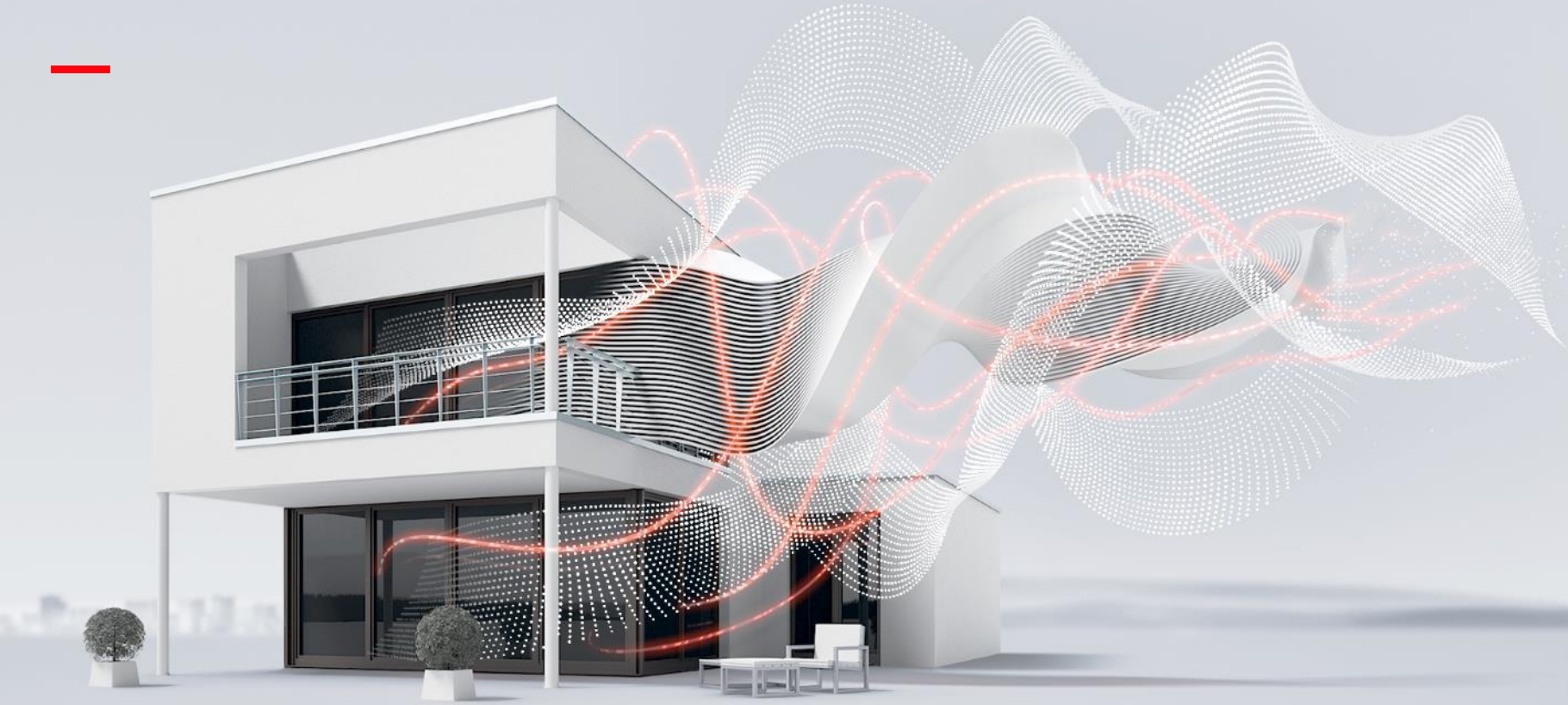


2020

KNX Combi Switch Actuators SAH/S

Competence Center Europe – Smart Buildings

Thorsten Reibel

© Copyright 2019 ABB. All rights reserved. Document ID.: Rev.:

KNX Combi Switch Actuators SAH/S

Switch to a smarter tomorrow

©ABB

Agenda

Why new KNX Switch Actuators?

Overview of all new Switch Actuators

KNX Combi Switch Actuators

- Range Overview and Functions
- ETS Application
- Commercial and Marketing Aspects

©ABB

KNX Combi Switch Actuators SAH/S

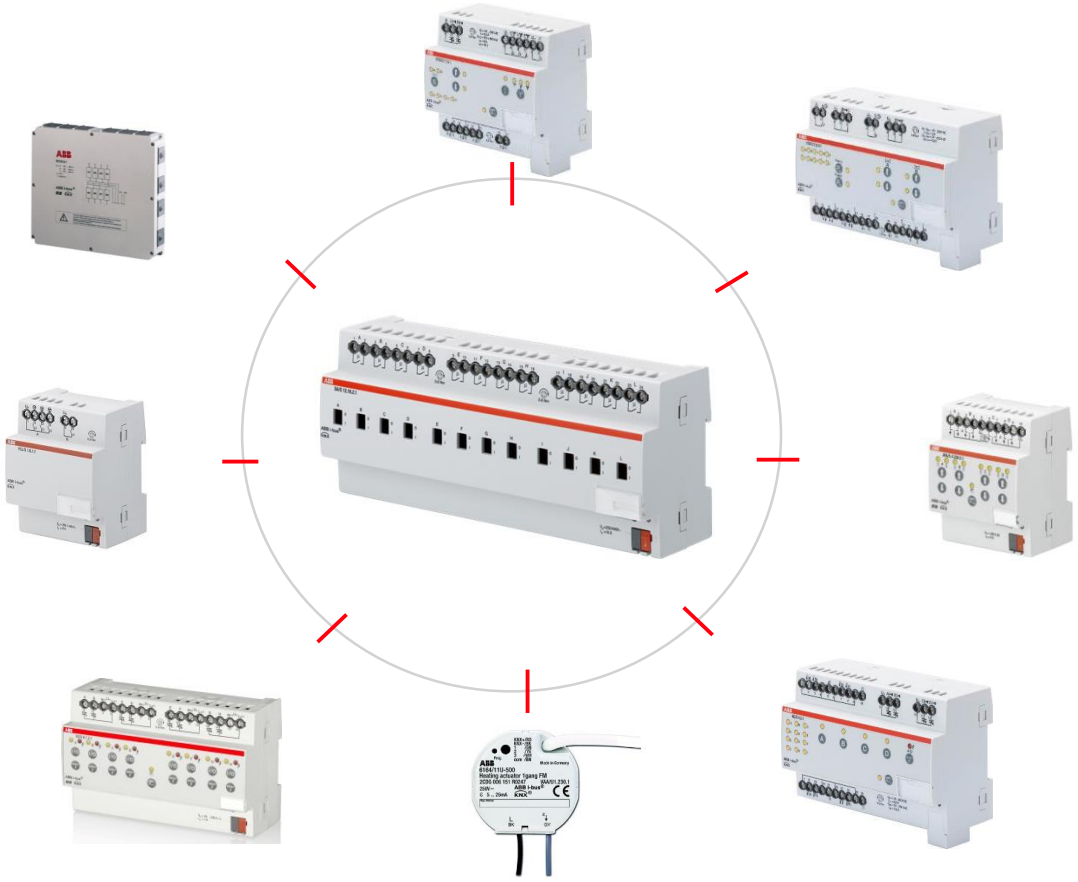
Why a new range of KNX Switch Actuators from ABB?

KNX Combi Switch Actuators SAH/S

Why a new range of KNX Switch Actuators from ABB?

Switch actuators still needed?

- Actuators carry out the function needed which finally results in the function in the building for the user
  - Turn on/off of lighting
  - Operation of socket outlets
  - Control of motors and pumps
  - Control of fan
  - Opening/Closing shutter, blinds, curtains or windows
- Though for many applications dedicated actuators are existing, especially for lighting control general switch actuators are very important and often used, with low costs per channel
- Strong market share of DALI for lighting control did not result in reduced number of switch actuators but in a growing market
- Energy efficient illumination with LED lamps allows economical and sophisticated lighting solutions with switch actuators, galvanic separation of the load, even light scenes are possible



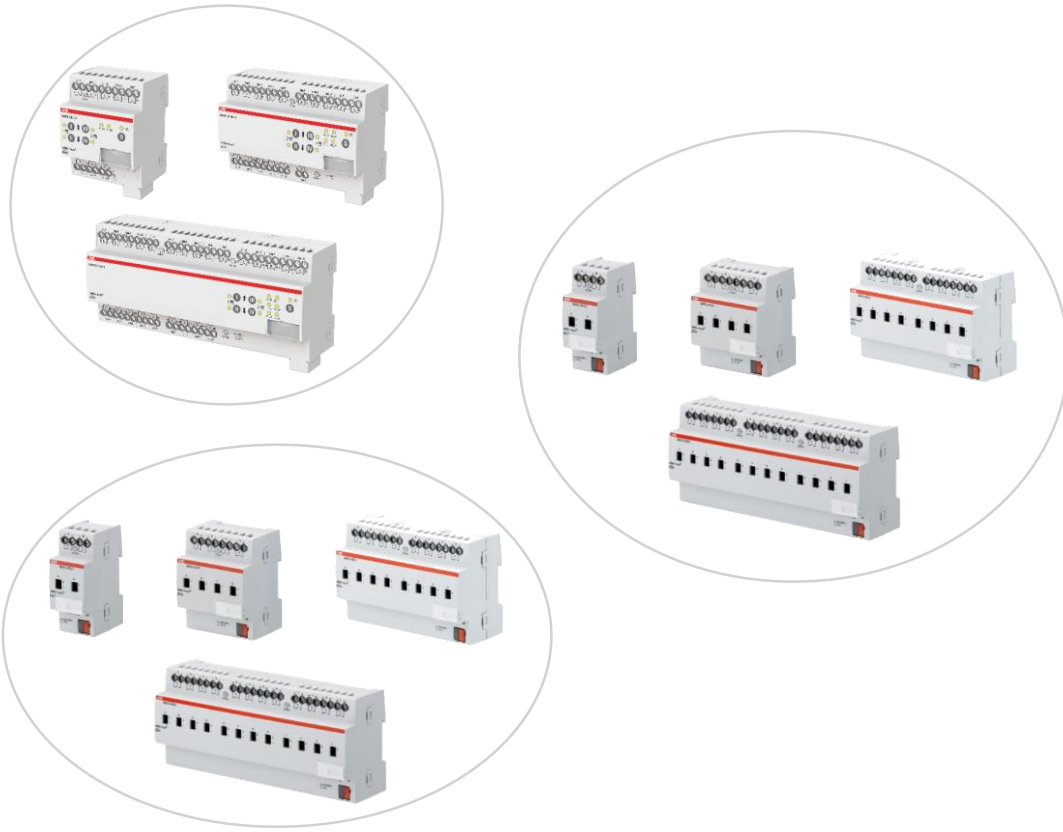
©ABB

KNX Combi Switch Actuators SAH/S

Why a new range of KNX Switch Actuators from ABB?

Requirements

- Closing product range gaps (e.g. number of channels or functionality)
- Increasing number of manufacturers and products needs a new and state of the art actuator range from ABB
- Reduction of size → less space per channel
- Being prepared for future developments (Software functions, IoT services)
- Segmentation → for each application and demand the right product
- Significant evolution of ABB's KNX switch actuator range, continuation of simplicity and reliability, but development of proven functions
- Advanced usability by optimized manual operation and ETS application



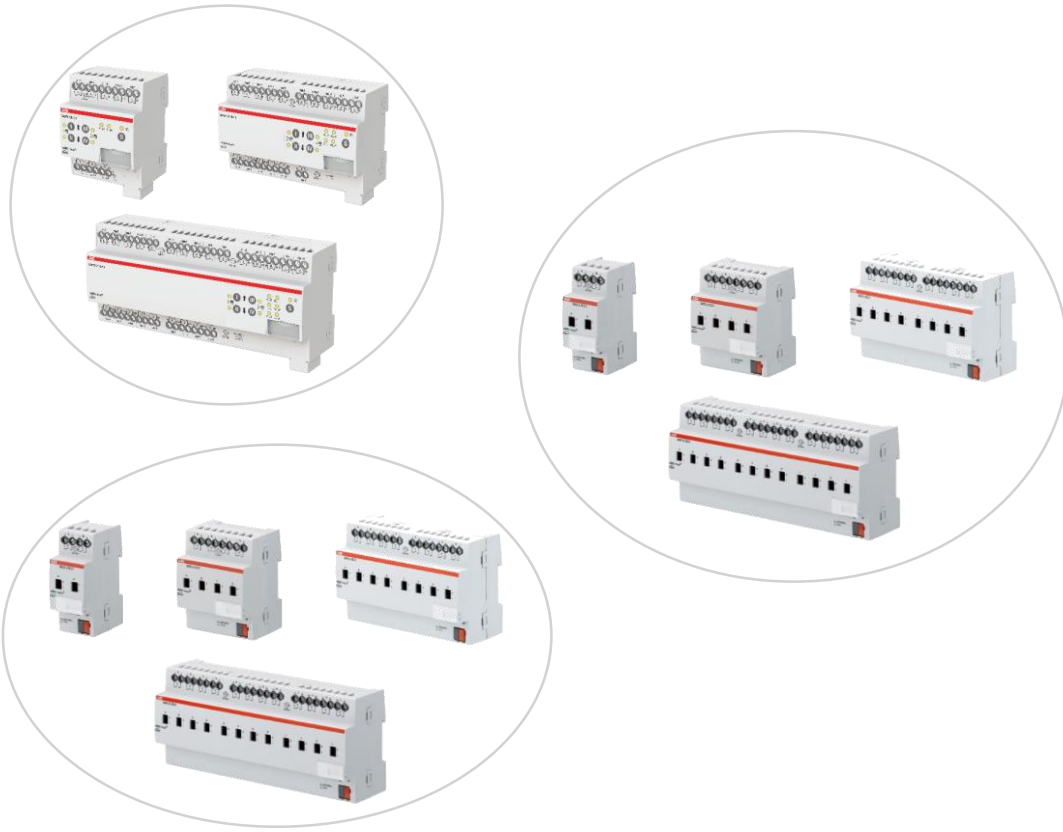
©ABB

KNX Combi Switch Actuators SAH/S

Why a new range of KNX Switch Actuators from ABB?

Requirements

- Being prepared for worldwide usage with different technical standards
- Being prepared for future software extensions
- Switch Actuators as a key product in KNX Building Automation are very important for the market and an all-inclusive manufacturer like ABB
- Provision of high class products with design and production in Germany
- State of the art product family for today and in the next future



©ABB

KNX Combi Switch Actuators SAH/S

Range overview of all new Switch Actuators

KNX Combi Switch Actuators SAH/S

Next Generation Switching

Combi Switch Actuators

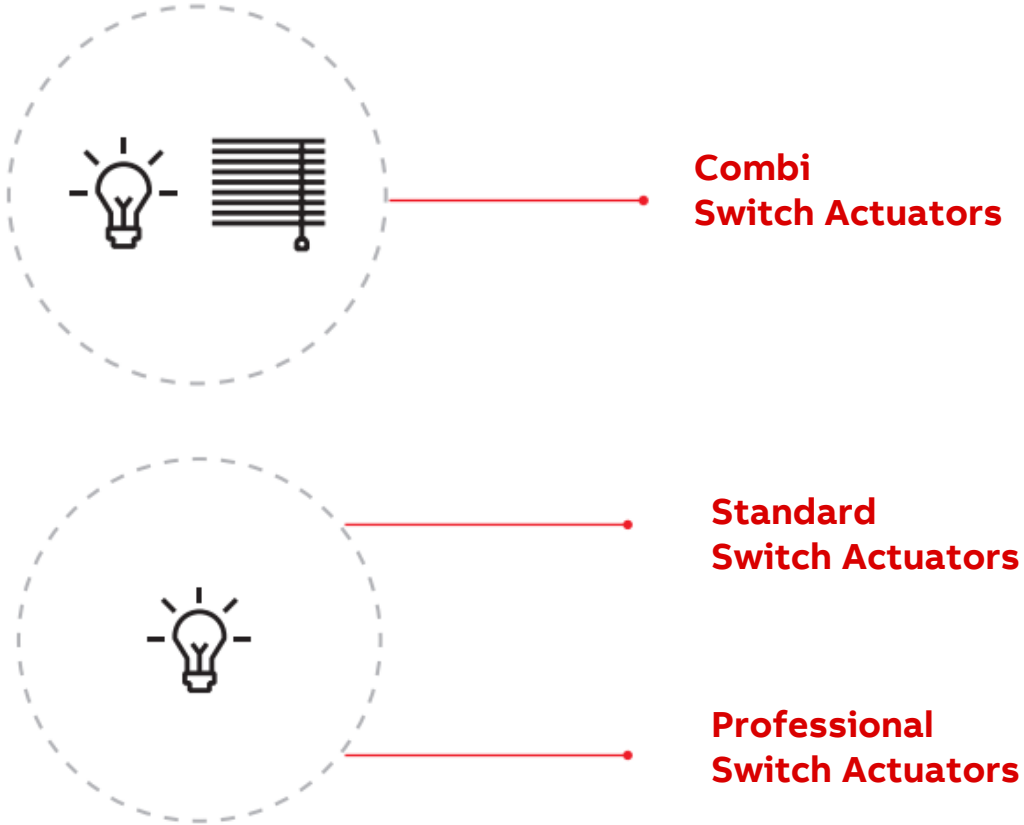
– The 9 Combi devices are combining two applications: switching and shading. The products are ideally made for residential usage to offer greatest flexibility

Standard Switch Actuators

– These 12 devices are building the Standard when it comes to switching applications for commercial buildings. During the development we focused on providing a cost optimized selection of products, that matches the needs of commercial projects

Professional Switch Actuators

– The professional series includes 8 switch actuators made for high switching capacity. This portfolio has been developed to suit the high requirements of industry standards



©ABB

KNX Combi Switch Actuators SAH/S

Next Generation Switching

Combi Switch Actuators

ABB i-bus® KNX Combi Switch Actuators feature 9 compact devices with high channel density and selectable switching and shading functionality optimally suited to flexible application in residential projects.

Standard Switch Actuators

These 12 devices are building the Standard when it comes to switching applications for commercial buildings. During the development we focused on providing a cost optimized selection of products, that matches the needs of commercial projects.

Professional Switch Actuators

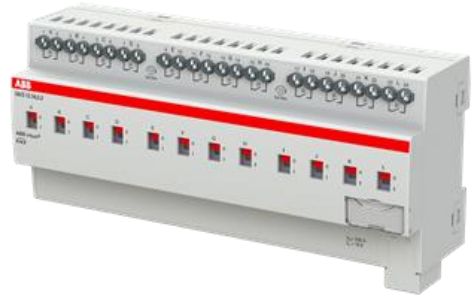


ABB i-bus® KNX Professional Switch Actuators offer devices with high switching capacity and enhanced energy management functionality. These 8 devices have been developed to suit the high requirements of industry standards.

