		Logic/Threshold 14			
79 … 82		Logic/Threshold 15			
83 … 86		Logic/Threshold 16			
87 … 90		Logic/Threshold 17			
91 … 94		Logic/Threshold 18			
95 … 98		Logic/Threshold 19			
99 … 102		Logic/Threshold 20			
103 … 106		Logic/Threshold 21			
107 … 110		Logic/Threshold 22			
111 … 114		Logic/Threshold 23			
115 … 118		Logic/Threshold 24			
119	*Move blind/shutter Up-Down*	Channel A: Shutter	DPT 1.008	1 bit	C W
119	*Switch*	Channel A: Switch	DPT 1.001	1 bit	C W
120	*Slat adjustment/stop Up-Down*	Channel A: Shutter	DPT 1.007	1 bit	C W
120	*Status Switch*	Channel A: Switch	DPT 1.011	1 bit	C R T
120	*Stop Up-Down*	Channel A: Shutter	DPT 1.007	1 bit	C W

No.	Function	Group Object Name	Data Point Type	Length	Flags
121	*Disable*	Channel A: Switch	DPT 1.003	1 bit	C W
121	*Enable limitation*	Channel A: Shutter	DPT 1.017	1 bit	C W
121	*Move blind/shutter Up-Down limited*	Channel A: Shutter	DPT 1.008	1 bit	C W
122	*Forced operation, 1-bit*	Channel A: Switch	DPT 1.003	1 bit	C W
122	*Forced operation, 2-bit*	Channel A: Switch	DPT 2.001	2 bit	C W
122	*Move to position height*	Channel A: Shutter	DPT 5.001	1 byte	C W
123	*Disable delay for switching ON and OFF*	Channel A: Switch	DPT 1.003	1 bit	C W
123	*Disable staircase lighting*	Channel A: Switch	DPT 1.003	1 bit	C W
123	*Move to position slat*	Channel A: Shutter	DPT 5.001	1 byte	C W
124	*Staircase lighting permanent ON*	Channel A: Switch	DPT 1.001	1 bit	C W
124	*Trigger reference movement*	Channel A: Shutter	DPT 1.008	1 bit	C W
125	*Disable*	Channel A: Shutter	DPT 1.003	1 bit	C W
125	*Staircase lighting time*	Channel A: Switch	DPT 7.005	2 bytes	C W
126	*Forced operation, 1-bit*	Channel A: Shutter	DPT 1.003	1 bit	C W
126	*Forced operation, 2-bit*	Channel A: Shutter	DPT 2.001	2 bit	C W
126	*Warning staircase lighting*	Channel A: Switch	DPT 1.001	1 bit	C R T
127	*Activation of automatic sun protection*	Channel A: Shutter	DPT 1.003	1 bit	C W T A
127	*Status information*	Channel A: Switch	nonDPT	1 byte	C R T
128	*Flashing*	Channel A: Switch	DPT 1.001	1 bit	C W
128	*Sun*	Channel A: Shutter	DPT 1.002	1 bit	C W T A
129	*Scene 1…64*	Channel A: Switch	DPT 18.001	1 byte	C W
129	*Sun: Move to height*	Channel A: Shutter	DPT 5.001	1 byte	C W T A
130 … 133	*Retrieve scene assignment x*	Channel A: Switch	DPT 1.017	1 bit	C W
130	*Sun: Move slat*	Channel A: Shutter	DPT 5.001	1 byte	C W T A
131	*Disable automatic sun protection*	Channel A: Shutter	DPT 1.003	1 bit	C W T A
132	*Disable direct operation*	Channel A: Shutter	DPT 1.003	1 bit	C W
133	*Status Height*	Channel A: Shutter	DPT 5.001	1 byte	C R T
134	*Status Slat*	Channel A: Shutter	DPT 5.001	1 byte	C R T
135	*Status Upper end position*	Channel A: Shutter	DPT 1.011	1 bit	C R T
136	*Status Lower end position*	Channel A: Shutter	DPT 1.011	1 bit	C R T
137	*Status Operability*	Channel A: Shutter	DPT 1.011	1 bit	C R T
138	*Status Automatic sun protection*	Channel A: Shutter	DPT 1.011	1 bit	C R T
139	*Status information*	Channel A: Shutter	nonDPT	1 byte	C R T
140	*Scene 1 … 64*	Channel A: Shutter	DPT 18.001	1 byte	C W
141 … 144	*Retrieve scene assignment x*	Channel A: Shutter	DPT 1.017	1 bit	C W
145 … 159		Channel B: Switch			
160 … 185		Channels C + D: Shutter			
160 … 174		Channel C: Switch			
186 … 200		Channel D: Switch			
201 … 226		Channels E + F: Shutter			
201 … 215		Channel E: Switch			
227 … 241		Channel F: Switch			
242 … 267		Channels G + H: Shutter			
242 … 256		Channel G: Switch			
268 … 282		Channel H: Switch			
283 … 308		Channels I + J: Shutter			
283 … 297		Channel I: Switch			
309 … 323		Channel J: Switch			
324 … 349		Channels K + L: Shutter			
324 … 338		Channel K: Switch			
350 … 364		Channel L: Switch			
365 … 390		Channels M + N: Shutter			
365 … 379		Channel M: Switch			
391 … 405		Channel N: Switch			
406 … 431		Channels O + P: Shutter			
406 … 420		Channel O: Switch			
432 … 446		Channel P: Switch			
447 … 472		Channels Q + R: Shutter			
447 … 461		Channel Q: Switch			
473 … 487		Channel R: Switch			
488 … 513		Channels S + T: Shutter			
488 … 502		Channel R: Switch			
514 … 528		Channel T: Switch			
529 … 554		Channels U + V: Shutter			
529 … 543		Channel U: Switch			
555 … 569		Channel V: Switch			
570 … 595		Channels W + X: Shutter			
570 … 584		Channel W: Switch			
596 … 610		Channel X: Switch			

8.2 Group objects Central

No.	Function	Group Object Name	Data Point Type	Length	Flags
1	*In operation*	**Central: General**	**DPT 1.002**	**1 bit**	**C R T**

In order to implement periodic monitoring of the device's presence on the ABB i-bus® KNX, an In operation telegram can be periodically sent on the ABB i-bus® KNX. The sent telegram value can be set in the parameter Enable group object "In operation". The cycle time can be set in the parameter Sending cycle.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable group object "In operation" \ Option *Yes, send value 0 cyclically, Yes, send value 1 cyclically*

No.	Function	Group Object Name	Data Point Type	Length	Flags
2	*Request status values*	**Central: General**	**DPT 1.017**	**1 bit**	**C W**

If a telegram with the value 0 or 1 is received on this group object, the values of all status group objects will be sent on the ABB i-bus® KNX.

Note
One of the following options must be selected for the sending behavior of the status values to be sent:
- *On request*
- *After change or on request*

Condition for visibility:
- Parameter window Device settings \ Parameter Enable group object "Request status values" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
3	*Switch*	**Central: Switch**	**DPT 1.001**	**1 bit**	**C W**

This group object can be used to switch several switching outputs of the device under central control. In the Parameter window Basic settings, in the Switch output reacts to central Switch group object parameter, it can be individually defined whether the output reacts to this group object .
Depending on the output parameterization as an NC or NO contact, the switching command leads to a different switching reaction.
NO contact telegram value:
1 = contact closed
0 = contact open
NC contact telegram value:
1 = contact open
0 = contact closed

Note
With the *Logic/Threshold*, *Disable* and *Forced operations* functions or the safety priorities, changing this group object does not necessarily result in a changed contact position.
Each relay can perform only a limited number of switching operations per minute. Frequent switching can cause a switching delay. More information → Technical data.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable central Switch group object \ Option

No.	Function	Group Object Name	Data Point Type	Length	Flags
4	*Move blind/shutter Up-Down*	**Central: Shutter**	**DPT 1.008**	**1 bit**	**C W**

This group object can be used to activate several shutter outputs of the device under central control and to move the blinds/shutters up or down.
In the Parameter window Basic settings, in the Output reacts to central shutter group objects parameter, it can be individually defined whether the output reacts to this group object.
Telegram value:
1 = down
0 = up

Note
With the functions *Weather alarms*, *Disable*, *Forced operation* or *Automatic sun protection*, changing this group object does not necessarily result in a changed blind/shutter position.
Each relay can perform only a limited number of switching operations per minute. Frequent switching can cause a switching delay. More information → Technical data.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable central Shutter group objects \ Option

No.	Function	Group Object Name	Data Point Type	Length	Flags
5	*Slat adjustment/stop Up-Down*	**Central: Shutter**	**DPT 1.007**	**1 bit**	**C W**

This group object can be used to activate several shutter outputs of the device under central control and (independently of the value 0 or 1) to stop the blind/shutter movement or to change the slat position.
In the Parameter window Basic settings, in the Output reacts to central shutter group objects parameter, it can be individually defined whether the output reacts to this group object.
Telegram value:
1 = stop/close slats
0 = stop/open slats

Note
With the functions *Weather alarms*, *Disable*, *Forced operation* or *Automatic sun protection*, changing this group object does not necessarily result in a changed blind/shutter position.
Each relay can perform only a limited number of switching operations per minute. Frequent switching can cause a switching delay. More information → Technical data.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable central Shutter group objects \ Option

No.	Function	Group Object Name	Data Point Type	Length	Flags
6	*Move to position height*	**Central: Shutter**	**DPT 5.001**	**1 byte**	**C W**

This group object can be used to activate several shutter outputs of the device under central control and to move the blinds/shutters to a defined position.
In the Parameter window Basic settings, in the Output reacts to central shutter group objects parameter, it can be individually defined whether the output reacts to this group object.
The slat position after the target position is reached corresponds to the slat position before the movement. If a telegram is received on the group object Move to position slat during the movement, the slats will be set according to the received value after the target position has been reached.
Telegram value:
0 % = upper end position
1 … 99 % = intermediate position
100 % = lower end position

Note
With the functions *Weather alarms*, *Disable*, *Forced operation* or *Automatic sun protection*, changing this group object does not necessarily result in a changed blind/shutter position.
Each relay can perform only a limited number of switching operations per minute. Frequent switching can cause a switching delay. More information → Technical data.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable central Shutter group objects \ Option

No.	Function	Group Object Name	Data Point Type	Length	Flags
7	*Move to position slat*	**Central: Shutter**	**DPT 5.001**	**1 byte**	**C W**

This group object can be used to activate several shutter outputs of the device under central control and to move the slats to a defined position. The slats are positioned only after the movement is ended.
In the Parameter window Basic settings, in the Output reacts to central shutter group objects parameter, it can be individually defined whether the output reacts to this group object.
Telegram value:
0 % = fully open
1 … 99 % = intermediate position
100 % = fully closed

Note
With the functions *Weather alarms*, *Disable*, *Forced operation* or *Automatic sun protection*, changing this group object does not necessarily result in a changed blind/shutter position.
Each relay can perform only a limited number of switching operations per minute. Frequent switching can cause a switching delay. More information → Technical data.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable central Shutter group objects \ Option

No.	Function	Group Object Name	Data Point Type	Length	Flags
8	*Scene 1 … 64*	**Central: Scene**	**DPT 18.001**	**1 byte**	**C W**

This group object can be used to send a scene telegram. The scene telegram includes the scene number and information about whether the scene is retrieved or the relay switching state is saved in the scene.
The assignment to a scene number can be made in the Parameter window Scene assignments (Shutter Actuator) or Parameter window Scene assignment (Switch Actuator). All outputs assigned to this scene number perform the set reaction.
Telegram value:
0 … 63 = retrieve scene x (x = 1 … 64)
128 … 191 = save scene x (x = 1 … 64)
More information → Code table 8-bit scene, Page 254.

Note
With the priorities of the safety functions, a change in the value of this group object does not necessarily result in a changed contact position or blind/shutter position.

Condition for visibility:
- Parameter window Device settings \ Parameter Enable central Scene group object \ Option

8.3 Group objects Device

No.	Function	Group Object Name	Data Point Type	Length	Flags
12	*Status Manual operation*	**Device: Manual operation**	**DPT 1.011**	**1 bit**	**C R T**

This group object indicates whether *Manual operation* mode is active.
Telegram value:
1 = manual operation active
0 = manual operation not active

Condition for visibility:
- Parameter window Manual operation \ Parameter Enable manual operation \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
13	*Enable/disable manual operation*	**Device: Manual operation**	**DPT 1.003**	**1 bit**	**C W**

This group object can be used to disable *Manual operation* mode.
If the device is in *Manual operation* mode, it will be ended and disabled when the value 0 is received.
Telegram value:
1 = enable manual operation
0 = disable manual operation

Condition for visibility:
- Parameter window Manual operation \ Parameter Enable manual operation \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
14	*End manual operation*	**Device: Manual operation**	**DPT 1.003**	**1 bit**	**C W**
	This group object can be used to end *Manual operation* mode. Telegram value: 1 = end manual operation 0 = end manual operation Condition for visibility: • Parameter window Manual operation \ Parameter Enable manual operation \ Option *Yes*				

8.4 Group objects Safety

No.	Function	Group Object Name	Data Point Type	Length	Flags
15 ... 17	*Safety priority x*	**Safety: Switch**	**DPT 1.005**	**1 bit**	**C W T A**
	If the device receives a telegram with the value 1 on one of these group objects, the reaction set in the parameter Switching status for safety priority x will take place in the assigned Switch Actuator outputs. An active safety priority overrides operation of the device. Order of priority → Priorities for Switch Actuator, Page 99. If the device does not receive a telegram on one of these group objects within the interval set in the parameter Cyclical monitoring interval (0 = cycl. monitoring deactivated), a fault will be assumed and the set reaction will take place. The first telegram after correction of the problem determines whether the reaction during the problem is retained: • Value 1 = set reaction is retained • Value 0 = set reaction is canceled The monitoring period is restarted after a telegram is received, after the device is programed and on bus voltage recovery. Telegram value: 1 = alarm (normal operation disabled) 0 = no alarm Condition for visibility: • Parameter window Safety/Weather alarms \ Parameter Enable group object "Safety priority x" \ Option *Yes*				
18 ... 20	*Wind alarm x*	**Safety: Shutter**	**DPT 1.005**	**1 bit**	**C W T A**
	If the device receives a telegram with the value 1 on one of these group objects, the reaction set in the parameter Position on wind alarm will take place in the assigned shutter outputs. An active weather alarm overrides operation of the device. Order of priority → Priorities for Shutter Actuator, Page 98. If the device does not receive a telegram on one of these group objects within the interval set in the parameter Cyclical monitoring interval (0 = cycl. monitoring deactivated), a fault will be assumed and the set reaction will take place. The first telegram after correction of the problem determines whether the reaction during the problem is retained: • Value 1 = set reaction is retained • Value 0 = set reaction is canceled The monitoring period is restarted after a telegram is received, after the device is programed and on bus voltage recovery. Telegram value: 1 = alarm (normal operation disabled) 0 = no alarm Condition for visibility: • Parameter window Safety/Weather alarms \ Parameter Enable group object "Wind alarm x" \ Option *Yes*				
21	*Rain alarm*	**Safety: Shutter**	**DPT 1.005**	**1 bit**	**C W T A**
	If the device receives a telegram with the value 1 on this group object, the reaction set in the parameter Position for rain alarm will take place in the assigned shutter outputs. An active weather alarm overrides operation of the device. Order of priority → Priorities for Shutter Actuator, Page 98. If the device does not receive a telegram on this group object within the interval set in the Cyclical monitoring interval (0 = cycl. monitoring deactivated) parameter, a fault will be assumed and the set reaction will take place. The first telegram after correction of the problem determines whether the reaction during the problem is retained: • Value 1 = set reaction is retained • Value 0 = set reaction is canceled The monitoring period is restarted after a telegram is received, after the device is programed and on bus voltage recovery. Telegram value: 1 = alarm (normal operation disabled) 0 = no alarm Condition for visibility: • Parameter window Safety/Weather alarms \ Parameter Enable group object "Rain alarm" \ Option *Yes*				

No.	Function	Group Object Name	Data Point Type	Length	Flags
22	*Frost alarm*	**Safety: Shutter**	**DPT 1.005**	**1 bit**	**C W T A**

If the device receives a telegram with the value 1 on this group object, the reaction set in the parameter Position for frost alarm will take place in the assigned shutter outputs.
An active weather alarm overrides operation of the device.
Order of priority → Priorities for Shutter Actuator, Page 98.
If the device does not receive a telegram on this group object within the interval set in the Cyclical monitoring interval (0 = cycl. monitoring deactivated) parameter, a fault will be assumed and the set reaction will take place. The first telegram after correction of the problem determines whether the reaction during the problem is retained:
- Value 1 = set reaction is retained
- Value 0 = set reaction is canceled

The monitoring period is restarted after a telegram is received, after the device is programed and on bus voltage recovery.
Telegram value:
1 = alarm (normal operation disabled)
0 = no alarm

Condition for visibility:
- Parameter window Safety/Weather alarms \ Parameter Enable group object "Frost alarm" \ Option *Yes*

8.5 Group objects Logic/Threshold 1

No.	Function	Group Object Name	Data Point Type	Length	Flags
23	*Connection A*	**Logic/Threshold 1: Logic**	**DPT 1.021**	**1 bit**	**C W**

This group object is used as one of two inputs for the function *Logic*.
More information → Function Logic, Page 84.
The logical connection is defined in Parameter window Logic/Threshold 1.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes*
- Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND, OR, Exclusive OR, GATE*

No.	Function	Group Object Name	Data Point Type	Length	Flags
23	*Threshold input*	**Logic/Threshold 1: Threshold**	**DPT 5.001**	**1 byte**	**C W**

This group object is used as the input for the function *Threshold*.
More information → Function Threshold, Page 85.
The function *Threshold* is defined in Parameter window Logic/Threshold 1. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input".

Condition for visibility:
- Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes*
- Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*
- Parameter Data type of group object "Threshold input" \ Option *Percent (DPT5.001)*

No.	Function	Group Object Name	Data Point Type	Length	Flags
23	*Threshold input*	**Logic/Threshold 1: Threshold**	**DPT 5.010**	**1 byte**	**C W**

This group object is used as the input for the function *Threshold*.
More information → Function Threshold, Page 85.
The function *Threshold* is defined in Parameter window Logic/Threshold 1. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input".

Condition for visibility:
- Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes*
- Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*
- Parameter Data type of group object "Threshold input" \ Option *Meter pulses (DPT5.010)*

No.	Function	Group Object Name	Data Point Type	Length	Flags
23	*Threshold input*	**Logic/Threshold 1: Threshold**	**DPT 7.001**	**2 bytes**	**C W**

This group object is used as the input for the function *Threshold*.
More information → Function Threshold, Page 85.
The function *Threshold* is defined in Parameter window Logic/Threshold 1. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input".

Condition for visibility:
- Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes*
- Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*
- Parameter Data type of group object "Threshold input" \ Option *Meter pulses (DPT7.001)*

No.	Function	Group Object Name	Data Point Type	Length	Flags
23	*Threshold input*	**Logic/Threshold 1: Threshold**	**DPT 9.001**	**2 bytes**	**C W**

This group object is used as the input for the function *Threshold*.
More information → Function Threshold, Page 85.
The function *Threshold* is defined in Parameter window Logic/Threshold 1. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input".

Condition for visibility:
- Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes*
- Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold*
- Parameter Data type of group object "Threshold input" \ Option *Temperature (DPT9.001)*

No.	Function	Group Object Name	Data Point Type	Length	Flags	
23	*Threshold input*	**Logic/Threshold 1: Threshold**	**DPT 9.004**	**2 bytes**	**C**	**W**
	This group object is used as the input for the function *Threshold*. More information → Function Threshold, Page 85. The function *Threshold* is defined in Parameter window Logic/Threshold 1. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Lux (DPT9.004)*					
24	*Connection B*	**Logic/Threshold 1: Logic**	**DPT 1.021**	**1 bit**	**C**	**W**
	This group object is used as one of two inputs for the function *Logic*. More information → Function Logic, Page 84. The logical connection is defined in Parameter window Logic/Threshold 1. Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND, OR, Exclusive OR, GATE*					
24	*Change upper threshold*	**Logic/Threshold 1: Threshold**	**DPT 5.001**	**1 byte**	**C**	**W**
	This group object can be used to change the upper threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Percent (DPT5.001)* • Parameter Change thresholds via KNX \ Option *Yes*					
24	*Change upper threshold*	**Logic/Threshold 1: Threshold**	**DPT 5.010**	**1 byte**	**C**	**W**
	This group object can be used to change the upper threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Meter pulses (DPT5.010)* • Parameter Change thresholds via KNX \ Option *Yes*					
24	*Change upper threshold*	**Logic/Threshold 1: Threshold**	**DPT 7.001**	**2 bytes**	**C**	**W**
	This group object can be used to change the upper threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Meter pulses (DPT7.001)* • Parameter Change thresholds via KNX \ Option *Yes*					
24	*Change upper threshold*	**Logic/Threshold 1: Threshold**	**DPT 9.001**	**2 bytes**	**C**	**W**
	This group object can be used to change the upper threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Temperature (DPT9.001)* • Parameter Change thresholds via KNX \ Option *Yes*					
24	*Change upper threshold*	**Logic/Threshold 1: Threshold**	**DPT 9.004**	**2 bytes**	**C**	**W**
	This group object can be used to change the upper threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Lux (DPT9.004)* • Parameter Change thresholds via KNX \ Option *Yes*					
25	*Change lower threshold*	**Logic/Threshold 1: Threshold**	**DPT 5.001**	**1 byte**	**C**	**W**
	This group object can be used to change the lower threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Percent (DPT5.001)* • Parameter Change thresholds via KNX \ Option *Yes*					

No.	Function	Group Object Name	Data Point Type	Length	Flags
25	*Change lower threshold*	**Logic/Threshold 1: Threshold**	**DPT 5.010**	**1 byte**	**C W**
	This group object can be used to change the lower threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Meter pulses (DPT5.010)* • Parameter Change thresholds via KNX \ Option *Yes*				
25	*Change lower threshold*	**Logic/Threshold 1: Threshold**	**DPT 7.001**	**2 bytes**	**C W**
	This group object can be used to change the lower threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Meter pulses (DPT7.001)* • Parameter Change thresholds via KNX \ Option *Yes*				
25	*Change lower threshold*	**Logic/Threshold 1: Threshold**	**DPT 9.001**	**2 bytes**	**C W**
	This group object can be used to change the lower threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Temperature (DPT9.001)* • Parameter Change thresholds via KNX \ Option *Yes*				
25	*Change lower threshold*	**Logic/Threshold 1: Threshold**	**DPT 9.004**	**2 bytes**	**C W**
	This group object can be used to change the lower threshold. The data point type for the group object depends on the option selected in the parameter Data type of group object "Threshold input". Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Data type of group object "Threshold input" \ Option *Lux (DPT9.004)* • Parameter Change thresholds via KNX \ Option *Yes*				
26	*Result*	**Logic/Threshold 1: Logic**	**DPT 1.011**	**1 bit**	**C R T**
	This group object can be used to send the result of the function *Logic* on the ABB i-bus® KNX. More information → Function Logic, Page 84. **Note** The result of the function *Logic* can also be internally connected to an output. Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *AND*, *OR*, *Exclusive OR*, *GATE* • Parameter Send result on KNX \ Option *Yes*				
26	*Result*	**Logic/Threshold 1: Threshold**	**DPT 1.011**	**1 bit**	**C W**
	This group object can be used to send the result of the function *Threshold* on the ABB i-bus® KNX. More information → Function Threshold, Page 85. **Note** The result of the function *Threshold* can also be internally connected to an output. Condition for visibility: • Parameter window Configuration \ Parameter Enable Logic/Threshold X-Y \ Option *Yes* • Parameter window Logic/Threshold 1 \ Parameter Function of the logic gate \ Option *Threshold* • Parameter Send result on KNX \ Option *Yes*				

8.6 Group objects Logic/Threshold 2

No.	Function	Group Object Name	Data Point Type	Length	Flags
27 … 30		**Logic/Threshold 2**			
	→ Group objects Logic/Threshold 1, Page 222				

8.7 Group objects Logic/Threshold 3

No.	Function	Group Object Name	Data Point Type	Length	Flags
31 … 34		**Logic/Threshold 3**			
	→ Group objects Logic/Threshold 1, Page 222				

8.8 Group objects Logic/Threshold 4

No.	Function	Group Object Name	Data Point Type	Length	Flags
35 ... 38		**Logic/Threshold 4**			
	→ Group objects Logic/Threshold 1, Page 222				