©ABB

KNX Combi Switch Actuators SAH/S

Next Generation Switching

Combi Switch Actuators

- Compact + switch/shutter modes
- 8 (4MW), 16 (8MW) & 24 (12 MW) channels
- 6A, 10A & 16A - AC1 ratings
- 3 x 3 devices

Standard Switch Actuators

- 2, 4, 8 & 12 channels
- 6A, 10A & 16A - AC1 ratings
- 3 x 4 devices

Professional Switch Actuators

- 2, 4, 8 & 12 channels
- 16A C-load + power measurement
- 2 x 4 devices

Residential ⟷ Applications ⟷ Commercial

©ABB

KNX Combi Switch Actuators SAH/S

Standard Switch Actuators

KNX Combi Switch Actuators SAH/S

Standard Switch Actuators

Key Characteristics

- ‘High-runner’ types for all standard switching applications

- Data
  - 2 / 4 / 8 / 12 outputs
  - 6A, 10A and 16A (AC1)
  - Manual operation (voltage independent)
  - Combi screw-head terminals
  - Single application, smart features
  - New housing
  - Cost optimized

6A (4 devices)

10A (4 devices)

16A (4 devices)

©ABB

KNX Combi Switch Actuators SAH/S

Professional Switch Actuators

KNX Combi Switch Actuators SAH/S

Professional Switch Actuators

Key Characteristics

- High-switching-capacity devices with extended functionality for industry standard applications
- Data
  - 2 / 4 / 8 / 12 outputs
  - 16A C-Load (high capacity)
  - Current / Power data
  - Manual operation (voltage independent)
  - Combi screw-head terminals
  - Single application, smart features
  - New housing

16A C-load (4 devices)

Key feature: High load capacity

16A C-load, Current & Power (4 devices)

Key feature: Power/Load data

KNX Combi Switch Actuators SAH/S

Features “KNX Combi Actuators SAH/S”

KNX Combi Switch Actuators SAH/S

Combi Switch Actuators

Combi range features

- High channel density
- Selectable switching and shading
- Proven connection terminals with screws
- Each channel with individual phase input
- Innovative Keypad usage

©ABB

KNX Combi Switch Actuators SAH/S

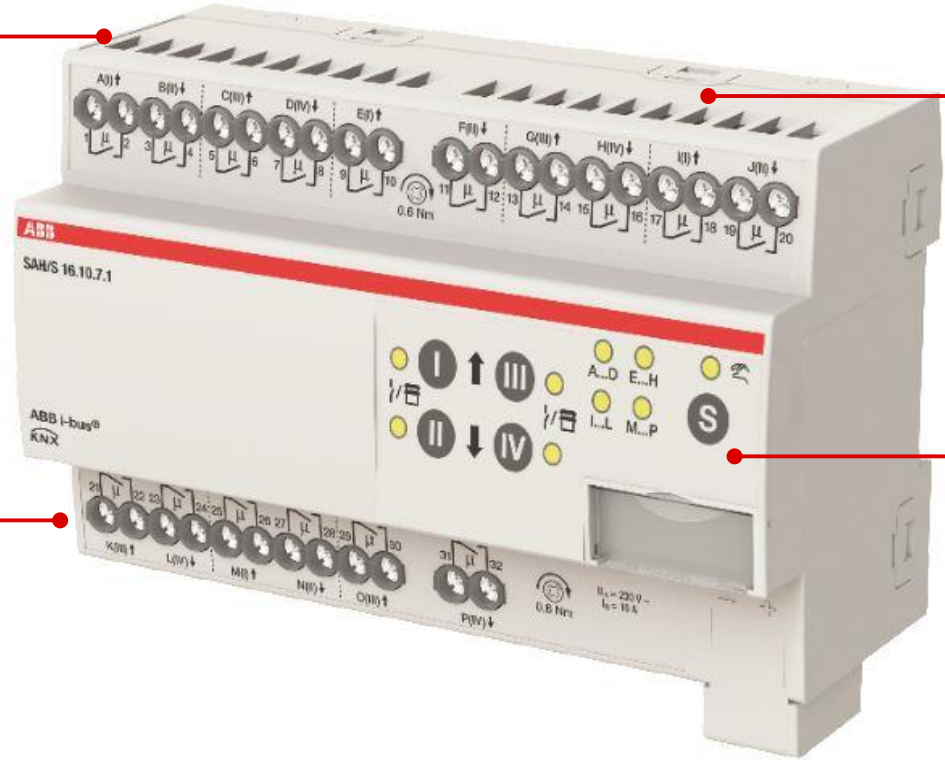
Combi Switch Actuators

Screw head terminals

- Simplify mounting of the device
- Easy connection of cables with large diameters thanks to the use of a 6 mm terminal and a combi screw head

High channel density

- Compact devices with high channel density (2 channels per module width) that double the space in the distribution board



Relay outputs

- Current load rating between 6 and 16 A
- Individual phase per output
- Mixed use of 1-phase load and motor with 2 relays

Manual operation concept

- With the keypad it is possible to choose the outputs (A – P) that are needed. One functionality includes four outputs.
- Locking the manual operation protects the device against unauthorized access

KNX Combi Switch Actuators SAH/S

Combi Switch Actuators

Key Characteristics

- Compact, high-channel-density devices with selectable switching & shading functionality
- Data
  - 8 / 16 / 24 outputs
  - 6A / 10A / 16A – AC1
  - Compact form: 2 channels per module width
  - Manual operation (KNX voltage dependent)
  - Combi screw-head terminals
  - Single application, smart features
  - New housing
  - Combi switching & shading

6A (3 devices)

10A (3 devices)

16A (3 devices)

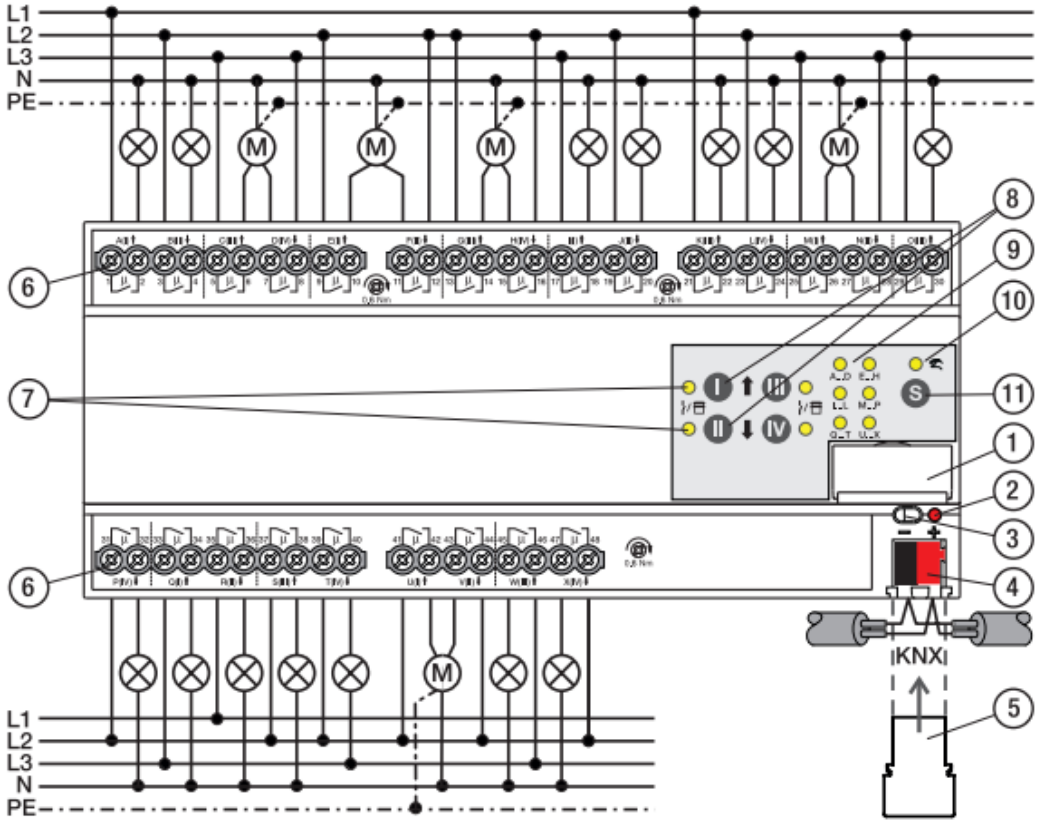
©ABB

MW = Module Width (17.5mm)

KNX Combi Switch Actuators SAH/S

Connection Diagram

1. Label Carriers
2. Programming LED
3. Programming Button
4. Bus Connection Terminal
5. Cover Cap
6. Load Circuit
7. Output Status LED (yellow)
8. Output Button
9. Group LED (yellow)
10. Manual Operation LED (yellow)
11. S-Button (manual operation/output selection/central off)



©ABB

KNX Combi Switch Actuators SAH/S

Selection Table

Overview about hardware performance (Relay, Power, Loads) and software features to select the right device

Differences between 6/10/16 A outputs

- Rated current I_N distinguish the components 6A, 10A and 16A, according to DIN EN 60947-4-1
  (AC1 operation with cos phi = 0,8)
- The continuous current and finally the total current of each device is important for the design of the circuit, the line protection and the switch actuator
- Depending on the rules and requirements in different countries (6, 10 or 16A electrical circuits) the right devices from ABB can be selected
- Max. peak inrush-current is the same for all, resulting in the same assignments for max. power for each type of load

	SAH/S 8.6.7.1 SAH/S 16.6.7.1 SAH/S 24.6.7.1	SAH/S 8.10.7.1 SAH/S 16.10.7.1 SAH/S 24.10.7.1	SAH/S 8.16.7.1 SAH/S 16.16.7.1 SAH/S 24.16.7.1
Range	Combi	Combi	Combi
I_n rated current (A) [3]	6 A	10 A [5]	16 A [5]
U_n rated voltage (V)	230 V AC	230 V AC	230 V AC
AC1 operation (cos ϕ = 0.8) DIN EN 60947-4-1	6 A	10 A	16 A
AC3 operation (cos ϕ = 0.45) DIN EN 60947-4-1	6 A	6 A	6 A
C-Load switching capacity (200 µF)	–	–	–
Minimum switching capacity	100 mA/12 V	100 mA/12 V	100 mA/12 V
DC current switching capacity (resistive load)	6 A/24 V =	6 A/24 V =	6 A/24 V =
Mechanical service life	> 10^6	> 10^6	> 10^6
Electronic endurance to IEC 60947-4-1:			
– Rated current AC1 (240 V/0.8)	100,000	100,000	100,000
– Rated current AC3 (240 V/0.45)	6,000	6,000	6,000
Incandescent lamp load at 230 V AC	1,200 W	1,200 W	1,200 W
Fluorescent lamp T5 / T8:			
– Uncorrected	800 W	800 W	800 W
Low-voltage halogen lamps:			
– Inductive transformer	800 W	800 W	800 W
– Electronic transformer	1,000 W	1,000 W	1,000 W
Halogen lamp 230 V	1,000 W	1,000 W	1,000 W
Mercury-vapour lamps:			
– Uncorrected	1,000 W	1,000 W	1,000 W
– Parallel compensated	800 W	800 W	800 W
Sodium-vapour lamps:			
– Uncorrected	1,000 W	1,000 W	1,000 W
– Parallel compensated	800 W	800 W	800 W
LED lamps/energy saving lamps	250 W	250 W	250 W
Motor load	1380 W	1380 W	1380 W
Max. peak inrush-current Ip (150 µs)	200 A	200 A	200 A
Max. peak inrush-current Ip (250 µs)	160 A	160 A	160 A
Max. peak inrush-current Ip (600 µs)	100 A	100 A	100 A
Number of electronic ballasts (T5/T8, single element): [2]			
18 W (ABB ballasts 1 x 18 SF)	10 ballasts	10 ballasts	10 ballasts
24 W (ABB ballasts 1 x 24 CY)	10 ballasts	10 ballasts	10 ballasts
36 W (ABB ballasts 1 x 36 CF)	7 ballasts	7 ballasts	7 ballasts
58 W (ABB ballasts 1 x 58 CF)	5 ballasts	5 ballasts	5 ballasts
80 W (Helvar EL 1 x 80 SC)	3 ballasts	3 ballasts	3 ballasts

KNX Combi Switch Actuators SAH/S

Range

Main technical Differences between Combi Switch Actuators

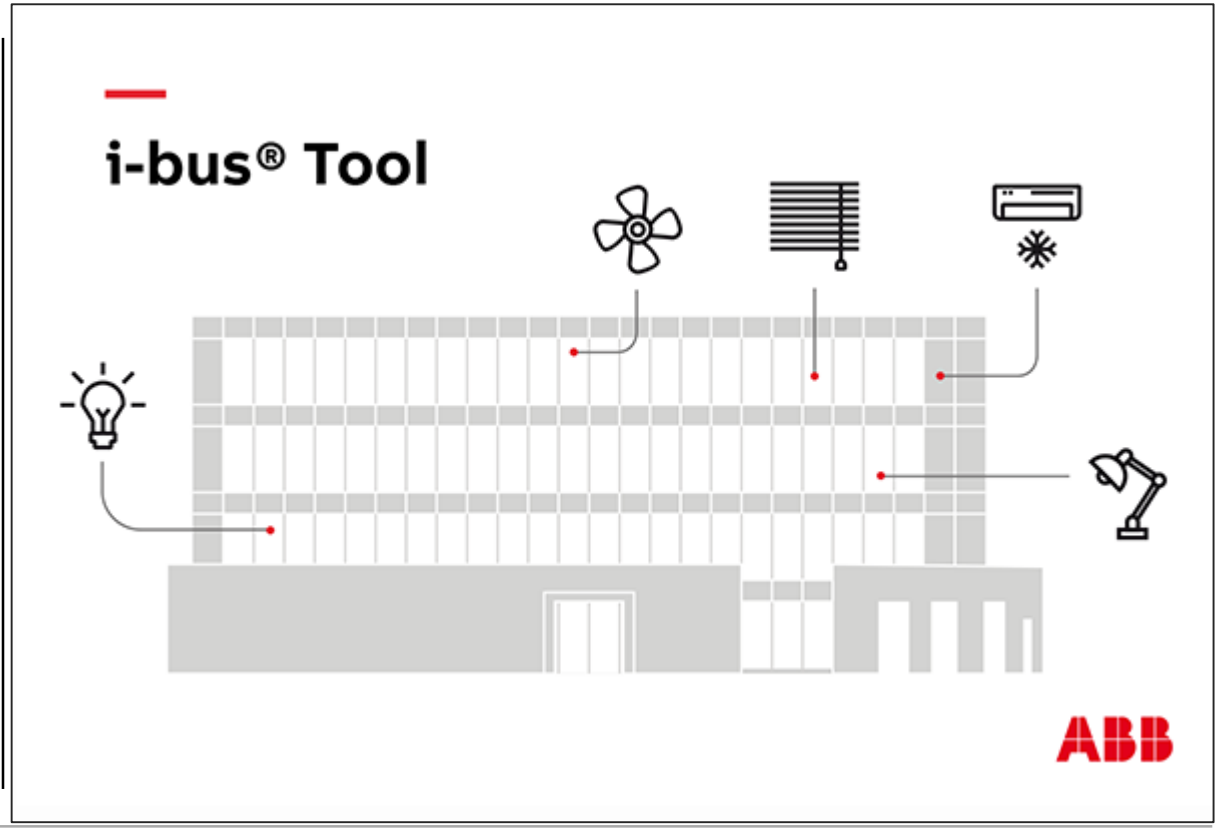
Switch/Shutter Actuator	Channels	Rated Current I_N per Channel	Module Width (MW)	Group Adresses	Group Objects	Total Current per Device
SAH/S 8.6.7.1	8	6A	4	1000	282	8 x 6A
SAH/S 16.6.7.1	16	6A	8	1000	446	16 x 6A
SAH/S 24.6.7.1	24	6A	12	1000	610	24 x 6A
SAH/S 8.10.7.1	8	10A	4	1000	282	8 x 10A
SAH/S 16.10.7.1	16	10A	8	1000	446	16 x 10A
SAH/S 24.10.7.1	24	10A	12	1000	610	200A
SAH/S 8.16.7.1	8	16A	4	1000	282	100A
SAH/S 16.16.7.1	16	16A	8	1000	446	160A
SAH/S 24.16.7.1	24	16A	12	1000	610	200A

©ABB

KNX Combi Switch Actuators SAH/S

ABB i-bus Tool

- All relevant ABB i-bus KNX Devices from the last years could be used together with ABB i-bus Tool
- the same will happen for the new generation of Switch Actuators
- Availability planned for 2020



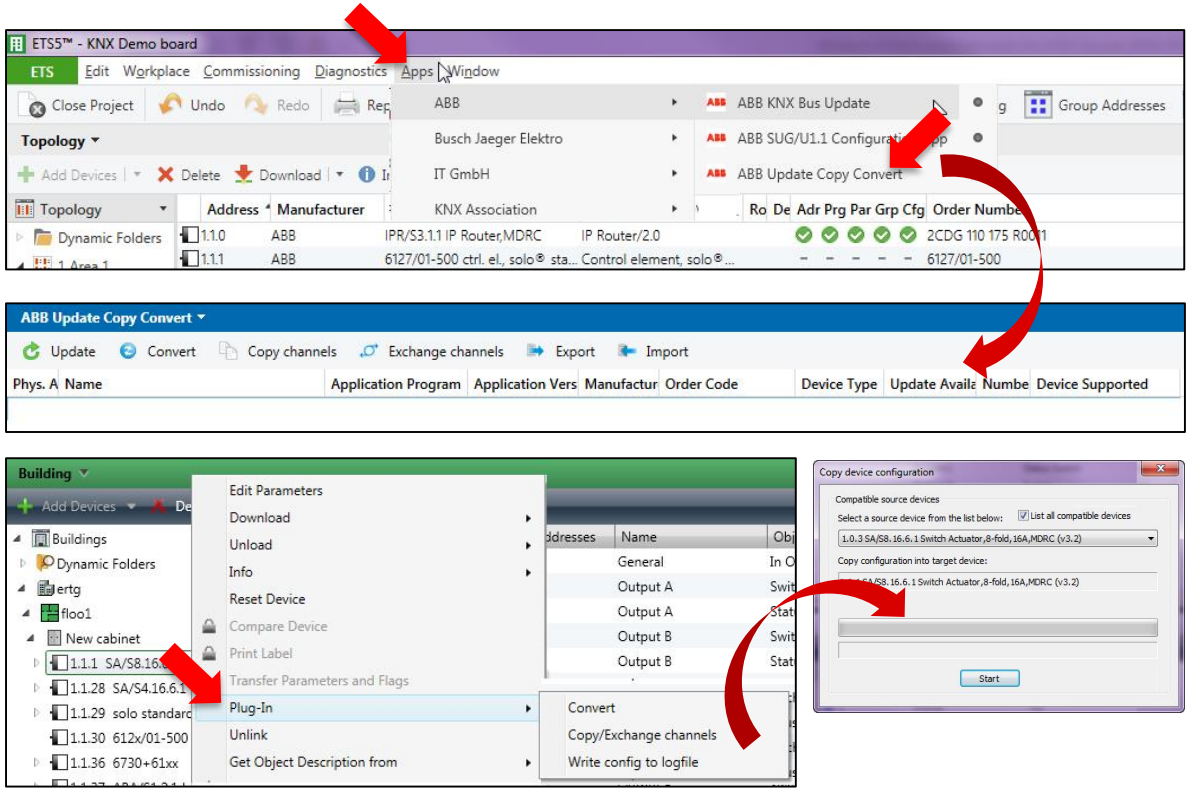
©ABB

KNX Combi Switch Actuators SAH/S

ABB ETS App: “Update Copy Convert”