8.9 Group objects Logic/Threshold 5

No.	Function	Group Object Name	Data Point Type	Length	Flags
39 ... 42		**Logic/Threshold 5**			
	→ Group objects Logic/Threshold 1, Page 222				

8.10 Group objects Logic/Threshold 6

No.	Function	Group Object Name	Data Point Type	Length	Flags
43 ... 46		**Logic/Threshold 6**			
	→ Group objects Logic/Threshold 1, Page 222				

8.11 Group objects Logic/Threshold 7

No.	Function	Group Object Name	Data Point Type	Length	Flags
47 ... 50		**Logic/Threshold 7**			
	→ Group objects Logic/Threshold 1, Page 222				

8.12 Group objects Logic/Threshold 8

No.	Function	Group Object Name	Data Point Type	Length	Flags
51 ... 54		**Logic/Threshold 8**			
	→ Group objects Logic/Threshold 1, Page 222				

8.13 Group objects Logic/Threshold 9

No.	Function	Group Object Name	Data Point Type	Length	Flags
55 ... 58		**Logic/Threshold 9**			
	→ Group objects Logic/Threshold 1, Page 222				

8.14 Group objects Logic/Threshold 10

No.	Function	Group Object Name	Data Point Type	Length	Flags
59 ... 62		**Logic/Threshold 10**			
	→ Group objects Logic/Threshold 1, Page 222				

8.15 Group objects Logic/Threshold 11

No.	Function	Group Object Name	Data Point Type	Length	Flags
63 ... 66		**Logic/Threshold 11**			
	→ Group objects Logic/Threshold 1, Page 222				

8.16 Group objects Logic/Threshold 12

No.	Function	Group Object Name	Data Point Type	Length	Flags
67 ... 70		**Logic/Threshold 12**			
	→ Group objects Logic/Threshold 1, Page 222				

8.17 Group objects Logic/Threshold 13

No.	Function	Group Object Name	Data Point Type	Length	Flags
71 ... 74		**Logic/Threshold 13**			
	→ Group objects Logic/Threshold 1, Page 222				

8.18 Group objects Logic/Threshold 14

No.	Function	Group Object Name	Data Point Type	Length	Flags
75 ... 78		**Logic/Threshold 14**			
	→ Group objects Logic/Threshold 1, Page 222				

8.19 Group objects Logic/Threshold 15

No.	Function	Group Object Name	Data Point Type	Length	Flags
79 ... 82		**Logic/Threshold 15**			
	→ Group objects Logic/Threshold 1, Page 222				

8.20 Group objects Logic/Threshold 16

No.	Function	Group Object Name	Data Point Type	Length	Flags
83 ... 86		**Logic/Threshold 16**			
	→ Group objects Logic/Threshold 1, Page 222				

8.21 Group objects Logic/Threshold 17

No.	Function	Group Object Name	Data Point Type	Length	Flags
87 ... 90		**Logic/Threshold 17**			
	→ Group objects Logic/Threshold 1, Page 222				

8.22 Group objects Logic/Threshold 18

No.	Function	Group Object Name	Data Point Type	Length	Flags
91 ... 94		**Logic/Threshold 18**			
	→ Group objects Logic/Threshold 1, Page 222				

8.23 Group objects Logic/Threshold 19

No.	Function	Group Object Name	Data Point Type	Length	Flags
95 ... 98		**Logic/Threshold 19**			
	→ Group objects Logic/Threshold 1, Page 222				

8.24 Group objects Logic/Threshold 20

No.	Function	Group Object Name	Data Point Type	Length	Flags
99 ... 102		**Logic/Threshold 20**			
	→ Group objects Logic/Threshold 1, Page 222				

8.25 Group objects Logic/Threshold 21

No.	Function	Group Object Name	Data Point Type	Length	Flags
103 ... 106		**Logic/Threshold 21**			
	→ Group objects Logic/Threshold 1, Page 222				

8.26 Group objects Logic/Threshold 22

No.	Function	Group Object Name	Data Point Type	Length	Flags
107 ... 110		**Logic/Threshold 22**			
	→ Group objects Logic/Threshold 1, Page 222				

8.27 Group objects Logic/Threshold 23

No.	Function	Group Object Name	Data Point Type	Length	Flags
111 ... 114		**Logic/Threshold 23**			
	→ Group objects Logic/Threshold 1, Page 222				

8.28 Group objects Logic/Threshold 24

No.	Function	Group Object Name	Data Point Type	Length	Flags
115 ... 118		**Logic/Threshold 24**			
	→ Group objects Logic/Threshold 1, Page 222				

8.29 Group objects Channels A + B: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
119	*Move blind/shutter Up-Down*	**Channel A: Shutter**	**DPT 1.008**	**1 bit**	**C W**
	If a telegram with the value 0 is received on this group object, the blind/shutter will be moved up. If a telegram with the value 1 is received, the blind/shutter will be moved down. Telegram value: 1 = down 0 = up Condition for visibility: • Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes* • Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*				
120	*Stop Up-Down*	**Channel A: Shutter**	**DPT 1.007**	**1 bit**	**C W**
	If a telegram is received on this group object (irrespectively of the value 0 or 1), the moving blind/shutter will be stopped. Telegram value: 1 = stop 0 = stop Condition for visibility: • Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes* • Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Operating mode \ Option *Blind/shutter control without slat adjustment*				

No.	Function	Group Object Name	Data Point Type	Length	Flags	
120	*Slat adjustment/stop Up-Down*	**Channel A: Shutter**	**DPT 1.007**	**1 bit**	**C**	**W**

The reaction on receipt of a telegram depends on the Operating mode:
- *Blind/shutter control without slat adjustment*: If a telegram is received on this group object (irrespectively of the value 0 or 1), the moving blind/shutter will be stopped.
- *Blind/shutter control with slat adjustment*: If the blind/shutter is at rest, the slat position can be changed.

Telegram value:
1 = stop/close slats
0 = stop/open slats

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Operating mode \ Option *Blind/shutter control with slat adjustment*

121	*Enable limitation*	**Channel A: Shutter**	**DPT 1.017**	**1 bit**	**C**	**W**

Travel range limitation can be activated with this group object. If limitation is activated, the blind/shutter will move only in the travel range defined by the Upper limit (0 % = top; 100 % = bottom) and Lower limit (0 % = top; 100 % = bottom) parameters.
Telegram value:
1 = limitation active
0 = limitation inactive

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Operating mode \ Option *Blind/shutter control with slat adjustment*
- Parameter window Shutter Actuator A+B \ Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Enable limitation*

121	*Move blind/shutter Up-Down limited*	**Channel A: Shutter**	**DPT 1.008**	**1 bit**	**C**	**W**

If a telegram with the value 0 is received on this group object, the blind/shutter will be moved up to the parameterized limit. If a telegram with the value 1 is received, the blind/shutter will be moved down to the parameterized limit.
Telegram value:
1 = down limited
0 = up limited

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*

Parameter window Shutter Actuator A+B \ Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Limit travel range via group object \ Option *Move blind/shutter Up-Down limited*

122	*Move to position height*	**Channel A: Shutter**	**DPT 5.001**	**1 byte**	**C**	**W**

This group object can be used to move the blind/shutter.
The slat position after the target position is reached corresponds to the slat position before the movement. If a telegram is received on the group object Move to position slat during the movement, the slats will be set according to the received value after the target position has been reached.
Telegram value:
0 % = upper end position
1 … 99 % = intermediate position
100 % = lower end position

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Move to pos. height/Move to pos. slat" \ Option *Yes*

123	*Move to position slat*	**Channel A: Shutter**	**DPT 5.001**	**1 byte**	**C**	**W**

This group object can be used to move the blind/shutter slats. The slats are positioned only after the movement is ended.
Telegram value:
0 % = slats open
1 … 99 % = intermediate position
100 % = slats closed

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Operating mode \ Option *Blind/shutter control with slat adjustment*
- Parameter window Shutter Actuator A+B \ Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Move to pos. height/Move to pos. slat" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags	
124	*Trigger reference movement*	**Channel A: Shutter**	**DPT 1.008**	**1 bit**	**C**	**W**

This group object can be used to initiate a reference movement.
More information → Reference movement, Page 87.
Telegram value:
1 = reference movement lower end position
0 = reference movement upper end position

Note
A reference movement cannot be performed while a safety function is active.
The following actions will interrupt an active reference movement:
- Receipt of a safety telegram
- Activation of manual operation

A reference movement can be performed even if direct operation is disabled (via group object Disable direct operation).

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Blind/Shutter \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Move to pos. height/Move to pos. slat" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags	
125	*Disable*	**Channel A: Shutter**	**DPT 1.003**	**1 bit**	**C**	**W**

This group object can be used to disable the output for operation via direct commands and automatic commands.
If a telegram with the value 1 is received, the blind/shutter will be moved to the position defined in the parameter Position on disabling and disabled in this position. If a telegram with the value 0 is received, the blind/shutter will be moved to the position defined in the parameter Position on cancellation of weather alarm, disabling and forced operation.
Telegram value:
1 = disable
0 = enable

Note
Disabling can be influenced via the i-bus® Tool.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Safety/Weather alarms \ Option *Yes*
- Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Position on disabling \ Option *Up* \ *Down* \ *Stop* \ *Unchanged (disable)* \ *Scene assignment* \ *Individual position*

No.	Function	Group Object Name	Data Point Type	Length	Flags	
126	*Forced operation, 1-bit*	**Channel A: Shutter**	**DPT 1.003**	**1 bit**	**C**	**W**

This group object can be used to activate 1-bit forced operation. The telegram value used to activate/deactivate forced operation can be defined in the parameter Forced operation (1 bit / 2 bit).
When forced operation is activated, the blind/shutter will be moved to the position defined in the parameter Position height (0 % = top; 100 % = bottom). The output cannot be controlled via KNX commands while forced operation is active. When forced operation is deactivated, the blind/shutter will be moved to the position defined in the parameter Position on cancellation of weather alarm, disabling and forced operation and operation will be enabled.
Telegram value:
1/0 = forced operation active
0/1 = forced operation inactive

Note
Forced operation can be influenced via the i-bus® Tool.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Safety/Weather alarms \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 1 bit – 0 active* \ *Activated 1 bit – 1 active*

No.	Function	Group Object Name	Data Point Type	Length	Flags	
126	*Forced operation, 2-bit*	**Channel A: Shutter**	**DPT 2.001**	**2 bit**	**C**	**W**

This group object can be used to activate 2-bit forced operation.
With 2-bit forced operation, the value of the group object determines the switching state. The first bit activates forced operation. The second bit switches between the two states.
The output cannot be controlled via KNX commands while forced operation is active. When forced operation is deactivated, the blind/shutter will be moved to the position defined in the parameter Position on cancellation of weather alarm, disabling and forced operation and operation will be enabled.
Telegram value (bit 1 | bit 0):
0 | 0 = forced operation inactive
0 | 1 = forced operation inactive
1 | 0 = forced operation active, Off state
1 | 1 = forced operation active, On state

Note
Forced operation can be influenced via the i-bus® Tool.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Safety/Weather alarms \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Safety/Weather \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 2 bit*

No.	Function	Group Object Name	Data Point Type	Length	Flags
127	*Activation of automatic sun protection*	**Channel A: Shutter**	**DPT 1.003**	**1 bit**	**C W T A**

This group object can be used to activate the function *Automatic sun protection*. Automatic sun protection can be controlled via the following group objects:

- Sun
- Sun: Move to height
- Sun: Move slat

When automatic sun protection is active, the output updates itself based on the values stored in the automatic sun protection group objects.
When automatic sun protection is deactivated, the output does not react to incoming telegrams on the automatic sun protection group objects. Movements initiated by automatic commands are completed when automatic sun protection is ended.
Telegram value:
1 = automatic sun protection activated, direct operation deactivated
0 = automatic sun protection deactivated, direct operation activated

Note
A reference movement interrupts automatic sun protection. Incoming automatic telegrams are executed after the reference movement is completed.