- App with a series of useful functions, especially for
  - 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 Channels: Copies a channel configuration to other channels on a multichannel device
  - Exchange Channels : Exchanges configurations between two channels on a multichannel device
  - Import/Export: Saves and reads device configurations as external XML files

- Support of this App for Combi Switch Actuators with so many channels is very useful, it will be available soon, final test are running

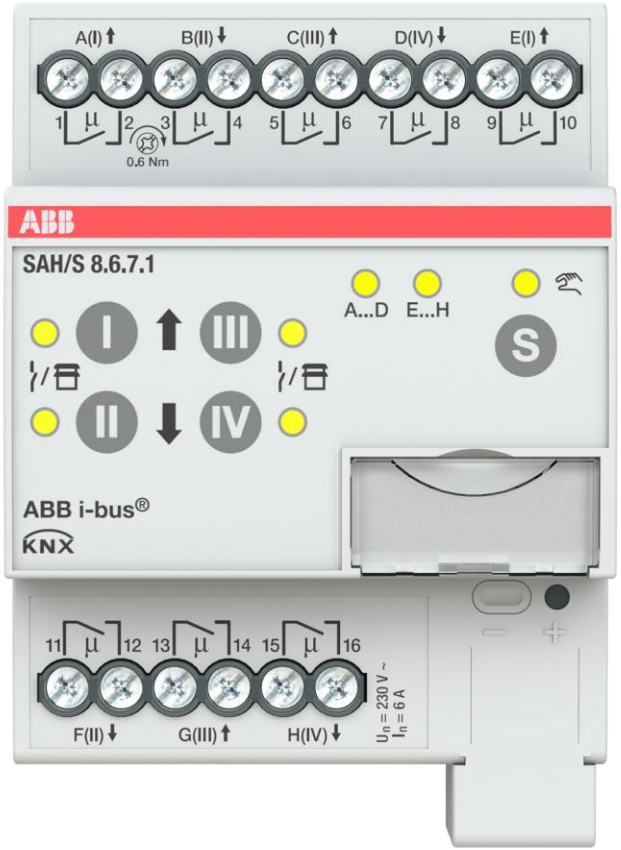


KNX Combi Switch Actuators SAH/S

Manual Operation

- Innovative Keypad for manual operation with reduced buttons and LED’s for all combi switch actuators
- Activation via S-button, deactivation also via time
- Manual operation can be blocked via parameter in ETS application or telegram
- Selection of relay groups
- Selection of all relays for central off
- Blinking LED’s indicate programming as shutter outputs

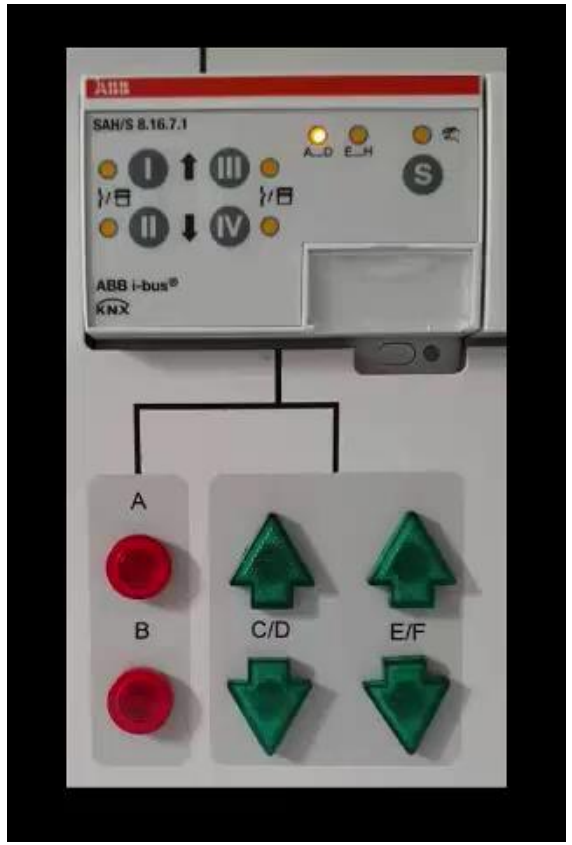
→ **VIDEO**

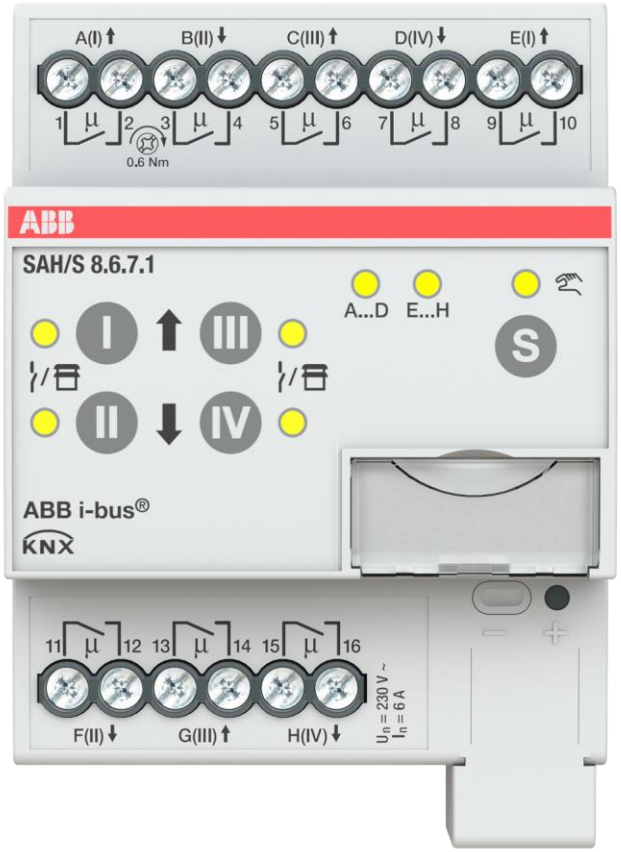


KNX Combi Switch Actuators SAH/S

Manual Operation

- Innovative Keypad for manual operation with reduced buttons and LED's for all combi switch actuators
- Activation via S-button, deactivation also via time
- Manual operation can be blocked via parameter in ETS application or telegram
- Selection of relay groups
- Selection of all relays for central off
- Blinking LED's indicate programming as shutter outputs





KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 1

Which statements for KNX Combi Switch Actuator are correct?

A SAH/S are prepared for future developments (Software functions, IoT services)

B In build LED Touch Panel for manual operation

C Reduced size, 2 channels per one module width

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 1

Which statements for KNX Combi Switch Actuator SAH/S are correct?

- **A** SAH/S are prepared for future developments (Software functions, IoT services)
- **B** In build LED Touch Panel for manual operation
- **C** Reduced size, 2 channels per one module width

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 2

What is true related to maximum number of channels and maximum current each relay?

A Up to 24 channels and 16 A AC1

B Up to 24 channels and 16 A AX

C Up to 16 channels and 16 A

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 2

What is true related to maximum number of channels and maximum current each relay?

A Up to 24 channels and 16 A AC1

B Up to 24 channels and 16 A AX

C Up to 16 channels and 16 A

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 3

What is right for the shutter functionality?

A. Each relay output can control one shutter motor completely

B. Outputs programmed as shutter can be identified by blinking LED‘s on the keypad

C. All outputs must be either switch outputs or shutter outputs

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 3

What is right for the shutter functionality?

A Each relay output can control one shutter motor completely

B Outputs programmed as shutter can be identified by blinking LED‘s on the keypad

C All outputs must be either switch outputs or shutter outputs

©ABB

KNX Combi Switch Actuators SAH/S

ETS Application

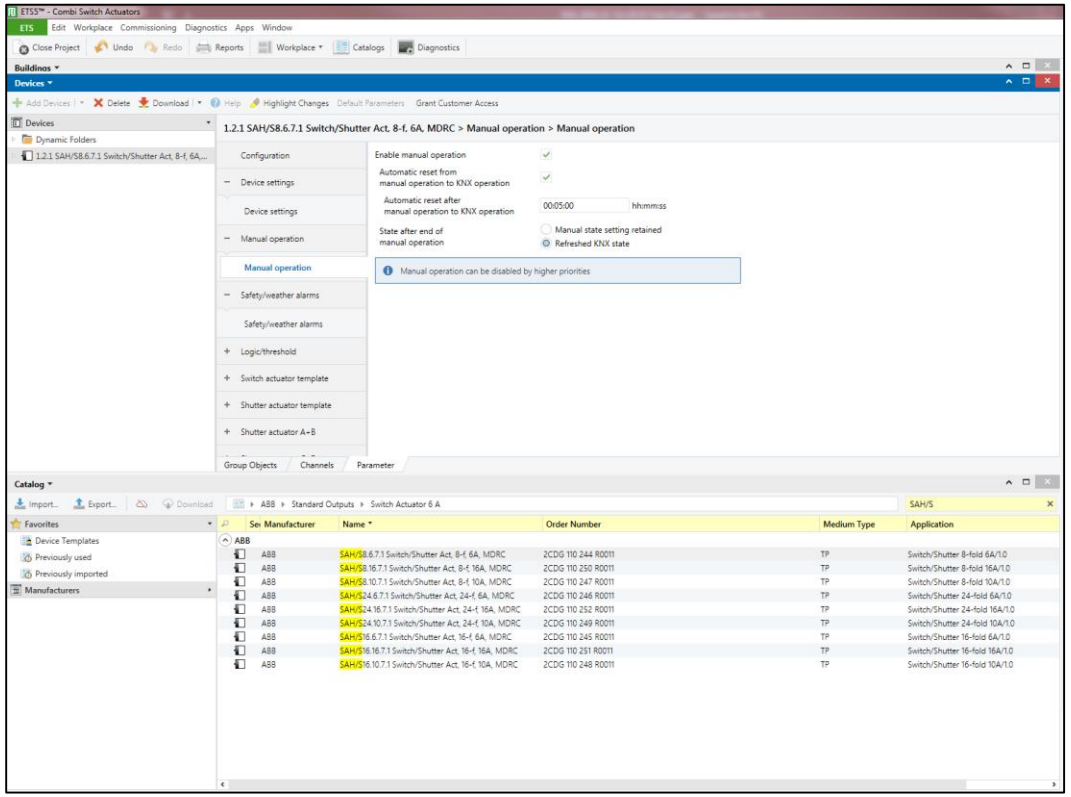
KNX Combi Switch Actuators SAH/S

ETS

Overview

ETS Application with comprehensive functions but satisfying user experience

- Templates for switch- and shutter functions
- Freely programmable logic independent of the output channels (AND, OR, Exclusive OR, GATE) and threshold functions
- Full functionality of shutter outputs (Safety/Weather alarm, automatic sun protection, scenes, blocking, forced operation), but no travel time detection
- Switch outputs with time functions (Staircase, Delay, Flashing), safety, forced operation, blocking, 16 scenes (8 bit)
- Central objects (switching, shutter functions, scenes)
- Colored hints simplify work
- ETS5 required



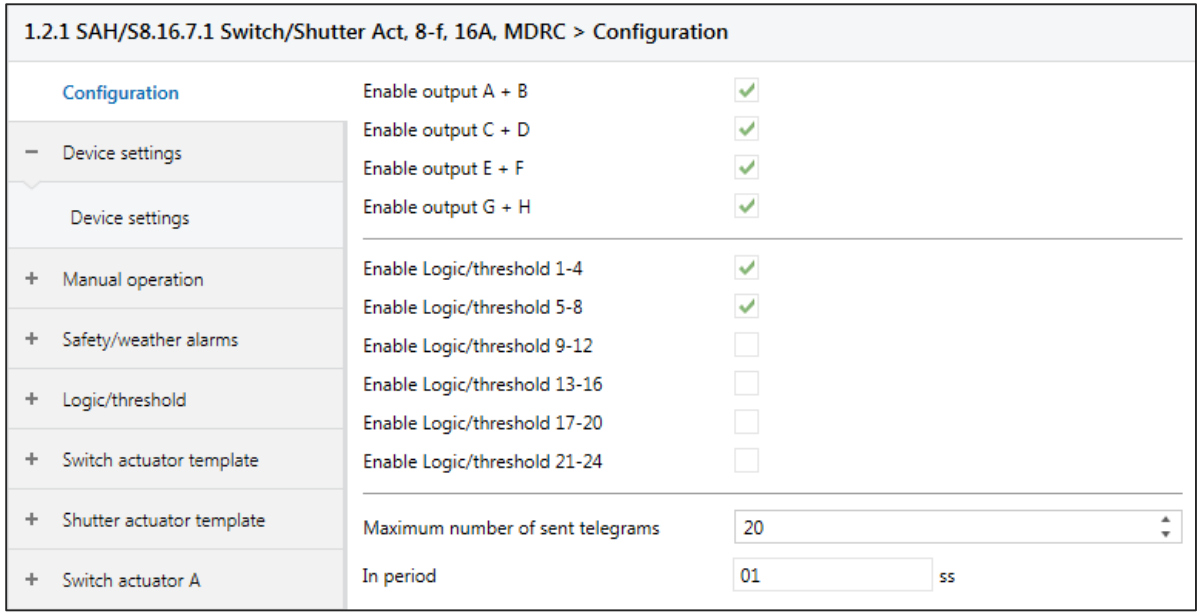
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Configuration

- Enabling of channels
- Enabling of logic and thresholds
  - 24 individual logic or threshold functions for each Combi Switch Actuator, independent of the outputs
- Telegram limitation



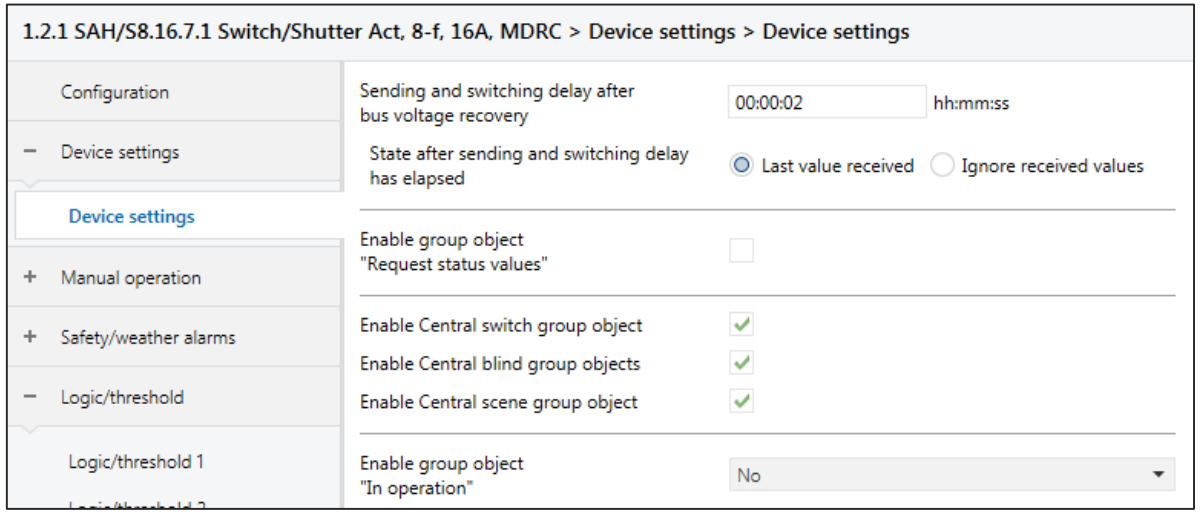
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Device Settings

– Central Group Objects
  - to be used to switch several device outputs at the same time
  - Advantage: Less group address assignments, especially for multi channel devices
  - Available for switching, shutter control and scene
  - In the parameter block of each channel it can be decided whether the channel shall be part of the central function



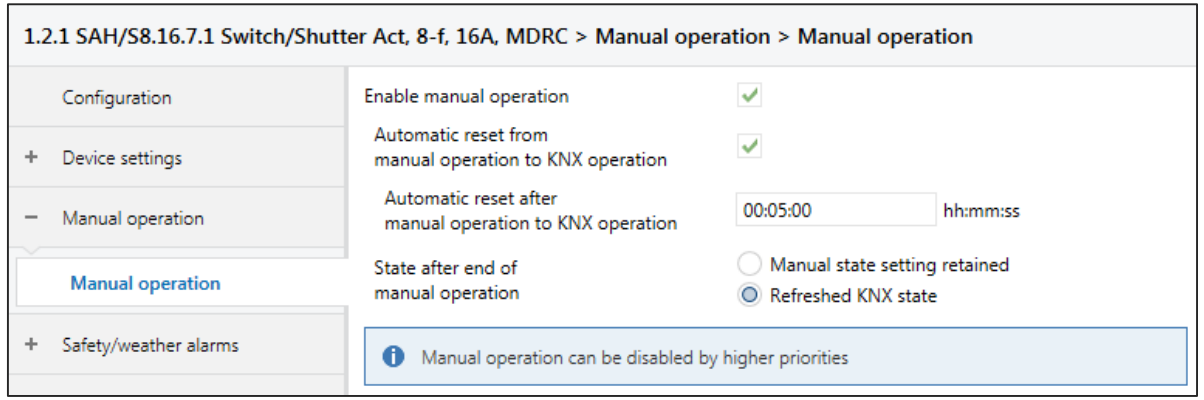
3	Switch	Central: Switch	1 bit
4	Move blind/shutter up-down	Central: Shutter	1 bit
5	Slat adjustment/stop up-down	Central: Shutter	1 bit
6	Move to position height	Central: Shutter	1 byte
7	Move to position slat	Central: Shutter	1 byte
8	Scenes 1...64	Central: Scene	1 byte