Condition for visibility:

- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Automatic sun protection \ Option *Yes*

128	*Sun*	**Channel A: Shutter**	**DPT 1.002**	**1 bit**	**C W T A**

If a telegram with the value 1 is received on this group object, the blind/shutter will move to the position defined in the parameter Position for sun = 1 (sun). If a telegram with the value 0 is received, the blind/shutter will move to the position defined in the parameter Position for sun = 0 (no sun).
To prevent frequent alternation between moving up and moving down due to weather, the reaction to incoming telegrams can be delayed via the parameters Delay for sun = 1 and Delay for sun = 0.
Telegram value:
1 = sun
0 = no sun

Condition for visibility:

- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Automatic sun protection \ Option *Yes*

129	*Sun: Move to height*	**Channel A: Shutter**	**DPT 5.001**	**1 byte**	**C W T A**

If automatic sun protection is active and a telegram is received on this group object, the blind/shutter will be positioned according to the value received.
If automatic sun protection is deactivated, telegrams on this group object are ignored.
When the the target position is reached, the slats are set to the same position as before the movement. If a telegram is received on the group object Sun: Move slat during the movement, the slats will be set according to the received value after the target position is reached.
Telegram value:
0 % = upper end position
1 % … 99 % = intermediate position
100 % = lower end position

Condition for visibility:

- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Automatic sun protection \ Option *Yes*

130	*Sun: Move slat*	**Channel A: Shutter**	**DPT 5.001**	**1 byte**	**C W T A**

If automatic sun protection is active and a telegram is received on this group object, the slats will be positioned according to the value received. If automatic sun protection is deactivated, telegrams on this group object are ignored.
Telegram value:
0 % = slats open
1 % … 99 % = intermediate position
100 % = slats closed

Note
The slats are positioned only after the blind/shutter reaches the target position.

Condition for visibility:

- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Automatic sun protection \ Option *Yes*

131	*Disable automatic sun protection*	**Channel A: Shutter**	**DPT 1.003**	**1 bit**	**C W T A**

This group object can be used to disable the function *Automatic sun protection*. If automatic sun protection is disabled, activation via the group object Activation of automatic sun protection will not be possible and the output can be activated only via direct group objects.
Telegram value:
1 = automatic sun protection disabled
0 = automatic sun protection enabled

Condition for visibility:

- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Automatic sun protection \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Disable automatic sun protection" \ Option

No.	Function	Group Object Name	Data Point Type	Length	Flags
132	*Disable direct operation*	**Channel A: Shutter**	**DPT 1.003**	**1 bit**	**C W**

This group object can be used to disable direct operation. If direct operation is disabled, incoming telegrams on the direct group objects will not be executed.
Automatic control has a higher priority. Even if direct operation is enabled, direct telegrams are executed only when automatic control is disabled.
Telegram value:
1 = direct operation disabled
0 = direct operation enabled

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Automatic sun protection \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Automatic sun protection \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Disable direct operation" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
133	*Status Height*	**Channel A: Shutter**	**DPT 5.001**	**1 byte**	**C R T**

This group object can be used to output the current position of the blind/shutter.
The sending behavior can be defined in the parameter Send value of group object. If the "On request" or "After change or on request" option is selected, the status is sent after a movement is completed.
Telegram value:
0 % = upper end position
1 % … 99 % = intermediate position
100 % = lower end position

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Status Height/Slat" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
134	*Status Slat*	**Channel A: Shutter**	**DPT 5.001**	**1 byte**	**C R T**

This group object can be used to output the current position of the slats.
The sending behavior can be defined in the parameter Send value of group object. If the "On request" or "After change or on request" option is selected, the status is sent after a movement is completed.
Telegram value:
0 % = slats open
1 % … 99 % = intermediate position
100 % = slats closed

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Status Height/Slat" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
135	*Status Upper end position*	**Channel A: Shutter**	**DPT 1.011**	**1 bit**	**C R T**

This group object can be used to output whether the blind/shutter is at the upper end position.
The sending behavior can be defined in the parameter Send value of group object. If the "On request" or "After change or on request" option is selected, the status is sent after the upper end position is reached or left.
Telegram value:
1 = blind/shutter in upper end position
0 = blind/shutter not in upper end position

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Status Upper/Lower end pos." \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
136	*Status Lower end position*	**Channel A: Shutter**	**DPT 1.011**	**1 bit**	**C R T**

This group object can be used to output whether the blind/shutter is at the lower end position.
The sending behavior can be defined in the parameter Send value of group object. If the "On request" or "After change or on request" option is selected, the status is sent after the lower end position is reached or left.
Telegram value:
1 = blind/shutter in lower end position
0 = blind/shutter not in lower end position

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group objects "Status Upper/Lower end pos." \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
137	*Status Operability*	**Channel A: Shutter**	**DPT 1.011**	**1 bit**	**C R T**

This group object can be used to output whether KNX operation of the output is enabled or disabled. KNX operation is disabled if
- one of the safety functions is active
- automatic sun protection is active
- the device is in *Manual operation* mode

The sending behavior can be defined in the parameter Send value of group object. If the "On request" or "After change or on request" option is selected, the status is sent after KNX operation is disabled/enabled.
Telegram value:
1 = operation enabled
0 = operation disabled

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status Operability" \ Option *Yes*

138	*Status Automatic sun protection*	**Channel A: Shutter**	**DPT 1.011**	**1 bit**	**C R T**

This group object can be used to output whether automatic sun protection control is activated or deactivated.
The sending behavior can be defined in the parameter Send value of group object. If the "On request" or "After change or on request" option is selected, the status is sent after activation/deactivation of the automatic function.
Telegram value:
1 = automatic sun protection activated
0 = automatic sun protection deactivated

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status Automatic sun protection" \ Option *Yes*

139	*Status information*	**Channel A: Shutter**	**nonDPT**	**1 byte**	**C R T**

This group object can be used to output status information about the output's operating state.
The sending behavior can be defined in the Send value of group object parameter. If the "On request" or "After change or on request" option is selected, the status is sent each time a bit value is changed.
Bit 0: Manual operation
Telegram value:
1 = active
0 = inactive
Bit 1: Disable
Telegram value:
1 = active
0 = inactive
Bit 2: Forced operation
Telegram value:
1 = active
0 = inactive
Bit 3: Frost alarm
Telegram value:
1 = active
0 = inactive
Bit 4: Rain alarm
Telegram value:
1 = active
0 = inactive
Bit 5: Wind alarm
Telegram value:
1 = active
0 = inactive
Bit 6: Automatic sun protection
Telegram value:
1 = active
0 = inactive
Bit 7: i-bus® Tool
Telegram value:
1 = active
0 = inactive
More information → Code table for 8-bit status byte (Shutter), Page 248.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator*
- Parameter window Shutter Actuator A+B \ Parameter window Status messages \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status information" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
140	*Scene 1 … 64*	**Channel A: Shutter**	**DPT 18.001**	**1 byte**	**C W**

This group object can be used to send a scene telegram. The scene telegram includes the scene number and information about whether the scene is retrieved or the relay switching state is saved in the scene.
Assignment to a scene number can be performed in the Parameter window Scene assignments, and this applies only to the output in which the scene assignment was set.
Telegram value:
0 … 63 = retrieve scene x (x = 1 … 64)
128 … 191 = save scene x (x = 1 … 64)
More information → Code table 8-bit scene, Page 254.

Note
With the functions *Weather alarm*, *Disable*, *Forced operation* or *Automatic sun protection*, changing this group object does not necessarily result in a changed blind/shutter position.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Scenes \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
141 … 144	*Retrieve scene assignment x*	**Channel A: Shutter**	**DPT 1.017**	**1 bit**	**C W**

This group object can be used to retrieve a scene assignment.
Telegram value:
1 = retrieve scene assignment x (x = 1 … 4)
0 = retrieve scene assignment x (x = 1 … 4)

Note
With the functions *Weather alarm*, *Disable*, *Forced operation* or *Automatic sun protection*, changing this group object does not necessarily result in a changed blind/shutter position.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Functions \ Parameter Application \ Option *Shutter Actuator* \ Parameter Enable function Scenes \ Option *Yes*
- Parameter window Shutter Actuator A+B \ Parameter window Scene assignments \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes* \ Parameter Scene retrieval additionally via group object \ Option *Yes*

8.30 Group objects Channel A: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
119	*Switch*	**Channel A: Switch**	**DPT 1.001**	**1 bit**	**C W**

This group object can be used to switch the output On and Off.
NO contact telegram value:
1 = On
0 = Off
NC contact telegram value:
1 = Off
0 = On

Note
With the *Logic/Threshold*, *Disable* and *Forced operation* functions or the *safety priority*, changing this group object does not necessarily result in a changed contact position.
Each relay can perform only a limited number of switching operations per minute. Frequent switching can cause a switching delay. More information → Technical data.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator

No.	Function	Group Object Name	Data Point Type	Length	Flags
120	*Status Switch*	**Channel A: Switch**	**DPT 1.011**	**1 bit**	**C R T**

This group object can be used to indicate the relay contact position. The telegram value is defined in the parameter Value of group object "Status switch".
Telegram value:
1 = contact closed or open, depending on parameterization
0 = contact open or closed, depending on parameterization

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator
- Parameter window Switch Actuator A \ Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Feedback of switching state via group object "Status switch" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags	
121	*Disable*	**Channel A: Switch**	**DPT 1.003**	**1 bit**	**C**	**W**

This group object can be used to disable the output. The function *Disable* overrides the active signals of the output. The relay contact position can be defined in the parameter Disable.
Telegram value:
1 = disable
0 = enable

Note
Disabling can be influenced via the i-bus® Tool.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Safety \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Safety \ Parameter Parameter setting \ Option *Individual* \ Parameter Disable \ Option *ON* \ *OFF* \ *Unchanged (disable)*

122	*Forced operation, 1-bit*	**Channel A: Switch**	**DPT 1.003**	**1 bit**	**C**	**W**

This group object can be used to activate 1-bit forced operation. The telegram value used to activate/deactivate forced operation can be defined in the parameter Forced operation (1 bit / 2 bit).
When forced operation is activated, the relay switching contact will assume the state defined in the parameter Switching status during forced operation. The output cannot be controlled via KNX commands while forced operation is active. When forced operation is deactivated, the relay switching contact will assume the state defined in the Switching state on cancellation of disabling, forced operation and safety priority parameter and operation will be enabled.
Telegram value:
1 = forced operation active, state On/Off/Unchanged
0 = forced operation inactive

Note
Forced operation can be influenced via the i-bus® Tool.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Safety \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Safety \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 1 bit – 0 active* \ Option *Activated 1 bit – 1 active*

122	*Forced operation, 2-bit*	**Channel A: Switch**	**DPT 2.001**	**2 bit**	**C**	**W**

This group object can be used to activate 2-bit forced operation.
With 2-bit forced operation, the value of the group object determines the switching state. The first bit activates forced operation. The second bit switches between the two states.
The output cannot be controlled via KNX commands while forced operation is active. When forced operation is deactivated, the relay switching contact will assume the state defined in the Switching state on cancellation of disabling, forced operation and safety priority parameter and operation will be enabled.
Telegram value (bit 1 | bit 0):
0 | 0 = forced operation inactive
0 | 1 = forced operation inactive
1 | 0 = forced operation active, state Off
1 | 1= forced operation active, state On

Note
Forced operation can be influenced via the i-bus® Tool.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Safety \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Safety \ Parameter Parameter setting \ Option *Individual* \ Parameter Forced operation (1 bit / 2 bit) \ Option *Activated 2 bit*

123	*Disable staircase lighting*	**Channel A: Switch**	**DPT 1.003**	**1 bit**	**C**	**W**

This group object can be used to disable the function *Staircase lighting*. If the function *Staircase lighting* is disabled, the switch-on command is forwarded without time function in the function chain and the output reacts according to its parameterization.
Telegram value:
1 = function Staircase lighting disabled
0 = function Staircase lighting enabled

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Time \ Option *Staircase lighting*
- Parameter window Switch Actuator A \ Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Disable staircase lighting via group object \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
123	*Disable delay for switching ON and OFF*	**Channel A: Switch**	**DPT 1.003**	**1 bit**	**C W**

This group object can be used to disable the function *Delay for switching ON and OFF*. If the function *Delay for switching ON and OFF* is disabled, the switch-on command is forwarded without time function in the function chain and the output reacts according to its parameterization.
Telegram value:
1 = delay for switching ON and OFF disabled
0 = delay for switching ON and OFF enabled

Note
If a delay time was set for a scene assignment in the parameter Delay, this group object can also be used to disable the delay of the scene.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Time \ Option *Delay for switching ON and OFF*
- Parameter window Switch Actuator A \ Parameter window Delay for switching ON and OFF \ Parameter Parameter setting \ Option *Individual* \ Parameter Disable delay for switching ON and OFF via group object \ Option *Yes*

124	*Staircase lighting permanent ON*	**Channel A: Switch**	**DPT 1.001**	**1 bit**	**C W**

This group object can be used to switch on the output permanently when the function *Staircase lighting* is active. Other functions continue to run in the background, but they do not trigger any switching operation.
Telegram value:
1 = starts Permanent ON operation
0 = ends Permanent ON operation

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option *Switch Actuator* \ Parameter Enable function Time \ Option *Staircase lighting*

125	*Staircase lighting time*	**Channel A: Switch**	**DPT 7.005**	**2 bytes**	**C W**

This group object can be used to set the Staircase lighting time.
Telegram value:
0 … 65,535 s

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Time \ Option *Staircase lighting*
- Parameter window Switch Actuator A \ Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Change staircase lighting time via group object \ Option *Yes*

126	*Warning staircase lighting*	**Channel A: Switch**	**DPT 1.001**	**1 bit**	**C R T**

This group object can be used to indicate the end of the Staircase lighting time. The group object is set to the value 1 at the beginning of the Warning time. The group object is set to the value 0 when the Warning time elapses. The group object can be used to switch a warning light.
Telegram value:
1 = warning time running
0 = warning time not running

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Time \ Option *Staircase lighting*
- Parameter window Switch Actuator A \ Parameter window Staircase lighting \ Parameter Parameter setting \ Option *Individual* \ Parameter Warning before switching off the staircase lighting \ Option *Via group object* \ *Via object and quick switching ON/OFF*

No.	Function	Group Object Name	Data Point Type	Length	Flags
127	*Status information*	**Channel A: Switch**	**nonDPT**	**1 byte**	**C R T**

This group object can be used to output status information about the output's operating state.
The sending behavior can be defined in the Send value of group object parameter. If the "On request" or "After change or on request" option is selected, the status is sent each time a bit value is changed.
Bit 0: Manual operation
Telegram value:
1 = active
0 = inactive
Bit 1: Disable
Telegram value:
1 = active
0 = inactive
Bit 2: Forced operation
Telegram value:
1 = active
0 = inactive
Bit 3: Safety priority 1
Telegram value:
1 = active
0 = inactive
Bit 4: Safety priority 2
Telegram value:
1 = active
0 = inactive
Bit 5: Safety priority 3
Telegram value:
1 = active
0 = inactive
Bit 6: Staircase lighting Permanent ON
Telegram value:
1 = active
0 = inactive
Bit 7: i-bus® Tool
Telegram value:
1 = active
0 = inactive
For more information → Code table for 8-bit status byte (Switch), Page 251.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator
- Parameter window Switch Actuator A \ Parameter window Basic settings \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable group object "Status information" \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
128	*Flashing*	**Channel A: Switch**	**DPT 1.001**	**1 bit**	**C W**

This group object can be used to activate the function *Flashing*. The telegram value that activates the function *Flashing* can be defined in the parameter Flashing if group object Flashing equals.
For more information → Function Flashing, Page 95.

Note
Only a limited number of switching operations can be performed per minute and relay. Frequent switching can cause a switching delay. Refer to the Technical data for more information.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Time \ Option *Flashing*

No.	Function	Group Object Name	Data Point Type	Length	Flags
129	*Scene 1…64*	**Channel A: Switch**	**DPT 18.001**	**1 byte**	**C W**

This group object can be used to send a scene telegram. The scene telegram includes the scene number and information about whether the scene is retrieved or the relay switching state is saved in the scene.
Assignment to a scene number can be performed in the Parameter window Scene assignment, and this applies only to the output in which the scene assignment was set.
Telegram value:
0 … 63 = retrieve scene x (x = 1 … 64)
128 … 191 = save scene x (x = 1 … 64)
More information → Code table 8-bit scene, Page 254.

Note
With the priorities of the safety functions, a change in the group object does not necessarily result in a changed contact position.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Scenes \ Option *Yes*

No.	Function	Group Object Name	Data Point Type	Length	Flags
130 … 133	*Retrieve scene assignment x*	**Channel A: Switch**	**DPT 1.017**	**1 bit**	**C W**

This group object can be used to retrieve a scene assignment.
Telegram value:
1 = retrieve scene assignment x (x = 1 … 4)
0 = retrieve scene assignment x (x = 1 … 4)

Note
With safety priorities, disabling or forced operation, receipt of the group object Retrieve scene assignment x does not necessarily change the contact position.

Condition for visibility:
- Parameter window Configuration \ Parameter Enable output X + Y \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Functions \ Parameter Application \ Option Switch Actuator \ Parameter Enable function Scenes \ Option *Yes*
- Parameter window Switch Actuator A \ Parameter window Scene assignment \ Parameter Parameter setting \ Option *Individual* \ Parameter Enable scene assignment x \ Option *Yes* \ Parameter Scene retrieval additionally via group object \ Option *Yes*

8.31 Group objects Channel B: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
145 … 159		**Channel B: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.32 Group objects Channels C + D: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
160 … 185		**Channels C + D: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.33 Group objects Channel C: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
160 … 174		**Channel C: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.34 Group objects Channel D: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
186 … 200		**Channel D: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.35 Group objects Channels E + F: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
201 … 226		**Channels E + F: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.36 Group objects Channel E: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
201 … 215		**Channel E: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.37 Group objects Channel F: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
227 ... 241		**Channel F: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.38 Group objects Channels G + H: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
242 ... 267		**Channels G + H: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.39 Group objects Channel G: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
242 ... 256		**Channel G: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.40 Group objects Channel H: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
268 ... 282		**Channel H: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.41 Group objects Channels I + J: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
283 ... 308		**Channels I + J: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.42 Group objects Channel I: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
283 ... 297		**Channel I: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.43 Group objects Channel J: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
309 ... 323		**Channel J: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.44 Group objects Channels K + L: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
324 ... 349		**Channels K + L: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.45 Group objects Channel K: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
324 ... 338		**Channel K: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.46 Group objects Channel L: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
350 ... 364		**Channel L: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.47 Group objects Channels M + N: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
365 ... 390		**Channels M + N: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.48 Group objects Channel M: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
365 ... 379		**Channel M: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.49 Group objects Channel N: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
391 ... 405		**Channel N: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.50 Group objects Channels O + P: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
406 ... 431		**Channels O + P: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.51 Group objects Channel O: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
406 ... 420		**Channel O: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.52 Group objects Channel P: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
432 ... 446		**Channel P: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.53 Group objects Channels Q + R: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
447 ... 472		**Channels Q + R: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.54 Group objects Channel Q: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
447 ... 461		**Channel Q: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.55 Group objects Channel R: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
473 ... 487		**Channel R: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.56 Group objects Channels S + T: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
488 ... 513		**Channels S + T: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.57 Group objects Channel S: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
488 ... 502		**Channel R: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.58 Group objects Channel T: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
514 ... 528		**Channel T: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.59 Group objects Channels U + V: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
529 ... 554		**Channels U + V: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.60 Group objects Channel U: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
529 ... 543		**Channel U: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.61 Group objects Channel V: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
555 ... 569		**Channel V: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.62 Group objects Channels W + X: Shutter

No.	Function	Group Object Name	Data Point Type	Length	Flags
570 ... 595		**Channels W + X: Shutter**			
	→ Group objects Channels A + B: Shutter, Page 227				

8.63 Group objects Channel W: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
570 ... 584		**Channel W: Switch**			
	→ Group objects Channel A: Switch, Page 233				

8.64 Group objects Channel X: Switch

No.	Function	Group Object Name	Data Point Type	Length	Flags
596 ... 610		**Channel X: Switch**			
	→ Group objects Channel A: Switch, Page 233				

9 Operation

9.1 Manual operation

NOTICE
The bus voltage supply must be established to operate the device in *Manual operation* mode.
Manual operation is ended in the event of bus voltage failure. The reaction of outputs to bus voltage failure can be set in the ETS application:
Shutter Actuator → Reaction on bus voltage failure, Page 136
Switch Actuator → Reaction on bus voltage failure, Page 195

Manual operation mode permits on-site operation of the device using a membrane keypad.

The relays of the outputs can be switched manually. The relay switching states or the shutter movement position is additionally displayed in accordance with the selected output function.

The relay status is indicated in groups of four consecutive switching outputs or two consecutive shutter outputs. A mixture of switching and shutter outputs is possible, e.g. two switching outputs and one shutter output.

Depending on the parameterization as a switching output or shutter output, each relay can be operated individually as a switching output or two relays can be operated together as a shutter output. Definition of *Switch Actuator* or *Shutter Actuator* mode is possible exclusively via parameterization in ETS.

In the as-delivered state, all outputs of the device are parameterized for operation as a Shutter Actuator. Manual operation is enabled and can be activated via the *S button* on the membrane keypad.

Note
The safety functions (weather alarms as well as the functions *Safety priority*, *Forced operation* and *Disable*) take priority over *Manual operation* mode. An output cannot be operated using the membrane keypad if it is disabled by a safety function. If the safety function is canceled in *Manual operation* mode, the output reacts corresponding to its parameterization.

Note
When manual operation is active, the outputs will continue to react to KNX commands until they are switched via manual operation. If an output has been switched via manual operation, incoming KNX commands will be processed in the background and no longer executed until manual operation is de-activated.
More information → State after end of manual operation, Page 112.

After connection to the ABB i-bus® KNX, bus voltage recovery, ETS download or ETS reset, the device is in *KNX operation*. The *Manual operation* LED is off.

More information → Function diagram of Shutter Actuator, Page 76, → Function diagram of Switch Actuator, Page 77.

9.1.1 Activating manual operation

- Press and hold *S*-button for 2 … 5 seconds.

⇨ *Manual operation* LED lights up. Manual operation is active.

Note
If manual operation is disabled via Parameter window Manual operation, *KNX operation* will not be switched to *Manual operation* mode. The LED remains off.

9.1.2 End manual operation

Manual operation mode can be ended in various ways:
- ▶ Press and hold *S*-button for 2 … 5 seconds.
- ⇨ *Manual operation* LED goes out. Manual operation is ended.

- Automatically after a time set in the parameter → Automatically reset from manual operation to KNX operation, Page 112.
- By a download. Manual operation is not reactivated automatically after the download is complete.
- Via the group object 221 *End manual operation*.

9.1.3 Disable manual operation

Manual operation can be disabled in various ways:
- Set the parameter Enable manual operation to the option *No*.
- Via the group object Enable/disable manual operation .

10 Maintenance and cleaning

10.1 Maintenance

The device is 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 the device from the electrical power supply before cleaning.
2. Clean dirty devices using a dry cloth or a cloth dampened with a soapy solution.

11 Removal and disposal

11.1 Removal

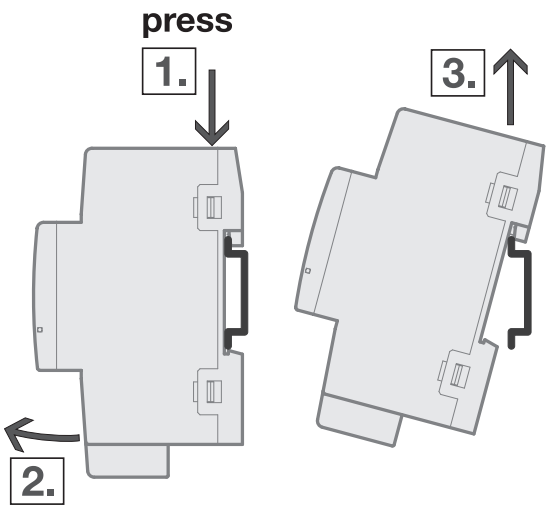

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Fig. 54: Removal from the DIN rail

1. Press on the top of the device.
2. Release the bottom of the device from the DIN rail.
3. Lift the device up and off the DIN rail.

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 Introduction

This chapter includes some tips and application examples for practical use of the device.

12.2 Ballast calculation

The ballast unit is used to operate gas-discharge lamps, e.g. fluorescent lamps. It converts the main voltage to the optimal operating voltage for the gas-discharge lamp and allows the gas-discharge lamps to be ignited (switched on). Lamps ignite with a time offset in choke/starter circuits; all fluorescent lamps ignite nearly simultaneously in ballast circuits.