KNX Combi Switch Actuators SAH/S

ETS

Manual Operation

– Functionality as known from other devices
  - can be reset after adjustable time
  - After end of manual operation also the actual and via KNX telegram changed status (Object End manual operation) can be shown
  - Objects for status, activation or deactivation of manual operation and to stop it any time but not to disable it



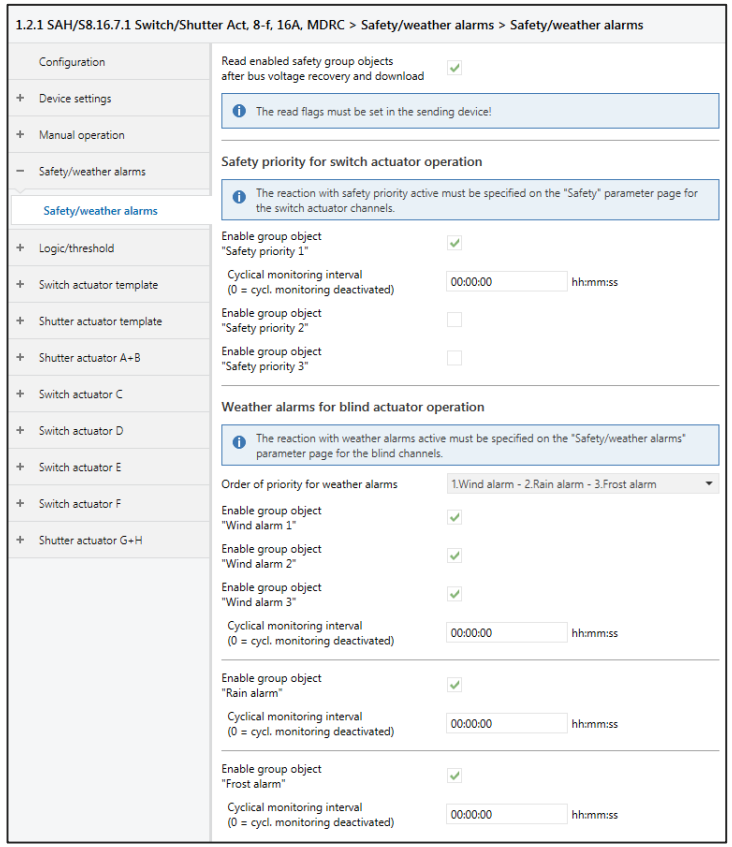
12	Status Manual operation	Manual operation: Manual operation	1 bit
13	Enable/disable manual operation	Manual operation: Manual operation	1 bit
14	End manual operation	Manual operation: Manual operation	1 bit

KNX Combi Switch Actuators SAH/S

ETS

Safety/weather alarms

- Distinction between switch and shutter functionality
- Switching
  - Safety priority 1, 2, 3
  - Monitoring of telegram possible with cyclical sending of safety signal
  - Application: In case of fire alarm all lights are to be turned on with highest priority, not possible to switch off locally
- Shutter
  - Wind alarm 1,2,3 / Rain / Frost
  - Priority of wind, rain and frost adjustable
  - Monitoring of sensor signals (standard due to security reasons) can be deactivated
- For both switching and shutter additionally forced operation and blocking at the dedicated parameter blocks available



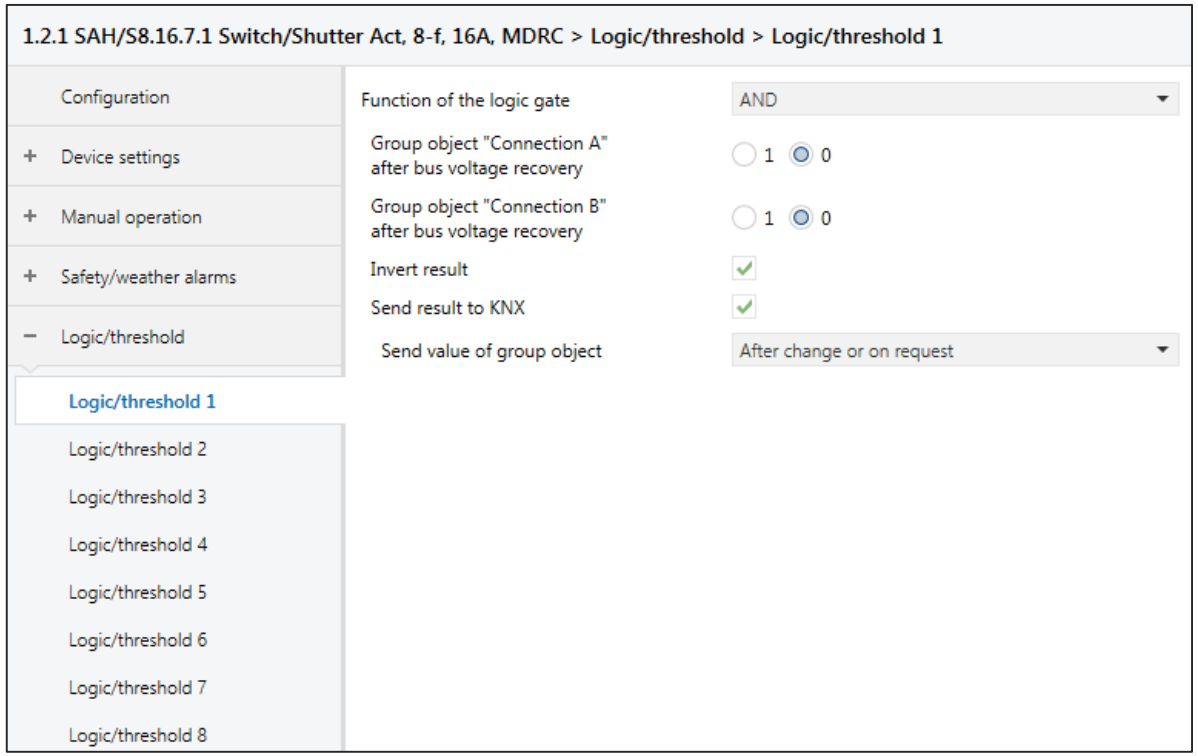
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Logic/thresholds

- Parametrization of logic and thresholds
  - 24 individual logic or threshold functions for each Combi Switch Actuator, independent of the outputs
  - Assignment of logic also directly to switch or shutter outputs possible, with individual reactions on the result of the logic
  - Functions: AND,OR, Exclusive OR, GATE and Threshold
- AND/OR/Exclusive OR
  - Inversion of result
  - Send result to KNX: not needed if result is linked internally to a further logic
  - Defined status of inputs in case of bus voltage recovery, important for safe operation

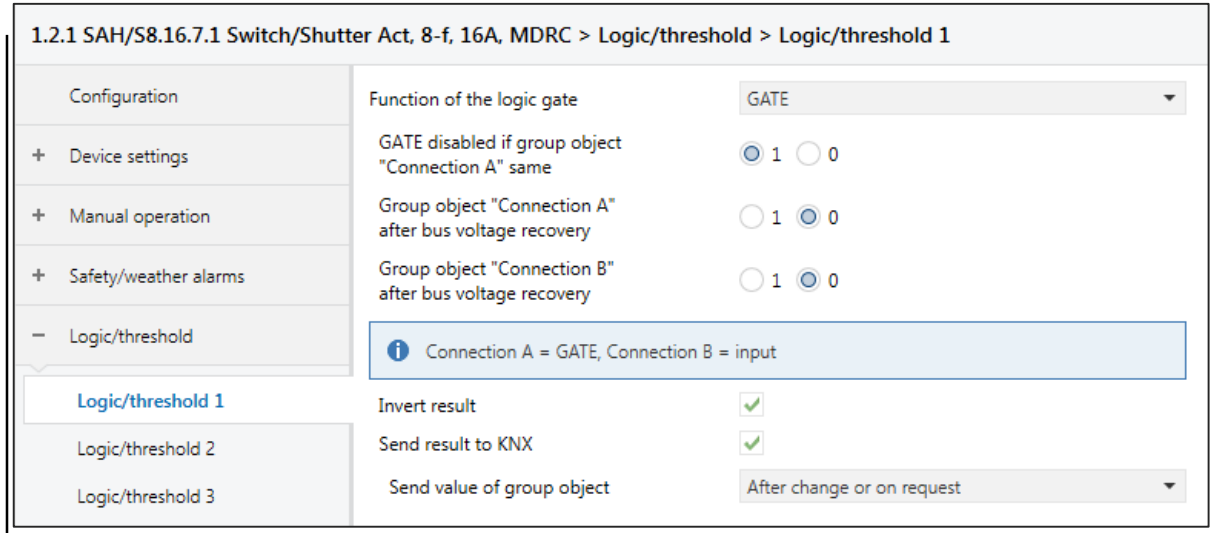


KNX Combi Switch Actuators SAH/S

ETS

Logic/thresholds

– GATE
  - To enable/disable telegrams at certain situations, e.g. a time program
  - Disabling with logical 1 or 0
  - Inversion of result
  - Send result to KNX: not needed if result is linked to a further logic
  - Defined status of inputs in case of bus voltage recovery, important for safe operation

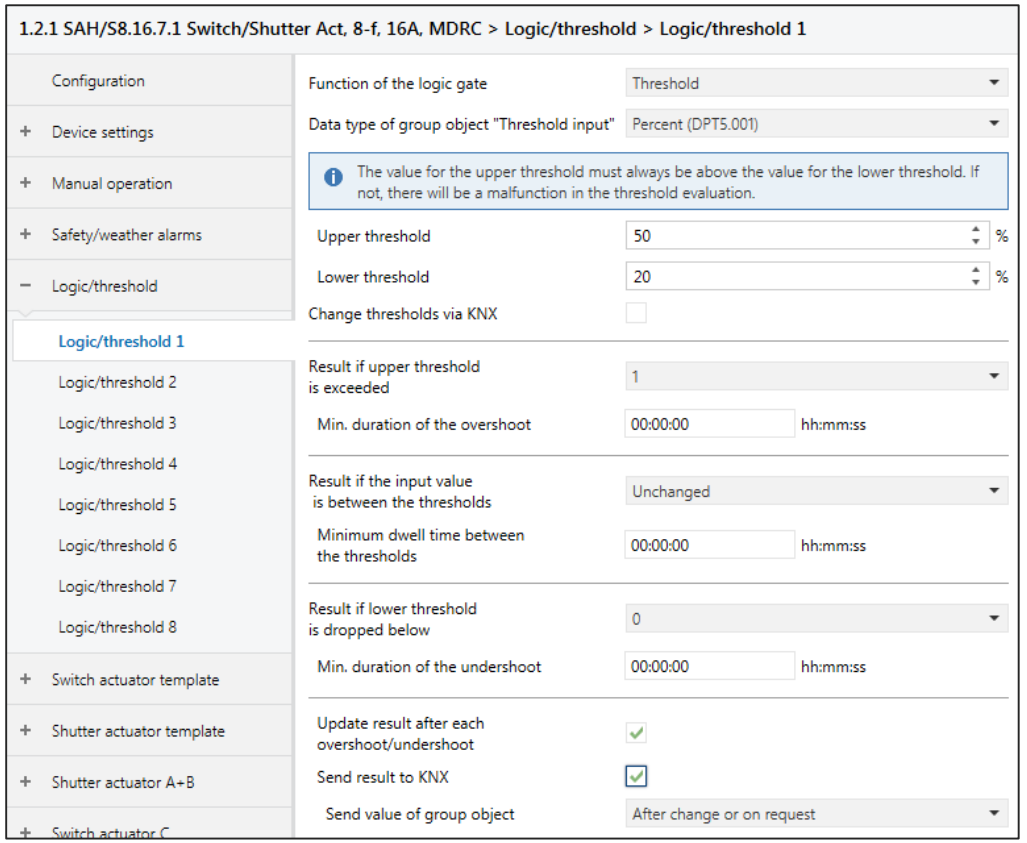


KNX Combi Switch Actuators SAH/S

ETS

Logic/thresholds

- Threshold
  - Different data point types for input selectable: Percent (1 byte), Meter pulses (1 byte or 2 byte), Temperature (2 byte floating), Lux (2 byte)
  - Upper and lower threshold (Hysteresis)
  - Thresholds changeable via KNX
  - Results (1, 0, unchanged) for overshooting and undershooting the thresholds, but also for value between both thresholds
  - Minimum time in all three situations adjustable, to hide short term and invalid situations
  - Send result to KNX: not needed if result is linked to a further logic

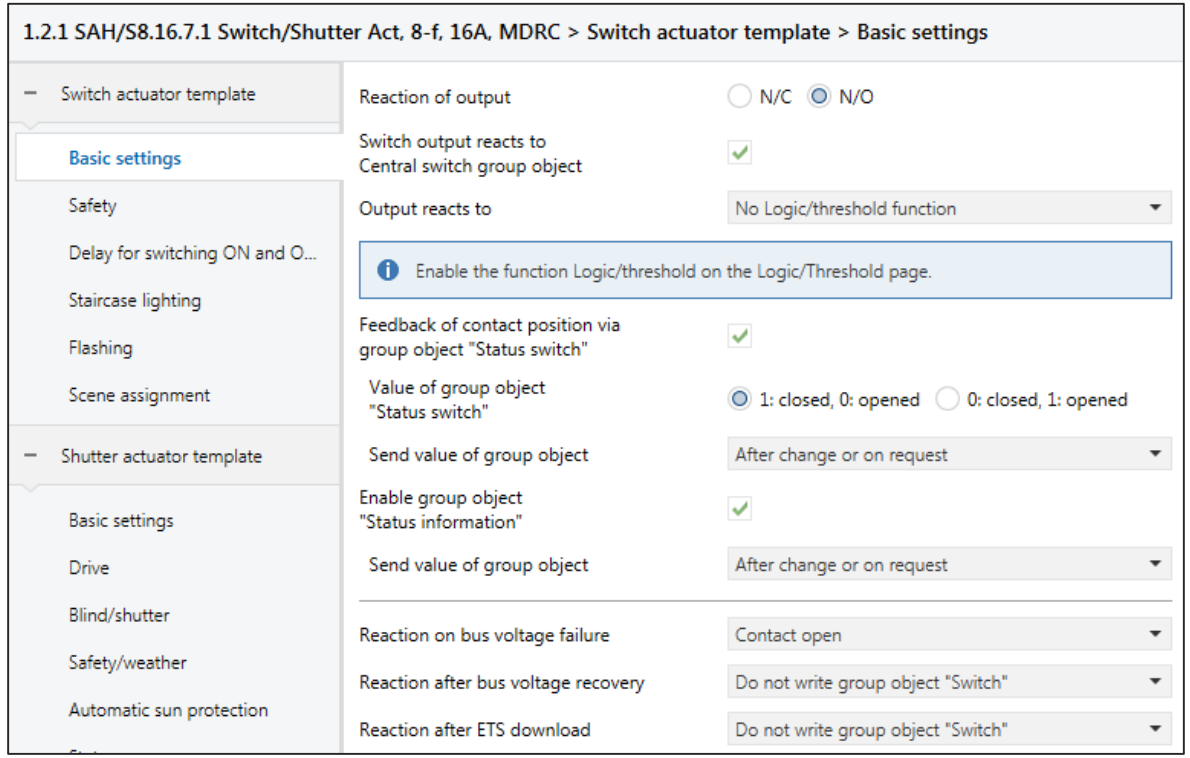


KNX Combi Switch Actuators SAH/S

ETS

Templates

- Templates allow to parametrize a certain number of functions to be assigned to individual channels
  - Available for switch or shutter outputs
  - Split into different parts (parameter blocks)
  - For each output and parameter block the templates can be used or individual adjustment can be done
- Advantage: Save of time and work during parametrization as typically channels need the same adjustments



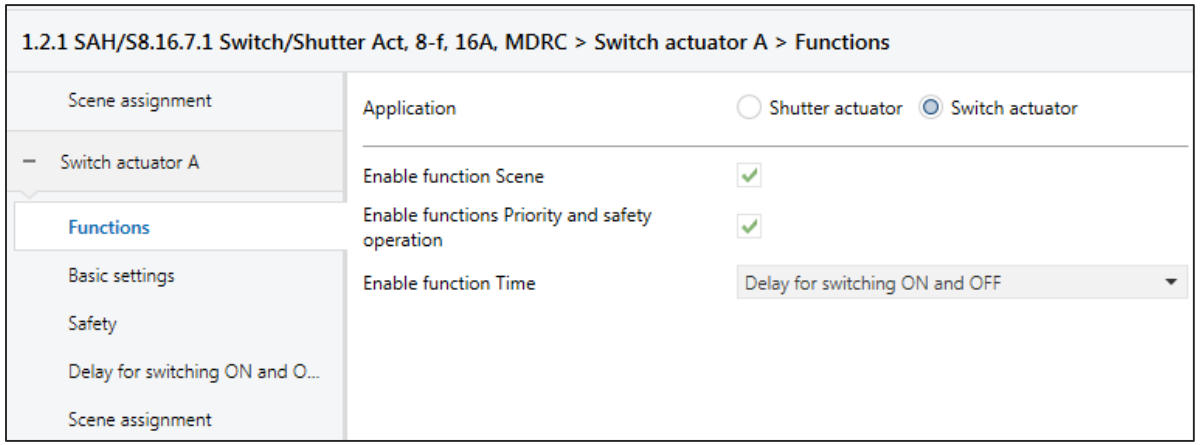
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Function

- Selection of actuator type (switching or shutter)
- Please note: Default parametrization is shutter! Why?
  - Inverse default parametrization (switching) can destroy a motor as the two related output can be closed at the same time!
  - For switch functionality the parameter has to be changed
- In case of switch actuator selection the second output of a pair (e.g. A/B or C/D) can be an actuator as well or inactive
  - Enable scene, priority/safety functions and time functions (staircase, on/off delay, flashing)