With LED lamps, the ballast unit is referred to as an LED driver or LED converter. The LED driver provides constant direct current or smoothed direct current for operating the connected lamps (LEDs).

Input capacitors in the electronic circuit of the ballast unit are required for storing charge to rectify and stabilize the alternating voltage or current on the primary side. The input capacitors charge at the moment of switch-on, briefly resulting in a very high inrush current. If several ballast units are used in the same circuit, simultaneous charging of the capacitors can cause very high inrush currents to flow. This peak inrush current I_p must be taken into account when designing the switching contacts and selecting the back-up fuse.

The ballast unit's inrush current depends not only on the wattage, but also on the type, the number of elements (lamps) and the manufacturer. The specified maximum number of ballast units that can be connected per output is therefore only a guide value.

To determine the maximum number of ballast units that can be connected per output, the peak inrush current I_p and the associated pulse width of the ballast unit must be known. Refer to the technical data of the ballast unit for this information.

Typical peak inrush current I_p values for
- single-element ballast units with T5/T8 fluorescent lamps: 15 … 50 A, pulse time 120 … 200 µs
- LED drivers: 3 … 50 A, pulse time 40 … 250 µs

Refer to the device's technical data → Product overview, Page 10 for the maximum peak inrush current I_p of the switching outputs.

Example:
Sample calculation for determining the maximum number of connectible ballast units per output:
- ABB i-bus® KNX ballast 1 x 58 CF, maximum peak inrush current I_p = 33.9 A (147.1 µs)
- Maximum permissible peak inrush current I_p of the output: 200 A

200 A / 33.9 A = 5.89
Max. five ballast units can be connected.

12.3 Locking of outputs

The device does not possess any mutually electromechanically interlocked output contacts. Interlocking can be implemented via a logical connection with the group objects Status Upper end position and Status Lower end position . The output sends the value 1 on these group objects when the blind/shutter is in the respective end position. The blind/shutter is in an intermediate position if the value 0 is sent on both group objects.

The group objects can be enabled in the parameter Enable group objects "Status Upper/Lower end pos.".

Example:
An awning must not be moved when the window is open. Conversely, a drive must not open the window when the awning is down.

12.4 Telegram rate limitation

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 ABB i-bus® KNX until the end of the period. A new period commences at the end of the previous period. The telegram counter is reset to zero, and sending of telegrams is allowed again. The current group object value at the time of sending is always sent.
The first period (break time) is not precisely predefined. It can be anywhere between zero seconds and the parameterized time. The subsequent sending times correspond to the parameterized time.
Example:
Maximum number of telegrams sent = 5, period = 5 s. 20 telegrams are ready to send. The device immediately sends five telegrams. The next five telegrams are sent after a maximum of 5 seconds. From this point, a further five telegrams are sent via ABB i-bus® KNX every 5 seconds.

13 Appendix

13.1 Code table for 8-bit status byte (Shutter)

The following code table contains the telegram code of the group object Status information belonging to a shutter output.

The 8-bit status byte indicates all pending forced operations and functions that affect the switching of the output.

X = value 1, applicable

empty = value 0, not applicable

Bit no.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Automatic sun protection	Wind alarm	Rain alarm	Frost alarm	Forced operation	Disable	Manual operation	Output operability
0	00									Via KNX
1	01								X	Disabled
2	02							X		Disabled
3	03							X	X	Disabled
4	04						X			Disabled
5	05						X		X	Disabled
6	06						X	X		Disabled
7	07						X	X	X	Disabled
8	08					X				Disabled
9	09					X			X	Disabled
10	0A					X		X		Disabled
11	0B					X		X	X	Disabled
12	0C					X	X			Disabled
13	0D					X	X		X	Disabled
14	0E					X	X	X		Disabled
15	0F					X	X	X	X	Disabled
16	10				X					Disabled
17	11				X				X	Disabled
18	12				X			X		Disabled
19	13				X			X	X	Disabled
20	14				X		X			Disabled
21	15				X		X		X	Disabled
22	16				X		X	X		Disabled
23	17				X		X	X	X	Disabled
24	18				X	X				Disabled
25	19				X	X			X	Disabled
26	1A				X	X		X		Disabled
27	1B				X	X		X	X	Disabled
28	1C				X	X	X			Disabled
29	1D				X	X	X		X	Disabled
30	1E				X	X	X	X		Disabled
31	1F				X	X	X	X	X	Disabled
32	20			X						Disabled
33	21			X					X	Disabled
34	22			X				X		Disabled
35	23			X				X	X	Disabled
36	24			X			X			Disabled
37	25			X			X		X	Disabled
38	26			X			X	X		Disabled
39	27			X			X	X	X	Disabled
40	28			X		X				Disabled
41	29			X		X			X	Disabled
42	2A			X		X		X		Disabled
43	2B			X		X		X	X	Disabled
44	2C			X		X	X			Disabled

Bit no.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Automatic sun protection	Wind alarm	Rain alarm	Frost alarm	Forced operation	Disable	Manual operation	Output operability
45	2D			X		X	X		X	Disabled
46	2E			X		X	X	X		Disabled
47	2F			X		X	X	X	X	Disabled
48	30			X	X					Disabled
49	31			X	X				X	Disabled
50	32			X	X			X		Disabled
51	33			X	X			X	X	Disabled
52	34			X	X		X			Disabled
53	35			X	X		X		X	Disabled
54	36			X	X		X	X		Disabled
55	37			X	X		X	X	X	Disabled
56	38			X	X	X				Disabled
57	39			X	X	X			X	Disabled
58	3A			X	X	X		X		Disabled
59	3B			X	X	X		X	X	Disabled
60	3C			X	X	X	X			Disabled
61	3D			X	X	X	X		X	Disabled
62	3E			X	X	X	X	X		Disabled
63	3F			X	X	X	X	X	X	Disabled
64	40		X							I-bus + KNX
65	41		X						X	Disabled
66	42		X					X		Disabled
67	43		X					X	X	Disabled
68	44		X				X			Disabled
69	45		X				X		X	Disabled
70	46		X				X	X		Disabled
71	47		X				X	X	X	Disabled
72	48		X			X				Disabled
73	49		X			X			X	Disabled
74	4A		X			X		X		Disabled
75	4B		X			X		X	X	Disabled
76	4C		X			X	X			Disabled
77	4D		X			X	X		X	Disabled
78	4E		X			X	X	X		Disabled
79	4F		X			X	X	X	X	Disabled
80	50		X		X					Disabled
81	51		X		X				X	Disabled
82	52		X		X			X		Disabled
83	53		X		X			X	X	Disabled
84	54		X		X		X			Disabled
85	55		X		X		X		X	Disabled
86	56		X		X		X	X		Disabled
87	57		X		X		X	X	X	Disabled
88	58		X		X	X				Disabled
89	59		X		X	X			X	Disabled

Bit no.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Automatic sun protection	Wind alarm	Rain alarm	Frost alarm	Forced operation	Disable	Manual operation	Output operability
90	5A		X		X	X		X		Disabled
91	5B		X		X	X		X	X	Disabled
92	5C		X		X	X	X			Disabled
93	5D		X		X	X	X		X	Disabled
94	5E		X		X	X	X	X		Disabled
95	5F		X		X	X	X	X	X	Disabled
96	60		X	X						Disabled
97	61		X	X					X	Disabled
98	62		X	X				X		Disabled
99	63		X	X				X	X	Disabled
100	64		X	X			X			Disabled
101	65		X	X			X		X	Disabled
102	66		X	X			X	X		Disabled
103	67		X	X			X	X	X	Disabled
104	68		X	X		X				Disabled
105	69		X	X		X			X	Disabled
106	6A		X	X		X		X		Disabled
107	6B		X	X		X		X	X	Disabled
108	6C		X	X		X	X			Disabled
109	6D		X	X		X	X		X	Disabled
110	6E		X	X		X	X	X		Disabled
111	6F		X	X		X	X	X	X	Disabled
112	70		X	X	X					Disabled
113	71		X	X	X				X	Disabled
114	72		X	X	X			X		Disabled
115	73		X	X	X			X	X	Disabled
116	74		X	X	X		X			Disabled
117	75		X	X	X		X		X	Disabled
118	76		X	X	X		X	X		Disabled
119	77		X	X	X		X	X	X	Disabled
120	78		X	X	X	X				Disabled
121	79		X	X	X	X			X	Disabled
122	7A		X	X	X	X		X		Disabled
123	7B		X	X	X	X		X	X	Disabled
124	7C		X	X	X	X	X			Disabled
125	7D		X	X	X	X	X		X	Disabled
126	7E		X	X	X	X	X	X		Disabled
127	7F		X	X	X	X	X	X	X	Disabled
128	80	X								Manual only
129	81	X							X	Disabled
130	82	X						X		Disabled
131	83	X						X	X	Disabled
132	84	X					X			Disabled
133	85	X					X		X	Disabled
134	86	X					X	X		Disabled
135	87	X					X	X	X	Disabled
136	88	X				X				Disabled
137	89	X				X			X	Disabled
138	8A	X				X		X		Disabled
139	8B	X				X		X	X	Disabled
140	8C	X				X	X			Disabled
141	8D	X				X	X		X	Disabled
142	8E	X				X	X	X		Disabled
143	8F	X				X	X	X	X	Disabled
144	90	X			X					Disabled
145	91	X			X				X	Disabled
146	92	X			X			X		Disabled
147	93	X			X			X	X	Disabled
148	94	X			X		X			Disabled
149	95	X			X		X		X	Disabled
150	96	X			X		X	X		Disabled
151	97	X			X		X	X	X	Disabled
152	98	X			X	X				Disabled

Bit no.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Automatic sun protection	Wind alarm	Rain alarm	Frost alarm	Forced operation	Disable	Manual operation	Output operability
153	99	X			X	X			X	Disabled
154	9A	X			X	X		X		Disabled
155	9B	X			X	X		X	X	Disabled
156	9C	X			X	X	X			Disabled
157	9D	X			X	X	X		X	Disabled
158	9E	X			X	X	X	X		Disabled
159	9F	X			X	X	X	X	X	Disabled
160	A0	X		X						Disabled
161	A1	X		X					X	Disabled
162	A2	X		X				X		Disabled
163	A3	X		X				X	X	Disabled
164	A4	X		X			X			Disabled
165	A5	X		X			X		X	Disabled
166	A6	X		X			X	X		Disabled
167	A7	X		X			X	X	X	Disabled
168	A8	X		X		X				Disabled
169	A9	X		X		X			X	Disabled
170	AA	X		X		X		X		Disabled
171	AB	X		X		X		X	X	Disabled
172	AC	X		X		X	X			Disabled
173	AD	X		X		X	X		X	Disabled
174	AE	X		X		X	X	X		Disabled
175	AF	X		X		X	X	X	X	Disabled
176	B0	X		X	X					Disabled
177	B1	X		X	X				X	Disabled
178	B2	X		X	X			X		Disabled
179	B3	X		X	X			X	X	Disabled
180	B4	X		X	X		X			Disabled
181	B5	X		X	X		X		X	Disabled
182	B6	X		X	X		X	X		Disabled
183	B7	X		X	X		X	X	X	Disabled
184	B8	X		X	X	X				Disabled
185	B9	X		X	X	X			X	Disabled
186	BA	X		X	X	X		X		Disabled
187	BB	X		X	X	X		X	X	Disabled
188	BC	X		X	X	X	X			Disabled
189	BD	X		X	X	X	X		X	Disabled
190	BE	X		X	X	X	X	X		Disabled
191	BF	X		X	X	X	X	X	X	Disabled
192	C0	X	X							Manual only
193	C1	X	X						X	Disabled
194	C2	X	X					X		Disabled
195	C3	X	X					X	X	Disabled
196	C4	X	X				X			Disabled
197	C5	X	X				X		X	Disabled
198	C6	X	X				X	X		Disabled
199	C7	X	X				X	X	X	Disabled
200	C8	X	X			X				Disabled
201	C9	X	X			X			X	Disabled
202	CA	X	X			X		X		Disabled
203	CB	X	X			X		X	X	Disabled
204	CC	X	X			X	X			Disabled
205	CD	X	X			X	X		X	Disabled
206	CE	X	X			X	X	X		Disabled
207	CF	X	X			X	X	X	X	Disabled
208	D0	X	X		X					Disabled
209	D1	X	X		X				X	Disabled
210	D2	X	X		X			X		Disabled
211	D3	X	X		X			X	X	Disabled
212	D4	X	X		X		X			Disabled
213	D5	X	X		X		X		X	Disabled
214	D6	X	X		X		X	X		Disabled
215	D7	X	X		X		X	X	X	Disabled