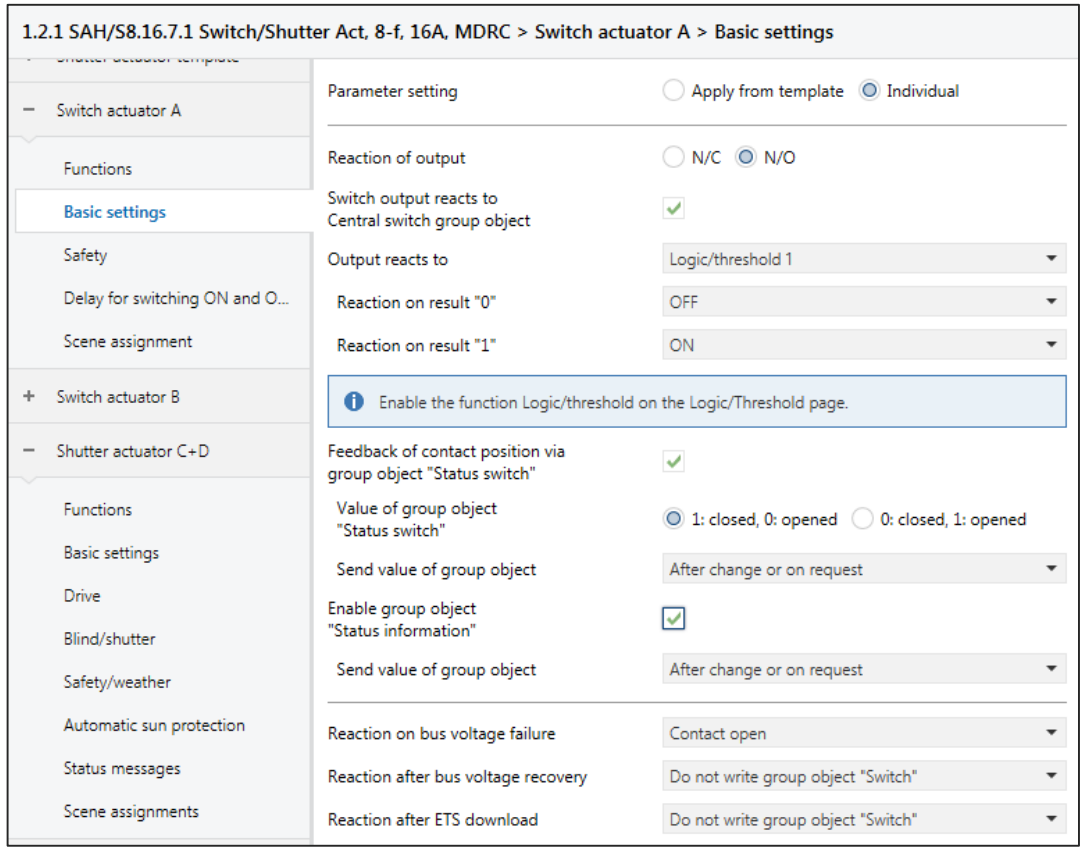


KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Basic settings

- Available for individual configuration or template
- Normally open or closed contact
- Reaction to central object to create individual ‘central’ function
- Reaction on logic/threshold function
  - Though logic is independent of any output, it can be directly assigned to the channel
- Status feedback (on/off) via separate group object
- Status information 1 byte, e.g. forced/manual operation or time function active
- Reaction on bus voltage failure and recovery or after ETS download



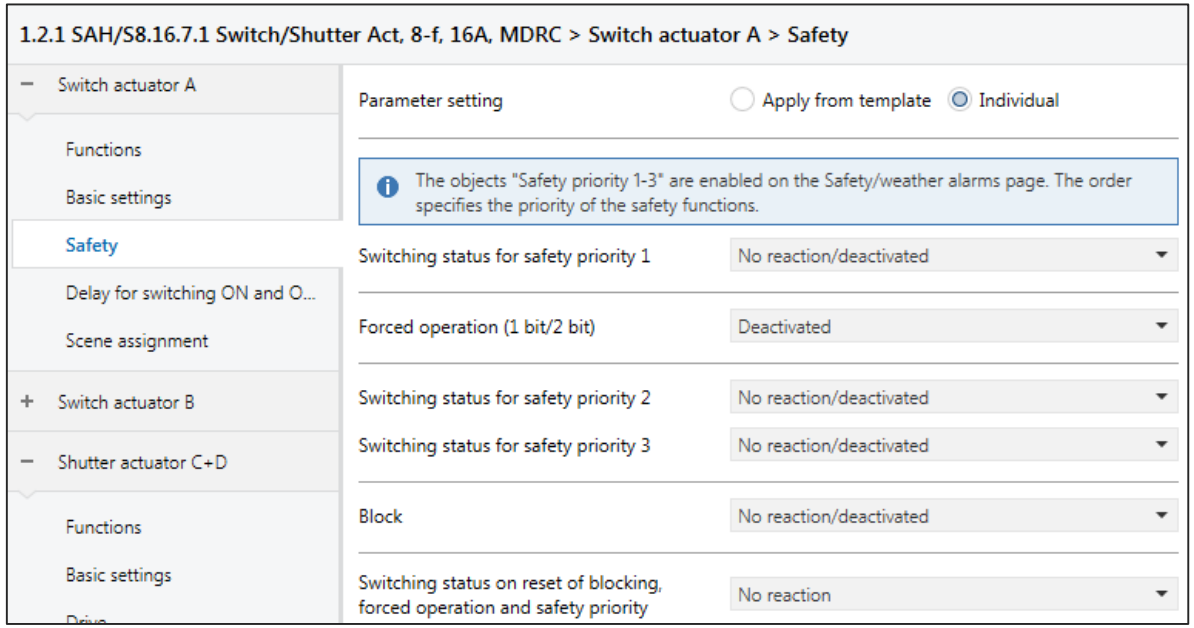
KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Safety

- Available for individual configuration or template
- Reaction on safety functions, forced operation or blocking
  - On/off/unchanged/no reaction
- Switching Status on reset of these functions
  - On/off/refreshed KNX state/no reaction
  - Refreshed KNX state (any background function during safety/forced operation/blocking will be carried out)

- Further adjustments at parameter block Safety/weather alarm



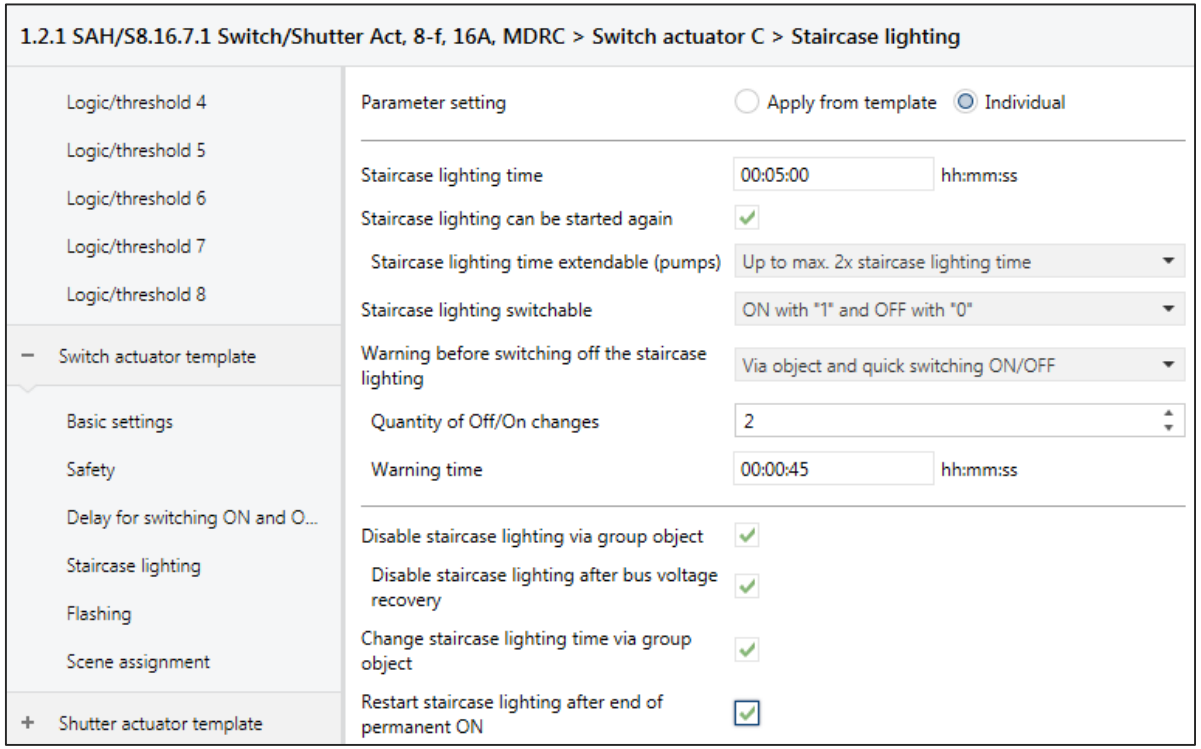
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Staircase lighting

- Available for individual configuration or template
- Visible if this time function is enabled at parameter block Functions
- Staircase lighting can be started again or extended to up to 5 x staircase time by pressing the local push button up to 5 times
- Staircase lighting switchable, e.g. to be turned off during an event (permanent on)
- Warning before switching off the staircase lighting: Either via telegram or quick switching off/on of the light
  - Switching off/on up to 5 times and warning time adjustable
- Staircase lighting can be enabled/disabled via group object
- Staircase time changeable via group object
- Restart staircase lighting after end of permanent on
- Timeline: Staircase time – warning – warning time – end (off)



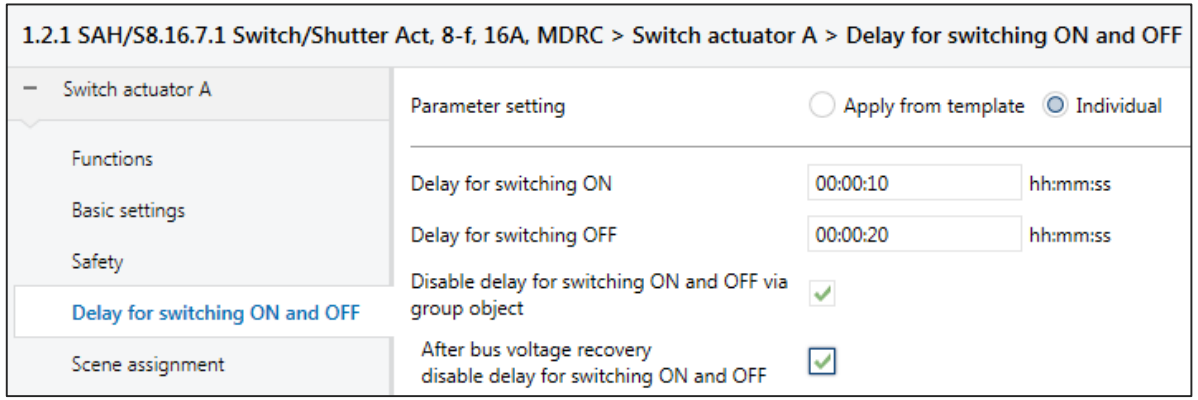
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Delay for switching ON and OFF

- Available for individual configuration or template
- Visible if this time function is enabled at parameter block Functions
- Time for delay on or delay off
- Can be enabled/disabled via group object

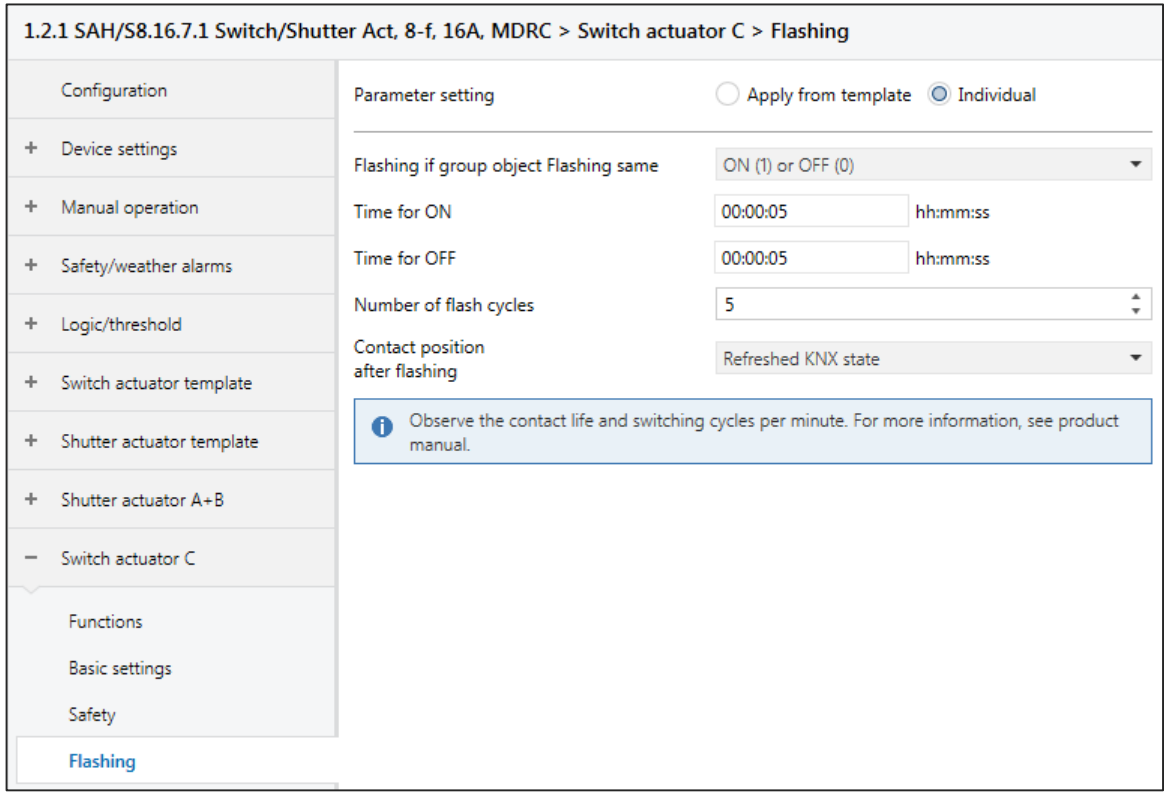


KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Flashing

- Available for individual configuration or template
- Visible if this time function is enabled at parameter block Functions
- Activation with value 0 or 1 or both
- Time for on and off
- Number of flash cycles up to 100
- After flashing relay on or off or refreshed KNX state (any background functions during flashing will be carried out)

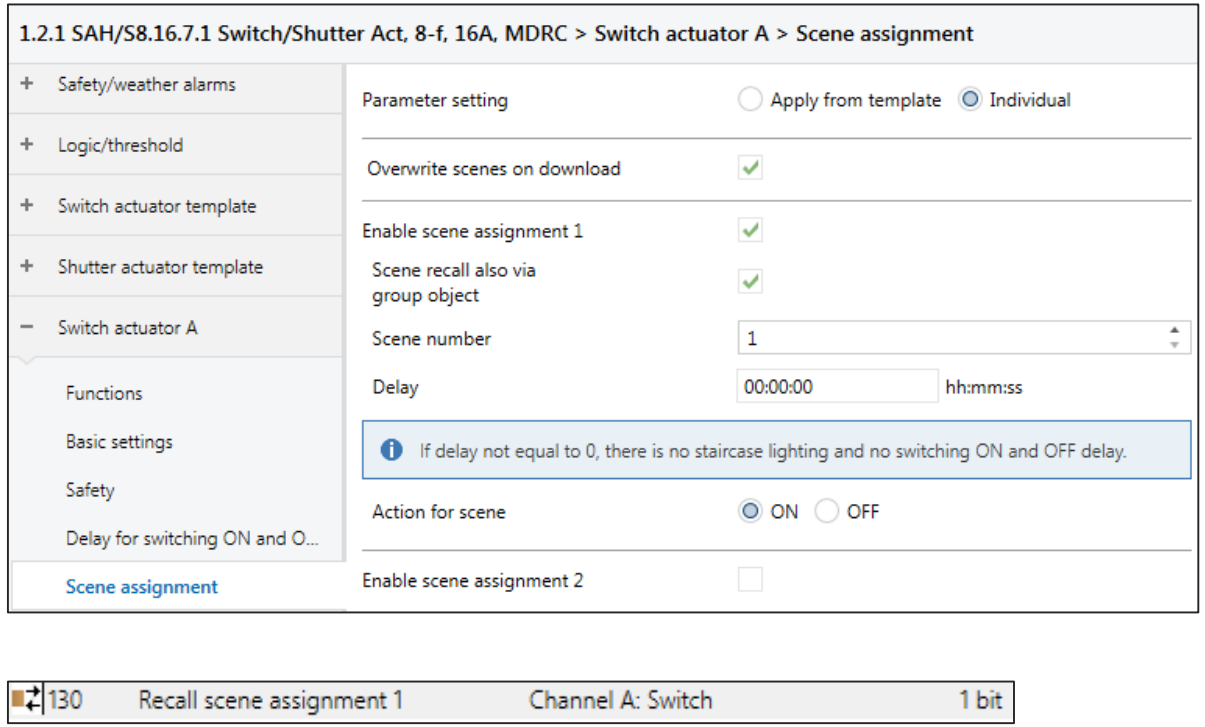


KNX Combi Switch Actuators SAH/S

ETS

Switch Actuator – Scene assignment

- Available for individual configuration or template
- Activation for of up to 16 scenes 1 byte
- Recall and storage of scenes via 1 byte object
- Scene recall also via group object 1 bit (for scene 1 … 4)
  - Additional object to activate the scene (similar to 1 bit preset, e.g. UD/S 2.300.2)
  - Advantage: 1 bit is easier to handle for some sensors than 1 byte
- Free allocation of the 16 scenes to scene number 1 … 64
- Delay time until scene is active (up to 12 hours)

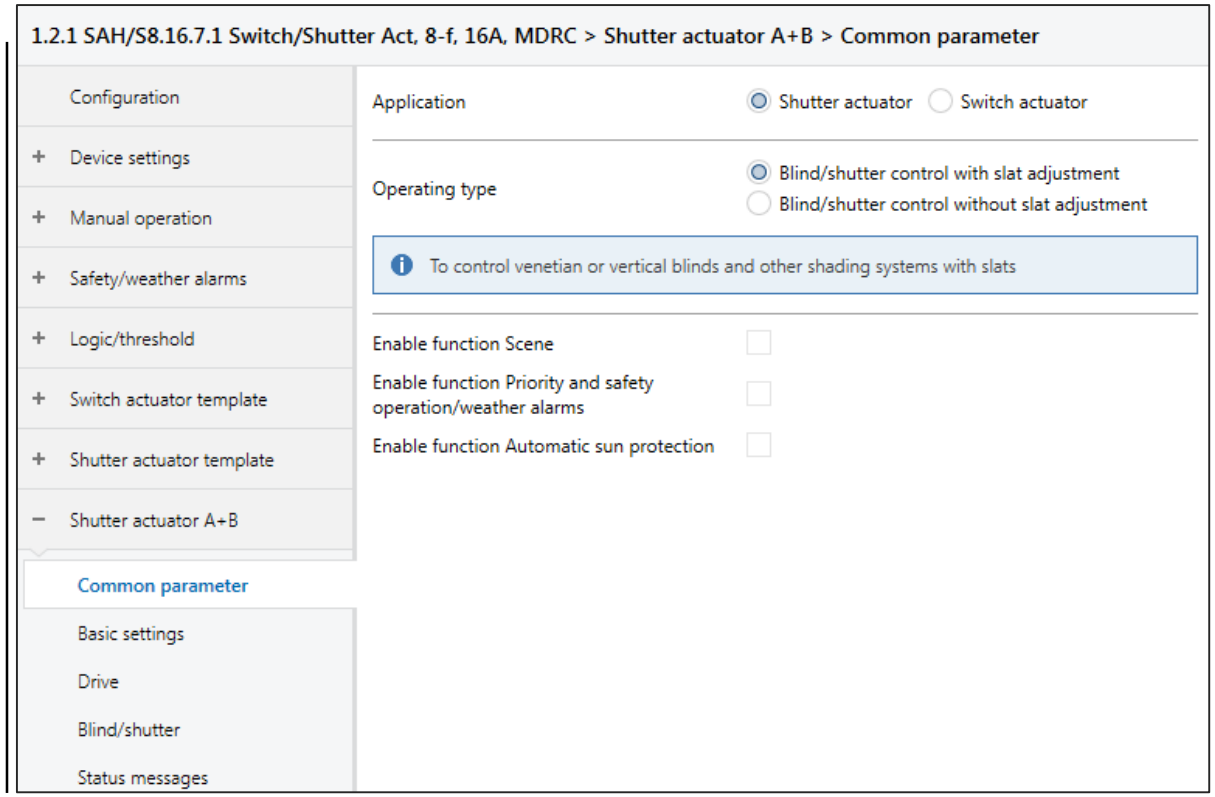


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – common parameters

- Selection of actuator type (switching or shutter)
- With selection shutter the second output of a pair (e.g. A/B or C/D) belongs automatically to the shutter channel
  - Selection with or without slat adjustment
  - Enable scene, priority/safety functions and automatic sun protection

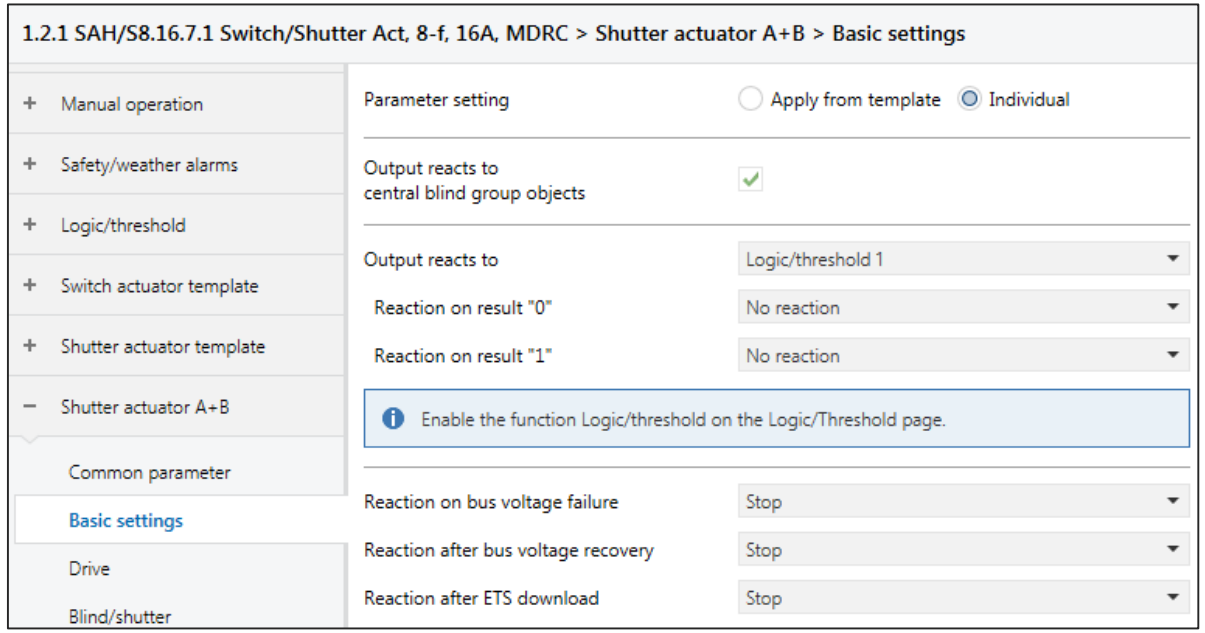


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Basic settings

- Available for individual configuration or template
- Reaction to central object to create individual ‘central’ function
- Reaction on logic/threshold function
  - No reaction, up, down, stop, scene, individual position
  - Though logic is independent of any output, it can be directly assigned
- Reaction on bus voltage failure and recovery or after ETS download



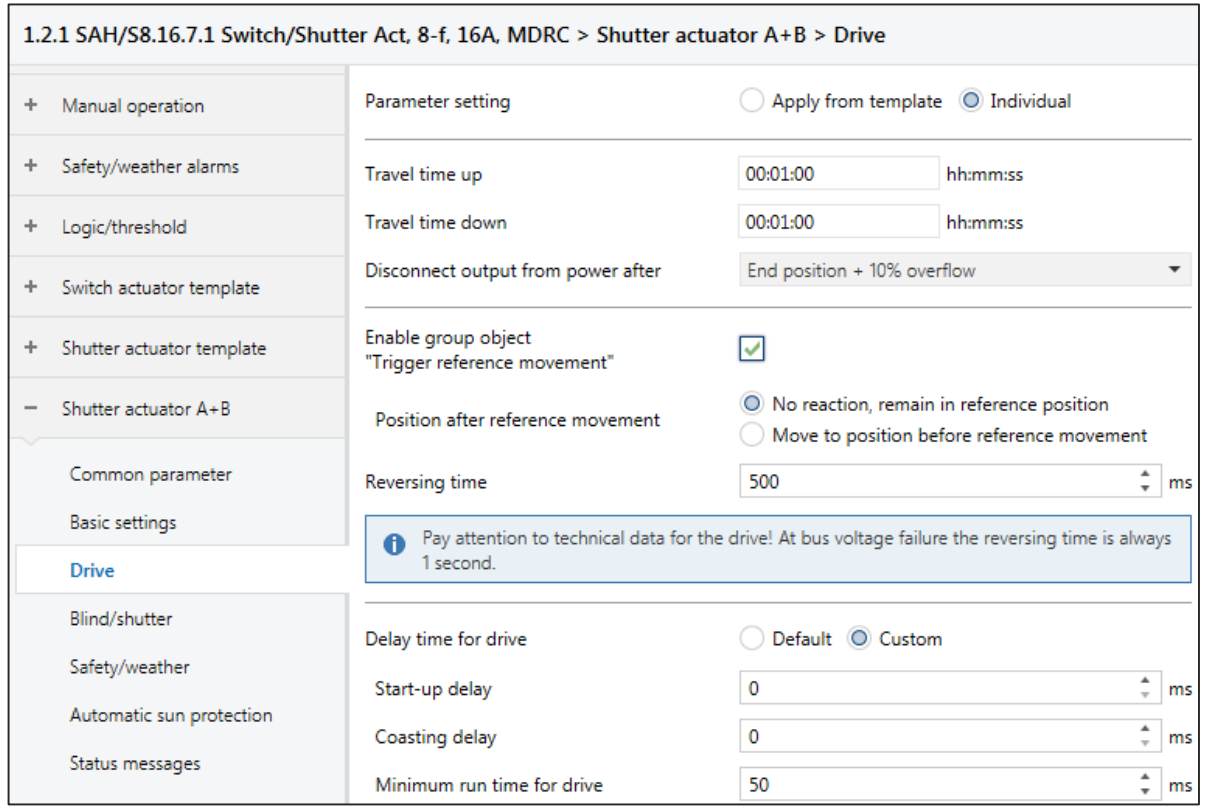
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Drive

- Available for individual configuration or template
- Travel time separate for up and down, needed for good positioning
  - Please note: no automatic travel time detection via current measurement available
- Disconnect output power after end position + x% overflow
  - Additional safety with power turn off in case of malfunction of end switch
- Object “Trigger Reference Movement”
  - Runs drive to end position (value 1 = lower end position, value 0 upper end position)
  - Improvement of positioning when driving the hanging not to end positions during normal operation
  - Position after reference movement adjustable

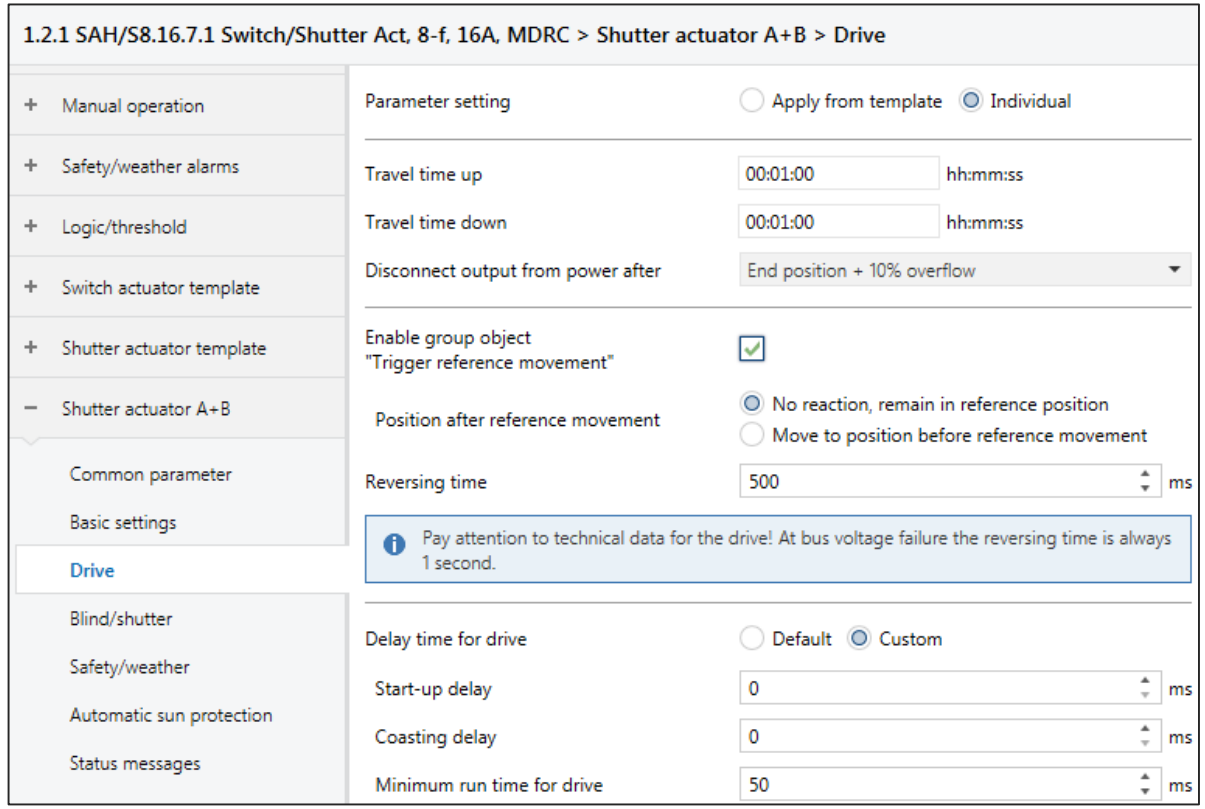


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Drive

- Available for individual configuration or template
- Reversing time: Time the drive stops when the direction of the hanging will be reversed
  - Please note: important value to protect the drive, see manual or recommendation of drive manufacturer
- Delay time of drive
  - Some drives attain their full power only after a start-up delay of a few milliseconds or continue moving for a few milli-seconds after switch-off (coasting delay). It might be necessary to compensate delay times during start-up and coasting of the drive, e.g. to position the blinds/shutters exactly
- Minimum run time for drive
  - Too short minimum run time can damage the connected drive. Pay attention to technical data for the connected drive

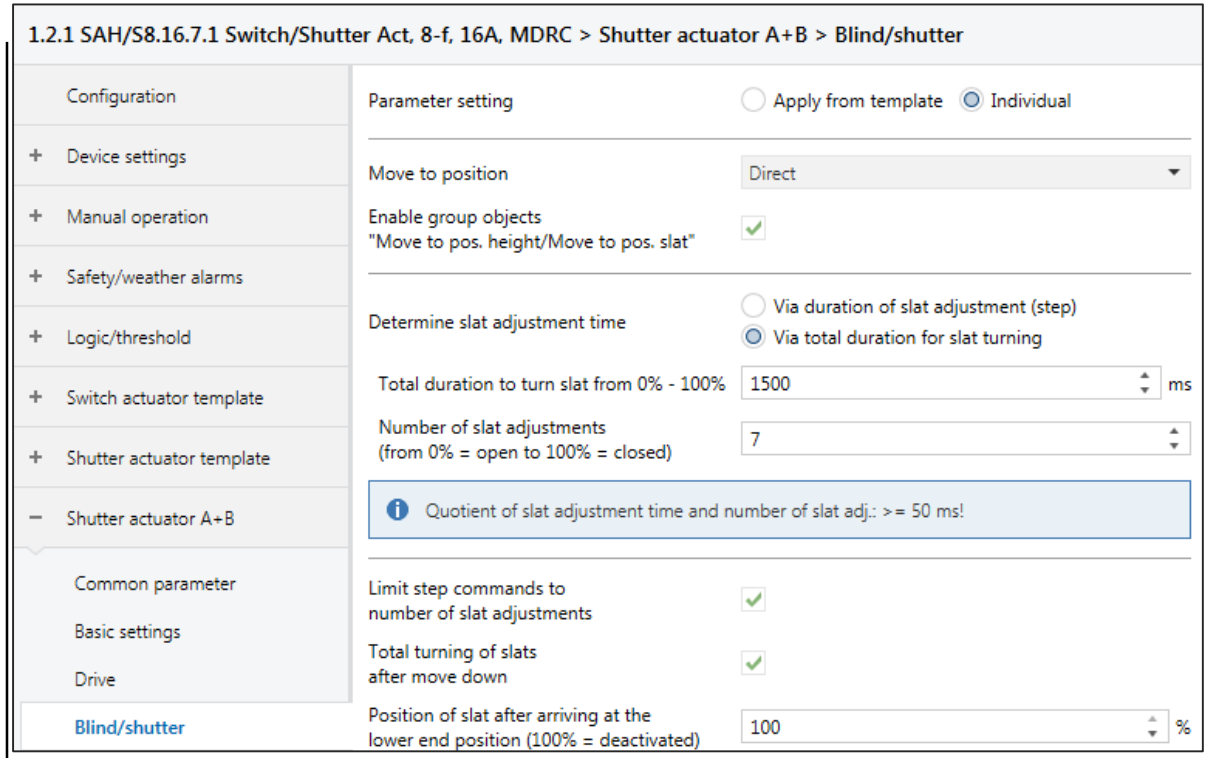


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Blind/Shutter

- Available for individual configuration or template
- Move to position
  - Direct, indirectly via upper or lower end position or shortest way
- Slat adjustment
  - Via duration of slat adjustment:
    After adjustment of duration the number of steps from open to close has to be tested and typed in the parameter
  - Via total duration: Time has to be obtained from manufacturer of the drive to adjust the required number of steps
- Limit step commands to the number of adjusted steps avoids further movement of hanging in case of slate operation
- Total turning of slats after move down (Function closed-open-closed) to release slats which got stuck
- Position of slats at lower end position



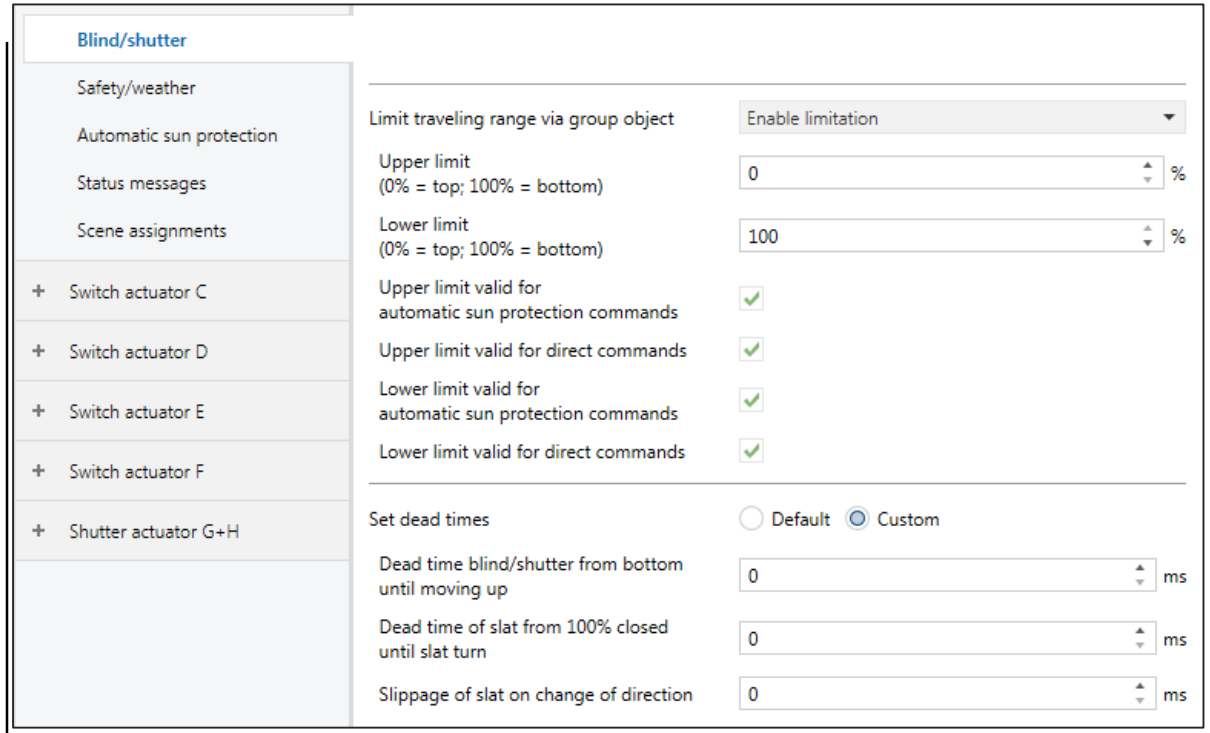
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Blind/Shutter