Bit no.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Automatic sun protection	Wind alarm	Rain alarm	Frost alarm	Forced operation	Disable	Manual operation	Output operability
216	D8	X	X		X	X				Disabled
217	D9	X	X		X	X			X	Disabled
218	DA	X	X		X	X		X		Disabled
219	DB	X	X		X	X		X	X	Disabled
220	DC	X	X		X	X	X			Disabled
221	DD	X	X		X	X	X		X	Disabled
222	DE	X	X		X	X	X	X		Disabled
223	DF	X	X		X	X	X	X	X	Disabled
224	E0	X	X	X						Disabled
225	E1	X	X	X					X	Disabled
226	E2	X	X	X				X		Disabled
227	E3	X	X	X				X	X	Disabled
228	E4	X	X	X			X			Disabled
229	E5	X	X	X			X		X	Disabled
230	E6	X	X	X			X	X		Disabled
231	E7	X	X	X			X	X	X	Disabled
232	E8	X	X	X		X				Disabled
233	E9	X	X	X		X			X	Disabled
234	EA	X	X	X		X		X		Disabled
235	EB	X	X	X		X		X	X	Disabled

Bit no.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Automatic sun protection	Wind alarm	Rain alarm	Frost alarm	Forced operation	Disable	Manual operation	Output operability
236	EC	X	X	X		X	X			Disabled
237	ED	X	X	X		X	X		X	Disabled
238	EE	X	X	X		X	X	X		Disabled
239	EF	X	X	X		X	X	X	X	Disabled
240	F0	X	X	X	X					Disabled
241	F1	X	X	X	X				X	Disabled
242	F2	X	X	X	X			X		Disabled
243	F3	X	X	X	X			X	X	Disabled
244	F4	X	X	X	X		X			Disabled
245	F5	X	X	X	X		X		X	Disabled
246	F6	X	X	X	X		X	X		Disabled
247	F7	X	X	X	X		X	X	X	Disabled
248	F8	X	X	X	X	X				Disabled
249	F9	X	X	X	X	X			X	Disabled
250	FA	X	X	X	X	X		X		Disabled
251	FB	X	X	X	X	X		X	X	Disabled
252	FC	X	X	X	X	X	X			Disabled
253	FD	X	X	X	X	X	X		X	Disabled
254	FE	X	X	X	X	X	X	X		Disabled
255	FF	X	X	X	X	X	X	X	X	Disabled

Tab. 35: Code table for 8-bit status byte (Shutter)

13.2 Code table for 8-bit status byte (Switch)

The following code table contains the telegram code of the group object Status information belonging to a switch output.

The 8-bit status byte indicates all pending forced operations and functions that affect the switching of the output.

X = value 1, applicable

empty = value 0, not applicable

Bit No.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Staircase lighting Permanent ON.	Safety priority 3	Safety priority 2	Safety priority 1	Forced operation	Disable	Manual operation	Output operability
0	00									Via KNX
1	01								X	Disabled
2	02							X		Disabled
3	03							X	X	Disabled
4	04						X			Disabled
5	05						X		X	Disabled
6	06						X	X		Disabled
7	07						X	X	X	Disabled
8	08					X				Disabled
9	09					X			X	Disabled
10	0A					X		X		Disabled
11	0B					X		X	X	Disabled
12	0C					X	X			Disabled
13	0D					X	X		X	Disabled
14	0E					X	X	X		Disabled
15	0F					X	X	X	X	Disabled
16	10				X					Disabled
17	11				X				X	Disabled
18	12				X			X		Disabled
19	13				X			X	X	Disabled
20	14				X		X			Disabled
21	15				X		X		X	Disabled
22	16				X		X	X		Disabled
23	17				X		X	X	X	Disabled
24	18				X	X				Disabled
25	19				X	X			X	Disabled
26	1A				X	X		X		Disabled
27	1B				X	X		X	X	Disabled
28	1C				X	X	X			Disabled
29	1D				X	X	X		X	Disabled
30	1E				X	X	X	X		Disabled
31	1F				X	X	X	X	X	Disabled
32	20			X						Disabled
33	21			X					X	Disabled
34	22			X				X		Disabled
35	23			X				X	X	Disabled
36	24			X			X			Disabled
37	25			X			X		X	Disabled
38	26			X			X	X		Disabled
39	27			X			X	X	X	Disabled
40	28			X		X				Disabled
41	29			X		X			X	Disabled
42	2A			X		X		X		Disabled
43	2B			X		X		X	X	Disabled
44	2C			X		X	X			Disabled
45	2D			X		X	X		X	Disabled
46	2E			X		X	X	X		Disabled
47	2F			X		X	X	X	X	Disabled
48	30			X	X					Disabled

Bit No.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Staircase lighting Permanent ON.	Safety priority 3	Safety priority 2	Safety priority 1	Forced operation	Disable	Manual operation	Output operability
49	31			X	X				X	Disabled
50	32			X	X			X		Disabled
51	33			X	X			X	X	Disabled
52	34			X	X		X			Disabled
53	35			X	X		X		X	Disabled
54	36			X	X		X	X		Disabled
55	37			X	X		X	X	X	Disabled
56	38			X	X	X				Disabled
57	39			X	X	X			X	Disabled
58	3A			X	X	X		X		Disabled
59	3B			X	X	X		X	X	Disabled
60	3C			X	X	X	X			Disabled
61	3D			X	X	X	X		X	Disabled
62	3E			X	X	X	X	X		Disabled
63	3F			X	X	X	X	X	X	Disabled
64	40		X							I-bus + KNX
65	41		X						X	Disabled
66	42		X					X		Disabled
67	43		X					X	X	Disabled
68	44		X				X			Disabled
69	45		X				X		X	Disabled
70	46		X				X	X		Disabled
71	47		X				X	X	X	Disabled
72	48		X			X				Disabled
73	49		X			X			X	Disabled
74	4A		X			X		X		Disabled
75	4B		X			X		X	X	Disabled
76	4C		X			X	X			Disabled
77	4D		X			X	X		X	Disabled
78	4E		X			X	X	X		Disabled
79	4F		X			X	X	X	X	Disabled
80	50		X		X					Disabled
81	51		X		X				X	Disabled
82	52		X		X			X		Disabled
83	53		X		X			X	X	Disabled
84	54		X		X		X			Disabled
85	55		X		X		X		X	Disabled
86	56		X		X		X	X		Disabled
87	57		X		X		X	X	X	Disabled
88	58		X		X	X				Disabled
89	59		X		X	X			X	Disabled
90	5A		X		X	X		X		Disabled
91	5B		X		X	X		X	X	Disabled
92	5C		X		X	X	X			Disabled
93	5D		X		X	X	X		X	Disabled
94	5E		X		X	X	X	X		Disabled
95	5F		X		X	X	X	X	X	Disabled
96	60		X	X						Disabled
97	61		X	X					X	Disabled

Bit No.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Staircase lighting Permanent ON.	Safety priority 3	Safety priority 2	Safety priority 1	Forced operation	Disable	Manual operation	Output operability
98	62		X	X				X		Disabled
99	63		X	X				X	X	Disabled
100	64		X	X			X			Disabled
101	65		X	X			X		X	Disabled
102	66		X	X			X	X		Disabled
103	67		X	X			X	X	X	Disabled
104	68		X	X		X				Disabled
105	69		X	X		X			X	Disabled
106	6A		X	X		X		X		Disabled
107	6B		X	X		X		X	X	Disabled
108	6C		X	X		X	X			Disabled
109	6D		X	X		X	X		X	Disabled
110	6E		X	X		X	X	X		Disabled
111	6F		X	X		X	X	X	X	Disabled
112	70		X	X	X					Disabled
113	71		X	X	X				X	Disabled
114	72		X	X	X			X		Disabled
115	73		X	X	X			X	X	Disabled
116	74		X	X	X		X			Disabled
117	75		X	X	X		X		X	Disabled
118	76		X	X	X		X	X		Disabled
119	77		X	X	X		X	X	X	Disabled
120	78		X	X	X	X				Disabled
121	79		X	X	X	X			X	Disabled
122	7A		X	X	X	X		X		Disabled
123	7B		X	X	X	X		X	X	Disabled
124	7C		X	X	X	X	X			Disabled
125	7D		X	X	X	X	X		X	Disabled
126	7E		X	X	X	X	X	X		Disabled
127	7F		X	X	X	X	X	X	X	Disabled
128	80	X								Manual only
129	81	X							X	Disabled
130	82	X						X		Disabled
131	83	X						X	X	Disabled
132	84	X					X			Disabled
133	85	X					X		X	Disabled
134	86	X					X	X		Disabled
135	87	X					X	X	X	Disabled
136	88	X				X				Disabled
137	89	X				X			X	Disabled
138	8A	X				X		X		Disabled
139	8B	X				X		X	X	Disabled
140	8C	X				X	X			Disabled
141	8D	X				X	X		X	Disabled
142	8E	X				X	X	X		Disabled
143	8F	X				X	X	X	X	Disabled
144	90	X			X					Disabled
145	91	X			X				X	Disabled
146	92	X			X			X		Disabled
147	93	X			X			X	X	Disabled
148	94	X			X		X			Disabled
149	95	X			X		X		X	Disabled
150	96	X			X		X	X		Disabled
151	97	X			X		X	X	X	Disabled
152	98	X			X	X				Disabled
153	99	X			X	X			X	Disabled
154	9A	X			X	X		X		Disabled
155	9B	X			X	X		X	X	Disabled
156	9C	X			X	X	X			Disabled
157	9D	X			X	X	X		X	Disabled
158	9E	X			X	X	X	X		Disabled
159	9F	X			X	X	X	X	X	Disabled
160	A0	X		X						Disabled

Bit No.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Staircase lighting Permanent ON.	Safety priority 3	Safety priority 2	Safety priority 1	Forced operation	Disable	Manual operation	Output operability
161	A1	X		X					X	Disabled
162	A2	X		X				X		Disabled
163	A3	X		X				X	X	Disabled
164	A4	X		X			X			Disabled
165	A5	X		X			X		X	Disabled
166	A6	X		X			X	X		Disabled
167	A7	X		X			X	X	X	Disabled
168	A8	X		X		X				Disabled
169	A9	X		X		X			X	Disabled
170	AA	X		X		X		X		Disabled
171	AB	X		X		X		X	X	Disabled
172	AC	X		X		X	X			Disabled
173	AD	X		X		X	X		X	Disabled
174	AE	X		X		X	X	X		Disabled
175	AF	X		X		X	X	X	X	Disabled
176	B0	X		X	X					Disabled
177	B1	X		X	X				X	Disabled
178	B2	X		X	X			X		Disabled
179	B3	X		X	X			X	X	Disabled
180	B4	X		X	X		X			Disabled
181	B5	X		X	X		X		X	Disabled
182	B6	X		X	X		X	X		Disabled
183	B7	X		X	X		X	X	X	Disabled
184	B8	X		X	X	X				Disabled
185	B9	X		X	X	X			X	Disabled
186	BA	X		X	X	X		X		Disabled
187	BB	X		X	X	X		X	X	Disabled
188	BC	X		X	X	X	X			Disabled
189	BD	X		X	X	X	X		X	Disabled
190	BE	X		X	X	X	X	X		Disabled
191	BF	X		X	X	X	X	X	X	Disabled
192	C0	X	X							Manual only
193	C1	X	X						X	Disabled
194	C2	X	X					X		Disabled
195	C3	X	X					X	X	Disabled
196	C4	X	X				X			Disabled
197	C5	X	X				X		X	Disabled
198	C6	X	X				X	X		Disabled
199	C7	X	X				X	X	X	Disabled
200	C8	X	X			X				Disabled
201	C9	X	X			X			X	Disabled
202	CA	X	X			X		X		Disabled
203	CB	X	X			X		X	X	Disabled
204	CC	X	X			X	X			Disabled
205	CD	X	X			X	X		X	Disabled
206	CE	X	X			X	X	X		Disabled
207	CF	X	X			X	X	X	X	Disabled
208	D0	X	X		X					Disabled
209	D1	X	X		X				X	Disabled
210	D2	X	X		X			X		Disabled
211	D3	X	X		X			X	X	Disabled
212	D4	X	X		X		X			Disabled
213	D5	X	X		X		X		X	Disabled
214	D6	X	X		X		X	X		Disabled
215	D7	X	X		X		X	X	X	Disabled
216	D8	X	X		X	X				Disabled
217	D9	X	X		X	X			X	Disabled
218	DA	X	X		X	X		X		Disabled
219	DB	X	X		X	X		X	X	Disabled
220	DC	X	X		X	X	X			Disabled
221	DD	X	X		X	X	X		X	Disabled
222	DE	X	X		X	X	X	X		Disabled
223	DF	X	X		X	X	X	X	X	Disabled