- Travelling range limitation upper/lower limit depending on function (automatic sun protection and direct commands)
- Dead times
  - Defines times where the hanging is not moving though motor is turning (mechanical slippage)
  - Consideration enables precise positioning
  - In projects to be tested with different times



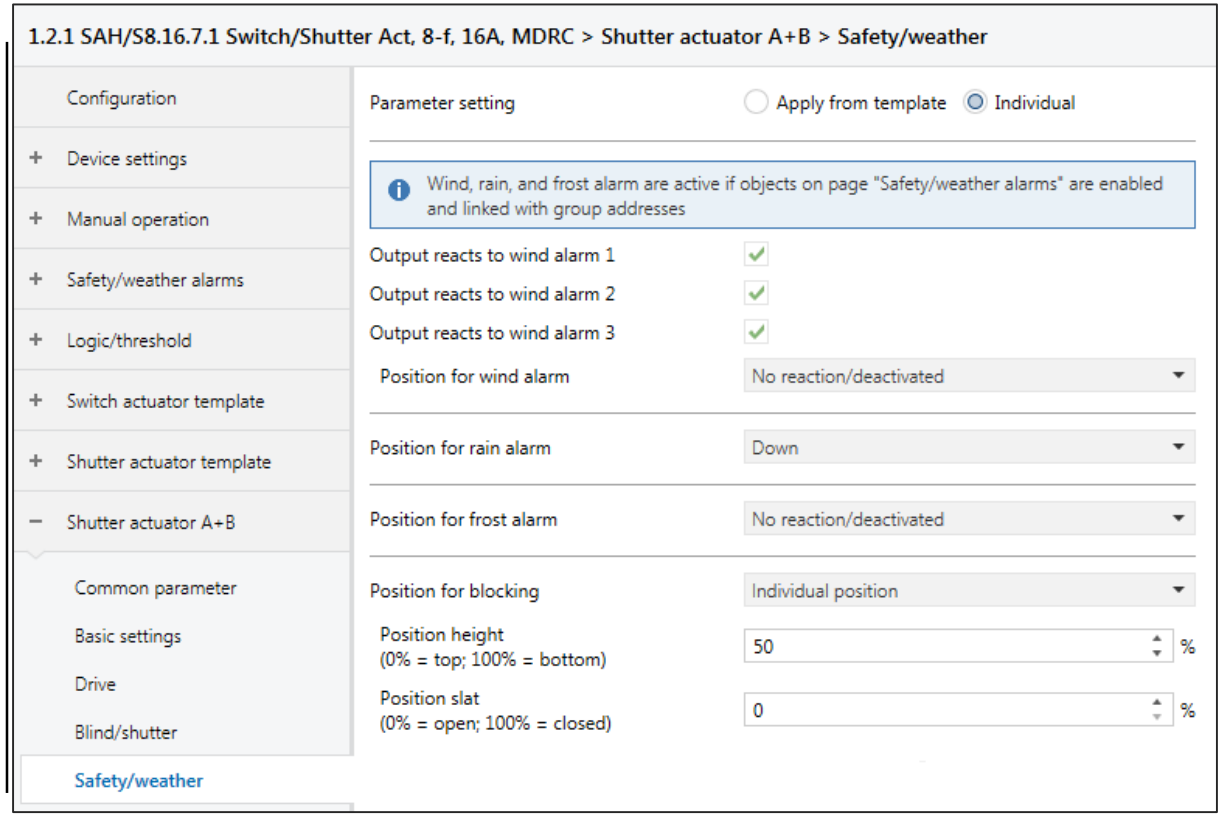
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Safety/weather

- Available for individual configuration or template
- Reaction of the drive on different safety or weather conditions
  - No reaction, up, down, stop, unchanged, scene, individual position
  - Up to 3 wind sensors can be assigned
    Application: Complex building structure with different wind situation at the facades
  - Rain and frost alarm sensors can be assigned
    Application: Closing of windows in case of rain, retract frost sensitive hanging
  - Blocking function via 1 bit telegram with position for height and slat
    Application: Cleaning of window with shutter up and blocked



©ABB

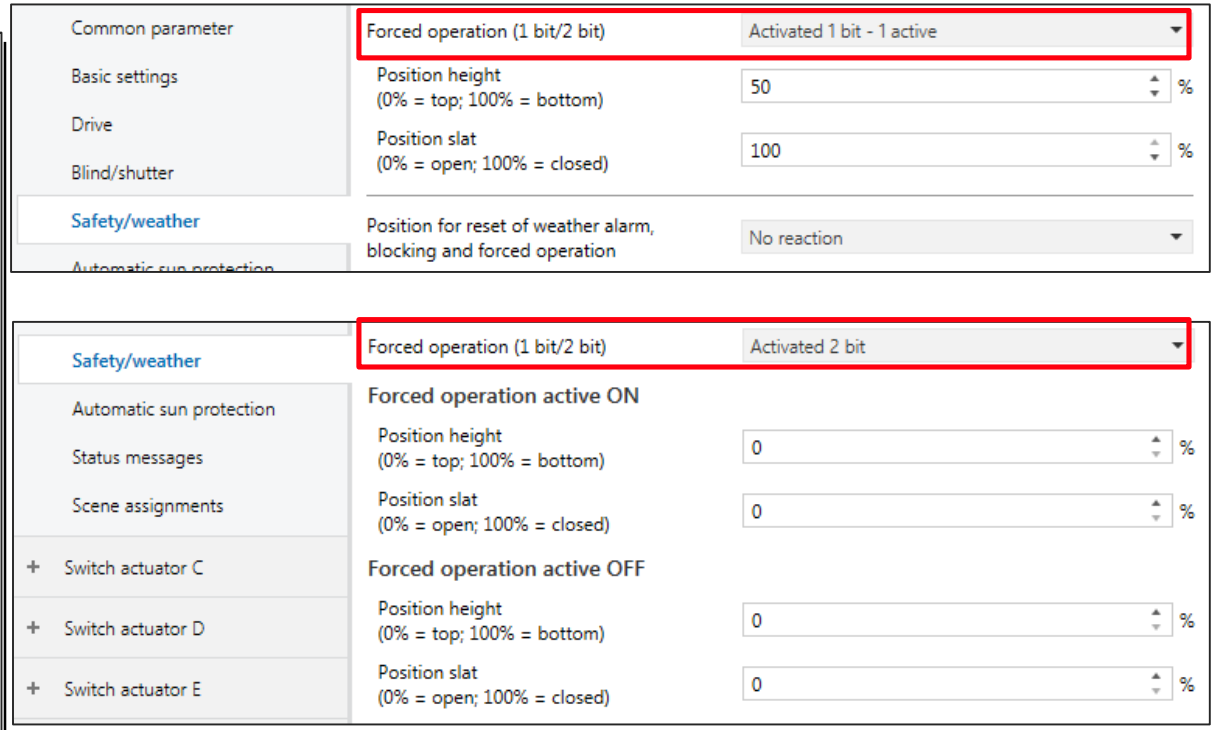
KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Safety/weather

- Forced operation via 1 or 2 bit
- 1 bit
  - Activation with value 0 **or** 1
  - Position of height and slat
- 2 bit
  - 2 different positions for height and slat possible
  - Activation with value 3 (active on) **and** 2 (active off)
  - Deactivation with value 0 or 1

0 | 0 = forced operation inactive (value 0 decimal)
0 | 1 = forced operation inactive (value 1 decimal)
1 | 0 = forced operation active, Off state (value 2 decimal)
1 | 1 = forced operation active, On state (value 3 decimal)



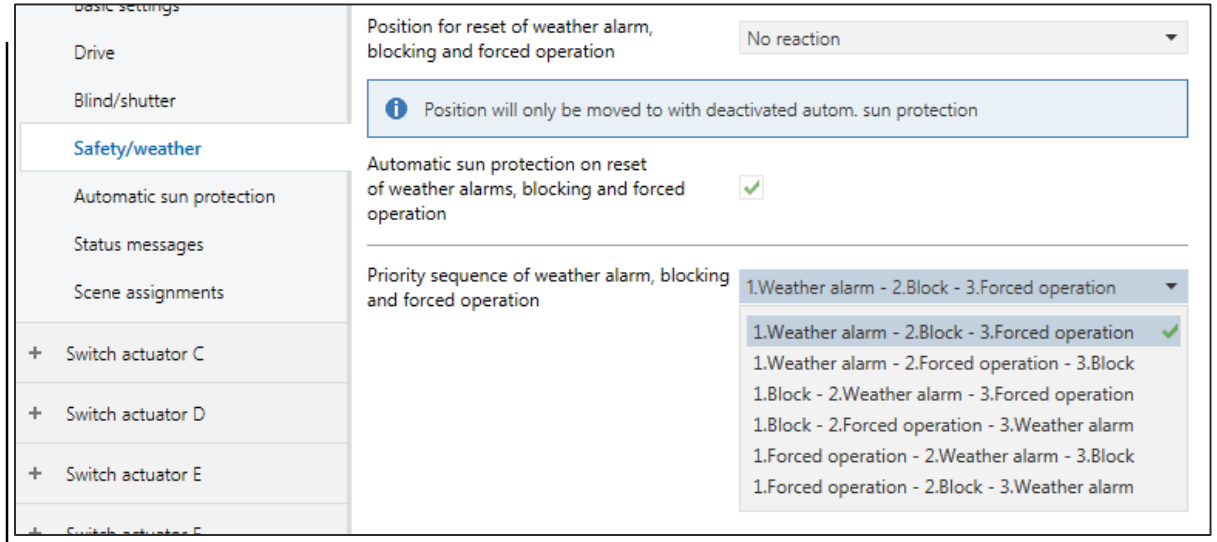
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Safety/weather

- Position for reset of weather alarm, blocking and forced operation
  - No reaction, up, down, stop, unchanged, scene, individual position, refreshed KNX state (any background functions during safety/weather functions will be carried out)
- Automatic sun protection on reset of weather alarms, blocking and forced operation
- Priority sequence of safety/weather alarms
  - Note: Priority sequence of weather alarms (wind, rain, frost) to be adjusted under parameter block Safety/weather alarms



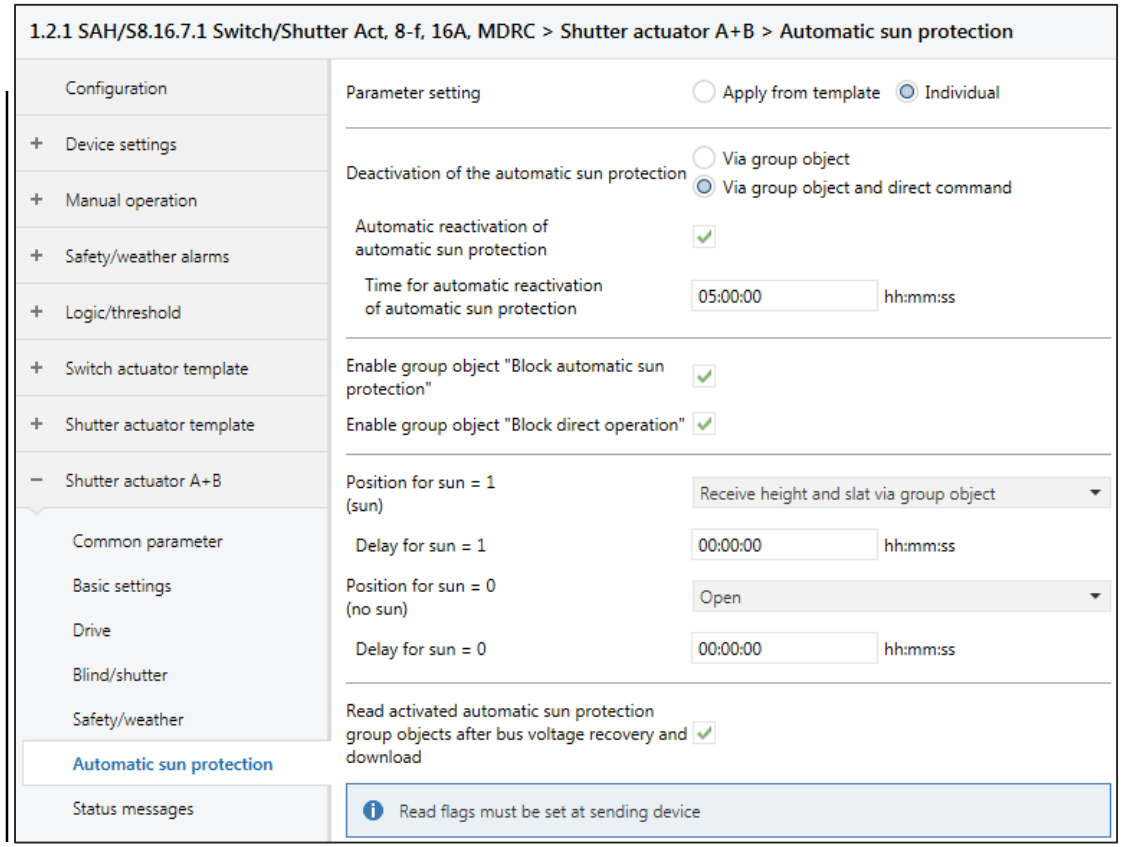
©ABB

KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Automatic sun protection

- Automatic sun protection runs the drive depending on over/undershooting of a brightness level.
  Information is received from outdoor brightness sensor or weather station as a 1 bit telegram
- Deactivation of automatic sun protection via group object or direct operation (e.g. local push button in the room)
  - Reactivation after certain time possible
- Both automatic sun protection and direct operation can be blocked via group objects
- Position of shutter in the event of over/undershooting adjustable, also with delay
  - No reaction, up, down, stop, unchanged, scene, individual pos.
  - Receive height and/or slat via group object (1 byte) allows integration of shutter control unit JSB/S 1.1 for control of blinds depending on sun position

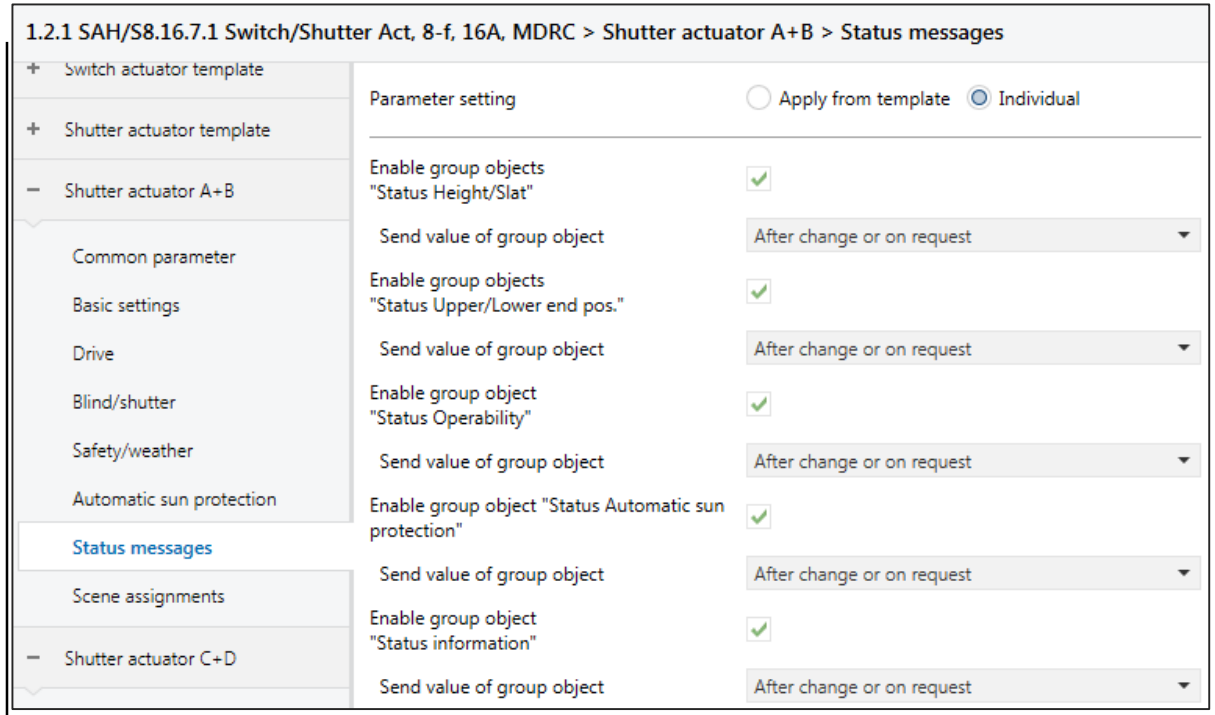


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Status messages

- Group objects for following status messages:
  - Height/Slats (1 byte)
  - Upper/Lower end position (1 bit)
  - Operability (1 bit)
    Application: LED on local push button shows operability, operation e.g. not possible due to safety functions (wind) or manual operation
  - Automatic sun protection active (1 bit)
  - Information (1 byte, e.g. safety, - time,- or manual operation active)

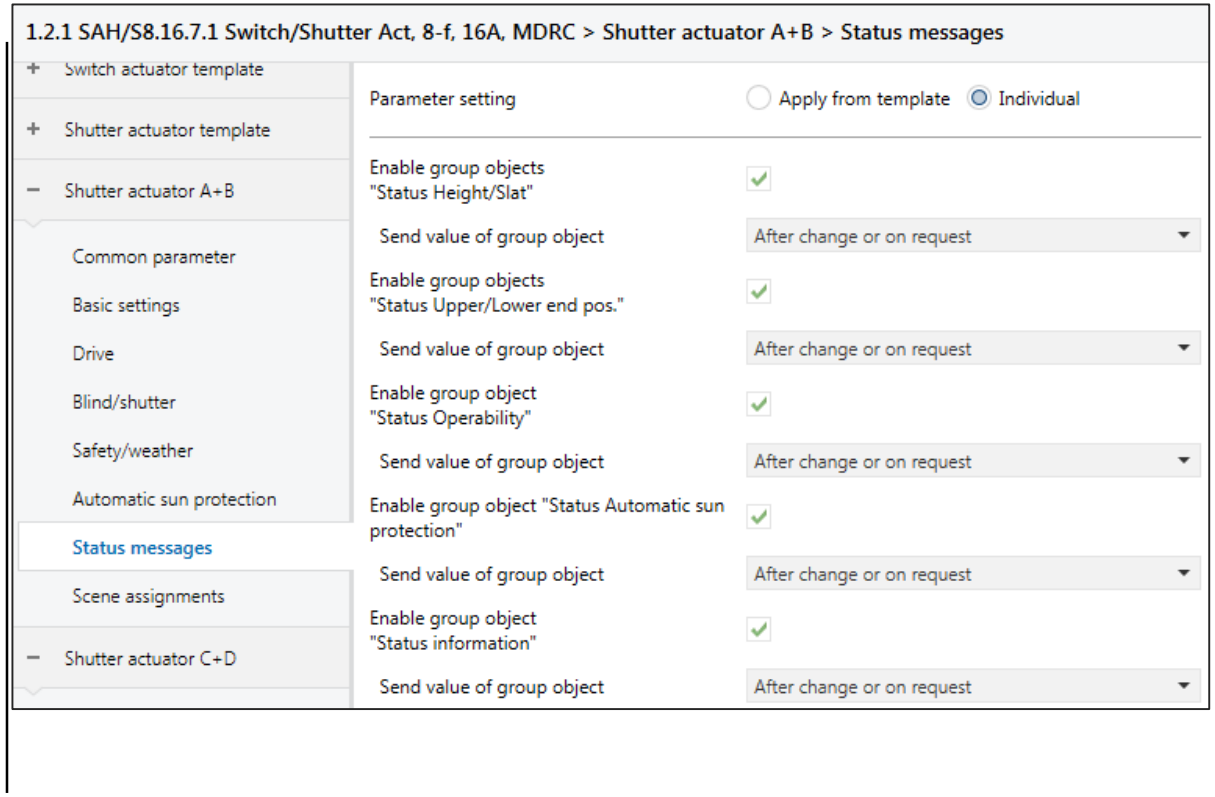


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Status messages

- Parameter options:
  - No, update only (value in group object will be updated but not sent on the bus. Possible to achieve via read request, e.g. visualization)
  - After change (value has to be different to be sent on the bus)
  - On request (A request can be triggered by sending the value 0 or 1 on the group object Request status values)
  - After change and on request