Bit No.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Staircase lighting Permanent ON.	Safety priority 3	Safety priority 2	Safety priority 1	Forced operation	Disable	Manual operation	Output operability
224	E0	X	X	X						Disabled
225	E1	X	X	X					X	Disabled
226	E2	X	X	X				X		Disabled
227	E3	X	X	X				X	X	Disabled
228	E4	X	X	X			X			Disabled
229	E5	X	X	X			X		X	Disabled
230	E6	X	X	X			X	X		Disabled
231	E7	X	X	X			X	X	X	Disabled
232	E8	X	X	X		X				Disabled
233	E9	X	X	X		X			X	Disabled
234	EA	X	X	X		X		X		Disabled
235	EB	X	X	X		X		X	X	Disabled
236	EC	X	X	X		X	X			Disabled
237	ED	X	X	X		X	X		X	Disabled
238	EE	X	X	X		X	X	X		Disabled
239	EF	X	X	X		X	X	X	X	Disabled

Bit No.		7	6	5	4	3	2	1	0	
8-bit value	Hexadecimal	i-bus® Tool	Staircase lighting Permanent ON.	Safety priority 3	Safety priority 2	Safety priority 1	Forced operation	Disable	Manual operation	Output operability
240	F0	X	X	X	X					Disabled
241	F1	X	X	X	X				X	Disabled
242	F2	X	X	X	X			X		Disabled
243	F3	X	X	X	X			X	X	Disabled
244	F4	X	X	X	X		X			Disabled
245	F5	X	X	X	X		X		X	Disabled
246	F6	X	X	X	X		X	X		Disabled
247	F7	X	X	X	X		X	X	X	Disabled
248	F8	X	X	X	X	X				Disabled
249	F9	X	X	X	X	X			X	Disabled
250	FA	X	X	X	X	X		X		Disabled
251	FB	X	X	X	X	X		X	X	Disabled
252	FC	X	X	X	X	X	X			Disabled
253	FD	X	X	X	X	X	X		X	Disabled
254	FE	X	X	X	X	X	X	X		Disabled
255	FF	X	X	X	X	X	X	X	X	Disabled

Tab. 36: Code table for 8-bit status byte (Switch)

13.3 Code table 8-bit scene

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 retrieved/saved.

X = value 1, applicable

empty = value 0, not applicable

Bit No.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Retrieve 0 Save 1	Not defined	Binary number codes	Binary number codes n	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Retrieve A Save S No reaction –
0	00									Via KNX	
0	00	0								1	A
1	01	0							X	2	A
2	02	0						X		3	A
3	03	0						X	X	4	A
4	04	0					X			5	A
5	05	0					X		X	6	A
6	06	0					X	X		7	A
7	07	0					X	X	X	8	A
8	08	0				X				9	A
9	09	0				X			X	10	A
10	0A	0				X		X		11	A
11	0B	0				X		X	X	12	A
12	0C	0				X	X			13	A
13	0D	0				X	X		X	14	A
14	0E	0				X	X	X		15	A
15	0F	0				X	X	X	X	16	A
16	10	0			X					17	A
17	11	0			X				X	18	A
18	12	0			X			X		19	A
19	13	0			X			X	X	20	A
20	14	0			X		X			21	A
21	15	0			X		X		X	22	A
22	16	0			X		X	X		23	A
23	17	0			X		X	X	X	24	A
24	18	0			X	X				25	A
25	19	0			X	X			X	26	A
26	1A	0			X	X		X		27	A
27	1B	0			X	X		X	X	28	A
28	1C	0			X	X	X			29	A
29	1D	0			X	X	X		X	30	A
30	1E	0			X	X	X	X		31	A
31	1F	0			X	X	X	X	X	32	A
32	20	0		X						33	A
33	21	0		X					X	34	A
34	22	0		X				X		35	A
35	23	0		X				X	X	36	A
36	24	0		X			X			37	A
37	25	0		X			X		X	38	A
38	26	0		X			X	X		39	A
39	27	0		X			X	X	X	40	A
40	28	0		X		X				41	A
41	29	0		X		X			X	42	A
42	2A	0		X		X		X		43	A
43	2B	0		X		X		X	X	44	A
44	2C	0		X		X	X			45	A
45	2D	0		X		X	X		X	46	A
46	2E	0		X		X	X	X		47	A
47	2F	0		X		X	X	X	X	48	A
48	30	0		X	X					49	A
49	31	0		X	X				X	50	A
50	32	0		X	X			X		51	A

Bit No.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Retrieve 0 Save 1	Not defined	Binary number codes	Binary number codes n	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Retrieve A Save S No reaction –
51	33	0		X	X			X	X	52	A
52	34	0		X	X		X			53	A
53	35	0		X	X		X		X	54	A
54	36	0		X	X		X	X		55	A
55	37	0		X	X		X	X	X	56	A
56	38	0		X	X	X				57	A
57	39	0		X	X	X			X	58	A
58	3A	0		X	X	X		X		59	A
59	3B	0		X	X	X		X	X	60	A
60	3C	0		X	X	X	X			61	A
61	3D	0		X	X	X	X		X	62	A
62	3E	0		X	X	X	X	X		63	A
63	3F	0		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		–	–

Bit No.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Retrieve 0 Save 1	Not defined	Binary number codes	Binary number codes n	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Retrieve A Save S No reaction –
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	–	–
126	7E	–	X	X	X	X	X	X		–	–
127	7F	–	X	X	X	X	X	X	X	–	–
128	80	1								1	W
129	81	1							X	2	W
130	82	1						X		3	W
131	83	1						X	X	4	W
132	84	1					X			5	W
133	85	1					X		X	6	W
134	86	1					X	X		7	W
135	87	1					X	X	X	8	W
136	88	1				X				9	W
137	89	1				X			X	10	W
138	8A	1				X		X		11	W
139	8B	1				X		X	X	12	W
140	8C	1				X	X			13	W
141	8D	1				X	X		X	14	W
142	8E	1				X	X	X		15	W
143	8F	1				X	X	X	X	16	W
144	90	1			X					17	W
145	91	1			X				X	18	W
146	92	1			X			X		19	W
147	93	1			X			X	X	20	W
148	94	1			X		X			21	W
149	95	1			X		X		X	22	W
150	96	1			X		X	X		23	W
151	97	1			X		X	X	X	24	W
152	98	1			X	X				25	W
153	99	1			X	X			X	26	W
154	9A	1			X	X		X		27	W
155	9B	1			X	X		X	X	28	W
156	9C	1			X	X	X			29	W
157	9D	1			X	X	X		X	30	W
158	9E	1			X	X	X	X		31	W
159	9F	1			X	X	X	X	X	32	W
160	A0	1		X						33	W
161	A1	1		X					X	34	W
162	A2	1		X				X		35	W
163	A3	1		X				X	X	36	W
164	A4	1		X			X			37	W
165	A5	1		X			X		X	38	W

Bit No.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Retrieve 0 Save 1	Not defined	Binary number codes	Binary number codes n	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Retrieve A Save S No reaction –
166	A6	1		X			X	X		39	W
167	A7	1		X			X	X	X	40	W
168	A8	1		X		X				41	W
169	A9	1		X		X			X	42	W
170	AA	1		X		X		X		43	W
171	AB	1		X		X		X	X	44	W
172	AC	1		X		X	X			45	W
173	AD	1		X		X	X		X	46	W
174	AE	1		X		X	X	X		47	W
175	AF	1		X		X	X	X	X	48	W
176	B0	1		X	X					49	W
177	B1	1		X	X				X	50	W
178	B2	1		X	X			X		51	W
179	B3	1		X	X			X	X	52	W
180	B4	1		X	X		X			53	W
181	B5	1		X	X		X		X	54	W
182	B6	1		X	X		X	X		55	W
183	B7	1		X	X		X	X	X	56	W
184	B8	1		X	X	X				57	W
185	B9	1		X	X	X			X	58	W
186	BA	1		X	X	X		X		59	W
187	BB	1		X	X	X		X	X	60	W
188	BC	1		X	X	X	X			61	W
189	BD	1		X	X	X	X		X	62	W
190	BE	1		X	X	X	X	X		63	W
191	BF	1		X	X	X	X	X	X	64	W
192	C0	–	X							–	–
193	C1	–	X						X	–	–
194	C2	–	X					X		–	–
195	C3	–	X					X	X	–	–
196	C4	–	X				X			–	–
197	C5	–	X				X		X	–	–
198	C6	–	X				X	X		–	–
199	C7	–	X				X	X	X	–	–
200	C8	–	X			X				–	–
201	C9	–	X			X			X	–	–
202	CA	–	X			X		X		–	–
203	CB	–	X			X		X	X	–	–
204	CC	–	X			X	X			–	–
205	CD	–	X			X	X		X	–	–
206	CE	–	X			X	X	X		–	–
207	CF	–	X			X	X	X	X	–	–
208	D0	–	X		X					–	–
209	D1	–	X		X				X	–	–
210	D2	–	X		X			X		–	–
211	D3	–	X		X			X	X	–	–
212	D4	–	X		X		X			–	–
213	D5	–	X		X		X		X	–	–
214	D6	–	X		X		X	X		–	–
215	D7	–	X		X		X	X	X	–	–
216	D8	–	X		X	X				–	–
217	D9	–	X		X	X			X	–	–
218	DA	–	X		X	X		X		–	–
219	DB	–	X		X	X		X	X	–	–
220	DC	–	X		X	X	X			–	–
221	DD	–	X		X	X	X		X	–	–
222	DE	–	X		X	X	X	X		–	–
223	DF	–	X		X	X	X	X	X	–	–
224	E0	–	X	X						–	–
225	E1	–	X	X					X	–	–
226	E2	–	X	X				X		–	–
227	E3	–	X	X				X	X	–	–
228	E4	–	X	X			X			–	–

Bit No.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Retrieve 0 Save 1	Not defined	Binary number codes	Binary number codes n	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Retrieve A Save S No reaction –
229	E5	–	X	X			X		X	–	–
230	E6	–	X	X			X	X		–	–
231	E7	–	X	X			X	X	X	–	–
232	E8	–	X	X		X				–	–
233	E9	–	X	X		X			X	–	–
234	EA	–	X	X		X		X		–	–
235	EB	–	X	X		X		X	X	–	–
236	EC	–	X	X		X	X			–	–
237	ED	–	X	X		X	X		X	–	–
238	EE	–	X	X		X	X	X		–	–
239	EF	–	X	X		X	X	X	X	–	–
240	F0	–	X	X	X					–	–
241	F1	–	X	X	X				X	–	–
242	F2	–	X	X	X			X		–	–

Bit No.		7	6	5	4	3	2	1	0		
8-bit value	Hexadecimal	Retrieve 0 Save 1	Not defined	Binary number codes	Binary number codes n	Binary number codes	Binary number codes	Binary number codes	Binary number codes	Scene number	Retrieve A Save S No reaction –
243	F3	–	X	X	X			X	X	–	–
244	F4	–	X	X	X		X			–	–
245	F5	–	X	X	X		X		X	–	–
246	F6	–	X	X	X		X	X		–	–
247	F7	–	X	X	X		X	X	X	–	–
248	F8	–	X	X	X	X				–	–
249	F9	–	X	X	X	X			X	–	–
250	FA	–	X	X	X	X		X		–	–
251	FB	–	X	X	X	X		X	X	–	–
252	FC	–	X	X	X	X	X			–	–
253	FD	–	X	X	X	X	X		X	–	–
254	FE	–	X	X	X	X	X	X		–	–
255	FF	–	X	X	X	X	X	X	X	–	–

Tab. 37: Code table 8-bit scene

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