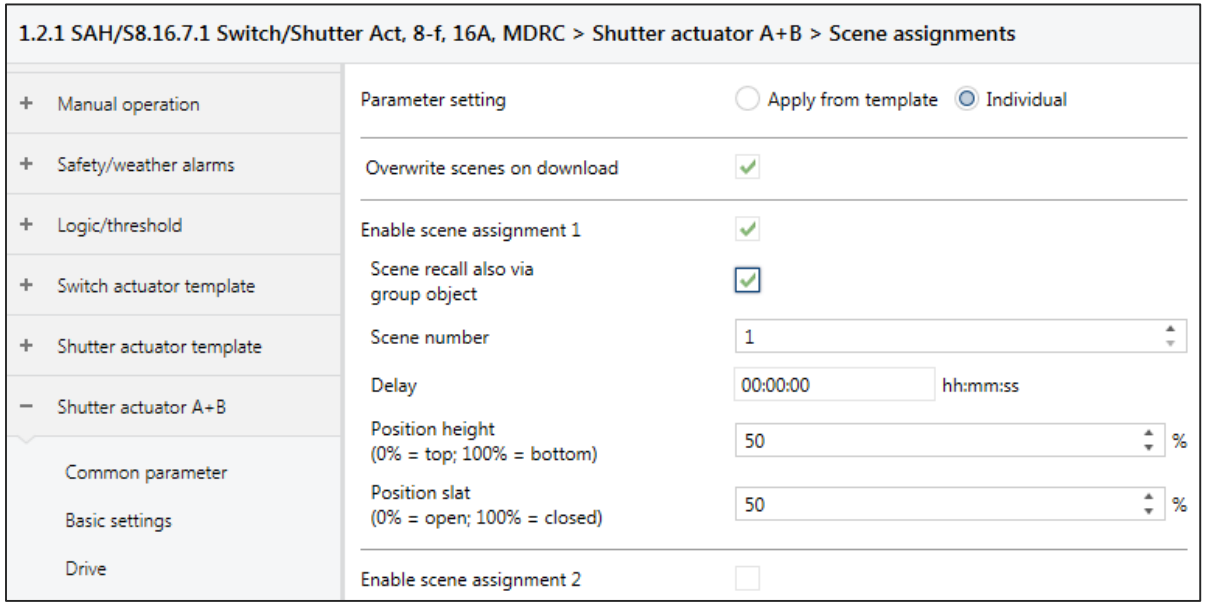


KNX Combi Switch Actuators SAH/S

ETS

Shutter Actuator – Scene assignment

- Available for individual configuration or template
- Activation for of up to 16 scenes 1 byte
- Recall and storage of scenes via 1 byte object
- Scene recall also via group object (for scene 1 … 4)
  - Additional 1 bit object to activate the scene
  - Advantage: 1 bit is easier to handle for some sensors than 1 byte
- Delay in running the drive
  - Application: delayed start of the drives to avoid load peak
- Position height or slat individually adjustable



KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 1

Templates ...

A ... are for saving time during commissioning with ETS

B ... are for assigning the same parameter to many channels

C ... are split into different parameter blocks

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 1

Templates ...

A ... are for saving time during commissioning with ETS

B ... are for assigning the same parameter to many channels

C ... are split into different parameter blocks

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 2

A Central group objects must be used for all outputs

B Up to 24 logic/threshold functions can be linked to internal outputs or used independently

C Shutter control in SAH/S has no travel time detection but can be connected with the shutter control unit JSB/S 1.1

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 2

A Central group objects must be used for all outputs

B Up to 24 logic/threshold functions can be linked to internal outputs or used independently

C Shutter control in SAH/S has no travel time detection but can be connected with the shutter control unit JSB/S 1.1

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 3

A For activation of scenes 1 bit and 1 byte group objects exist

B On a local push button the operability of a shutter output of SAH/S can be shown

C Staircase function can be disabled, staircase time can be changed via KNX telegram

©ABB

KNX Combi Switch Actuators SAH/S

Which answer is correct?

Question 3

A For activation of scenes 1 bit and 1 byte group objects exist

B On a local push button the operability of a shutter output of SAH/S can be shown

C Staircase function can be disabled, staircase time can be changed via KNX telegram

©ABB

KNX Combi Switch Actuators SAH/S

Commercial and Marketing Aspects “KNX Combi Switch Actuators SAH/S”

KNX Combi Switch Actuators SAH/S

Range

Order Code (ABB Version)

Switch/Shutter Actuator	Order Code
SAH/S 8.6.7.1	2CDG110244R0011
SAH/S 16.6.7.1	2CDG110245R0011
SAH/S 24.6.7.1	2CDG110246R0011
SAH/S 8.10.7.1	2CDG110247R0011
SAH/S 16.10.7.1	2CDG110248R0011
SAH/S 24.10.7.1	2CDG110249R0011
SAH/S 8.16.7.1	2CDG110250R0011
SAH/S 16.16.7.1	2CDG110251R0011
SAH/S 24.16.7.1	2CDG110252R0011

Comprehensive range, reasonable price per channel

©ABB

KNX Combi Switch Actuators SAH/S

Range

Order Code (Busch-Jaeger Version)

Switch/Shutter Actuator	Order Code
SAH/S 8.10.7.11	2CDG110247R0021
SAH/S 16.10.7.11	2CDG110248R0021
SAH/S 24.10.7.11	2CDG110249R0021
SAH/S 8.16.7.11	2CDG110250R0021
SAH/S 16.16.7.11	2CDG110251R0021
SAH/S 24.16.7.11	2CDG110252R0021

Comprehensive range, reasonable price per channel

©ABB

KNX Combi Switch Actuators SAH/S

Microsite

Product page with the first main information and links to further related pages

LINK

©ABB

KNX Combi Switch Actuators SAH/S

Homepage

www.abb.com/KNX
→ Products and Downloads
→ Outputs
→ Search Options SAH/S

Product Manual

CAD Drawing

Installation and Operating Instructions

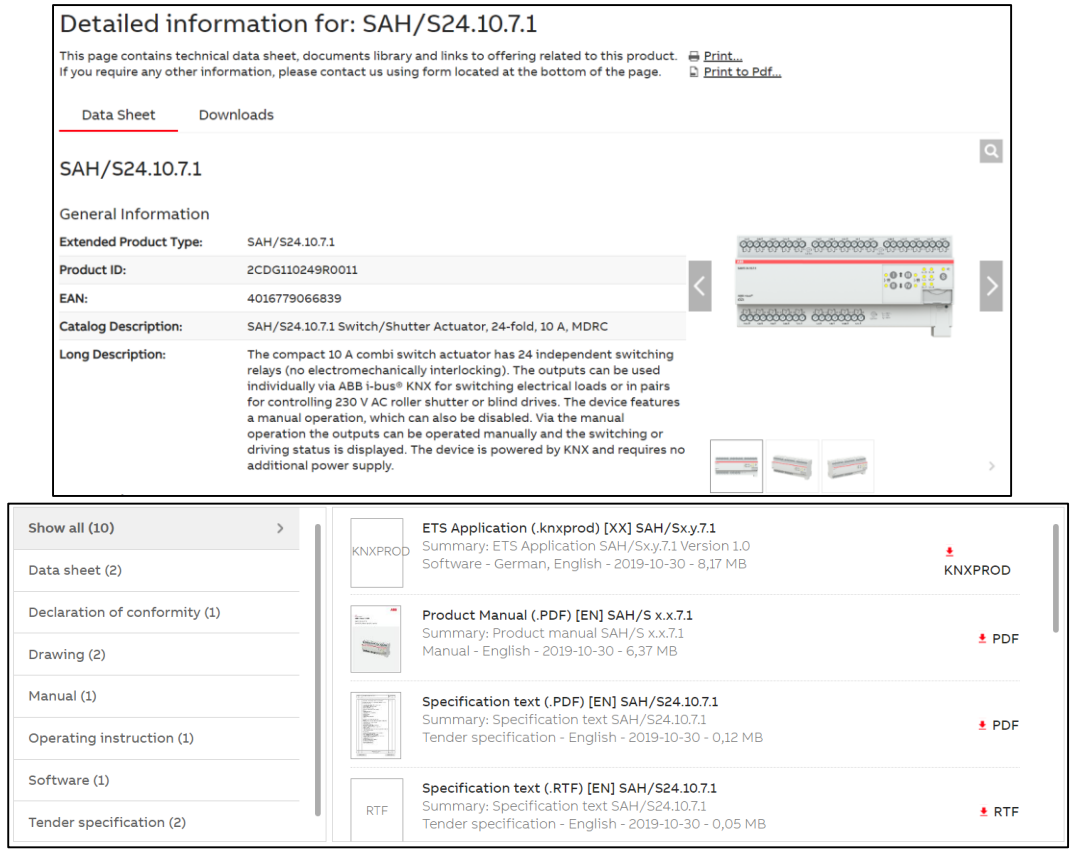
Specification Text

ETS Application

Selection Table

CE & RoHS Declaration of Conformity

• • •



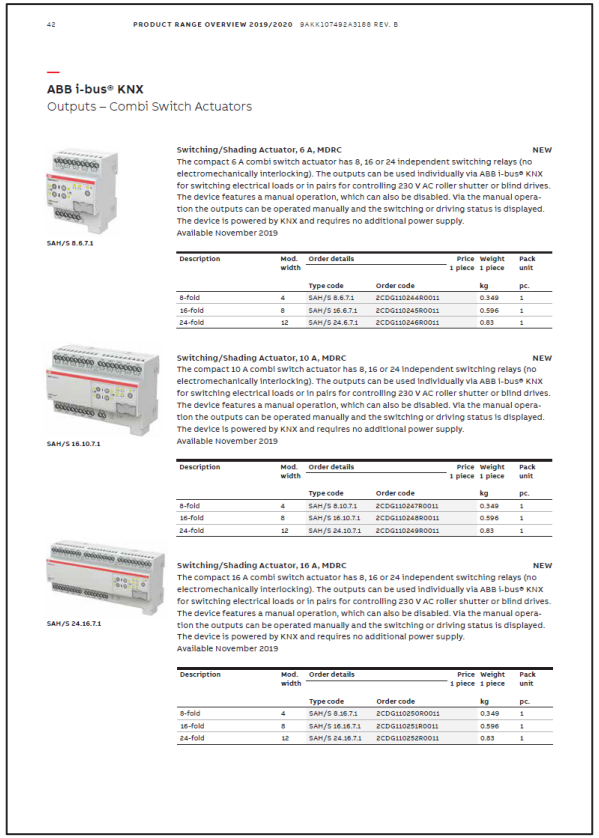
KNX Combi Switch Actuators SAH/S

Range Overview

Smarter Solutions for Home and Building Automation
ABB i-bus KNX
Product Range Overview 2019/2020

Including Combi Switch Actuators SAH/S

LINK

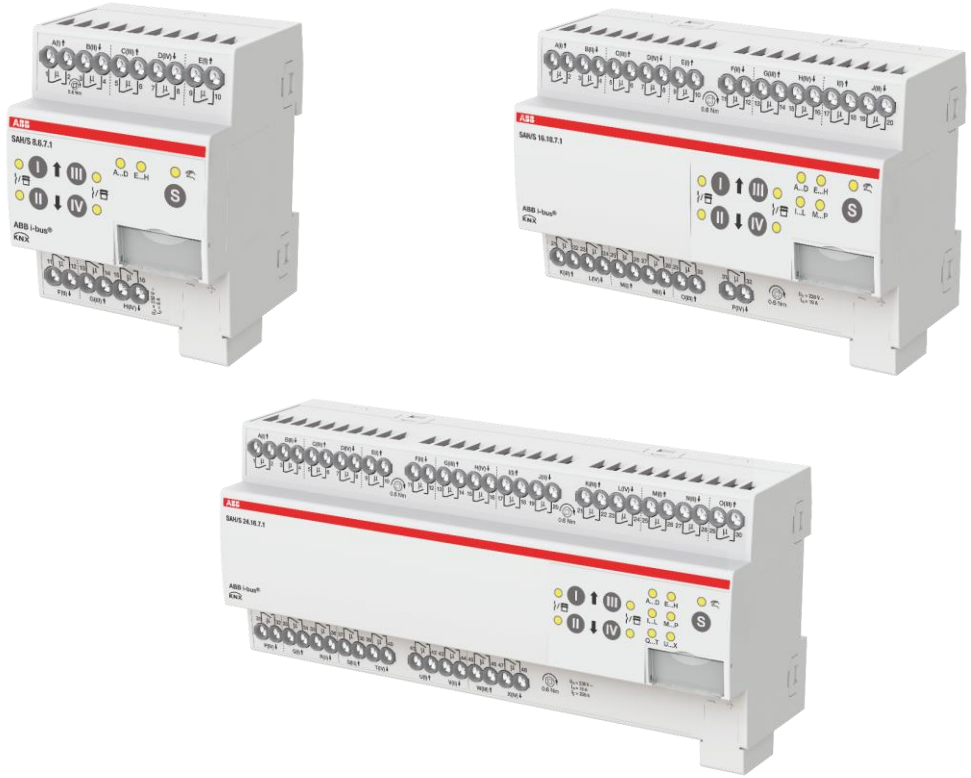


KNX Combi Switch Actuators SAH/S

Combi Switch Actuators

Summary of the Features and Advantages

- High channel density with 2 channels per module
  → less installation space in distribution boards with cost saving
- Choice between switching and shading
  → high flexibility also in the phase of installation and commissioning
- Proven connection terminals with screws, on the same level
  → easy and stress-free wiring for the panel builder
- All products with innovative Keypad for manual operation
  → simple but powerful manual operation with reduced number of keys and LED's
- Up to 24 independent channels
  → very cost efficient solution (costs per channel) with no restrictions in functions
- Optimized ETS Application
  → easy to operate, safes time and satisfies the programmer



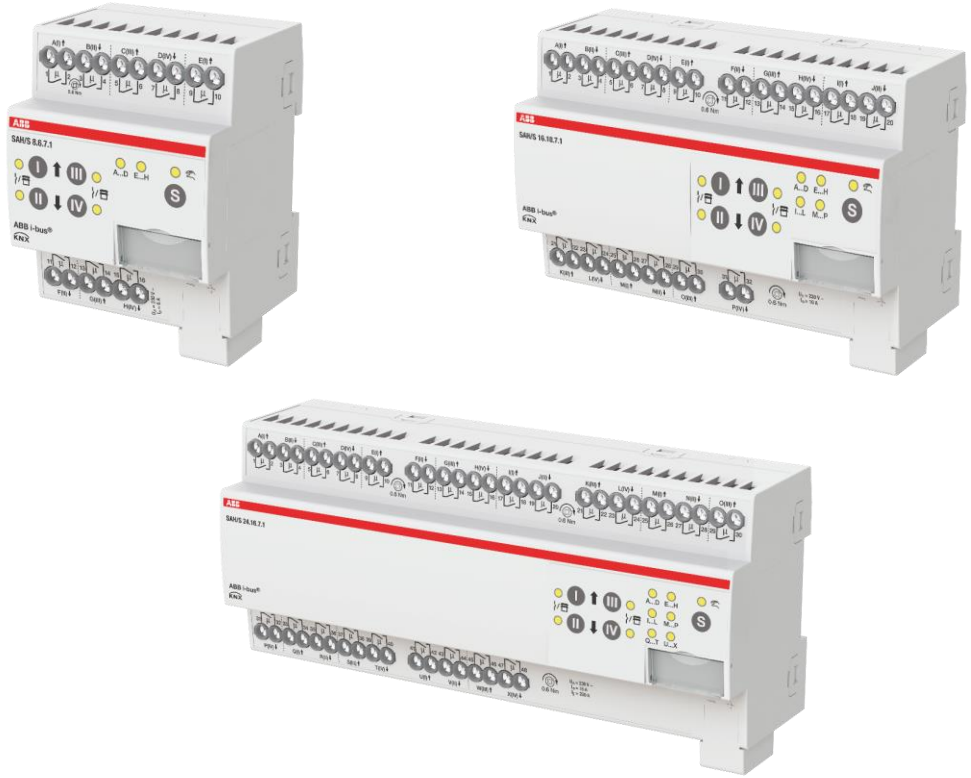
©ABB

KNX Combi Switch Actuators SAH/S

Combi Switch Actuators

Summary of the Features and Advantages

- Versions with 6, 10 and 16A
  → products available for the different market requirements
- New hardware platform and digital ready components
  → allows in future feature extensions
- Completion of the range with the standard and professional actuators
  → Products for all demands and markets from one manufacturer
- Designed and produced in Germany
  → highest quality standard



©ABB

Disclaimer

The information in this document is subject to change without notice and should not be construed as a commitment by ABB. ABB assumes no responsibility for any errors that may appear in this document.

In no event shall ABB be liable for direct, indirect, special, incidental or consequential damages of any nature or kind arising from the use of this document, nor shall ABB be liable for incidental or consequential damages arising from use of any software or hardware described in this document.

© Copyright [2020] ABB. All rights reserved.

ABB