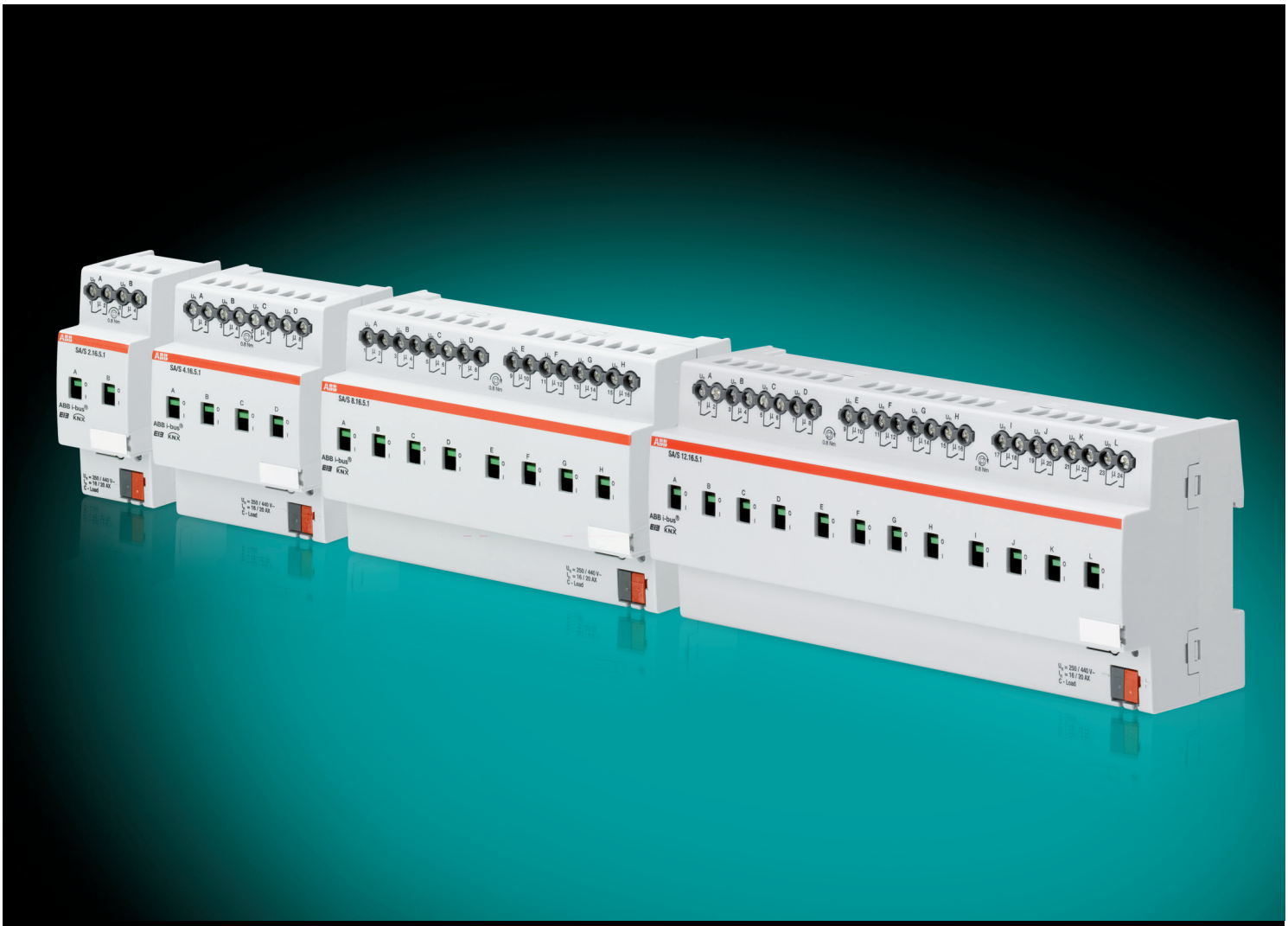


ABB i-bus® KNX
Switch Actuators SA/S
Product Information

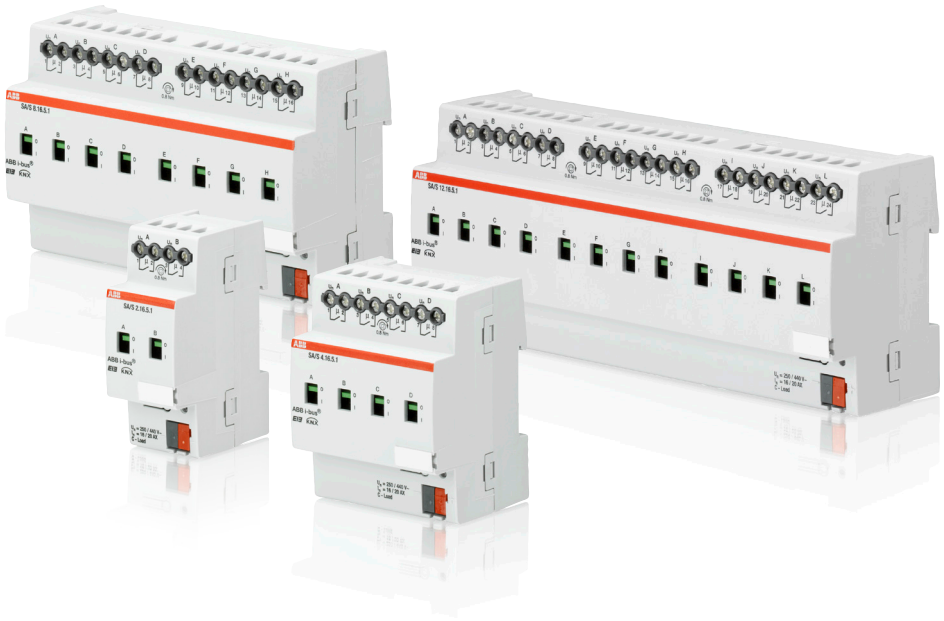
Power and productivity
for a better world™

ABB Stotz-Kontakt GmbH
Your Partner with Know-How for Future-Oriented Electrical Installation

Hugo Stotz, the company founder of ABB Stotz-Kontakt, paved the way for the development of modern and safe electrical installations in buildings with the invention of the circuit breaker more than 80 years ago.
ABB Stotz-Kontakt today has the complete range for forward-looking electrical installations in its product range with more than 10,000 components.

In addition to the products for conventional electrical installation, for more than 20 years, ABB i-bus® KNX has been providing flexible, economic and reliable solutions for intelligent installation systems – the networked control of all building functions – on the basis of the global standard KNX. Today, several million ABB i-bus® KNX devices control lighting, blinds, roller shutters, heating valves, air conditioning and climate control systems and other electrical loads in residential buildings, hotels, schools, office buildings, industrial buildings, airports and on ships in more than 60 countries. The technical and functional demands made on the ABB i-bus® KNX devices are as numerous and diverse as the connected electrical loads.

ABB i-bus® KNX Switch Actuators
A Complete Range



Switch Actuators are responsible for reliable switching of different electrical loads in the KNX system.
Many different load situations are possible. ABB offers a suitable Switch Actuator for all application areas. The range has been rounded off with a new series. Now 16/20 AX C-Load Switch Actuators with and without a current detection feature are available; each featuring 2, 4, 8 or 12 outputs.

In the following table, you will find an overview of the ABB i-bus® Switch Actuators and their type designations:

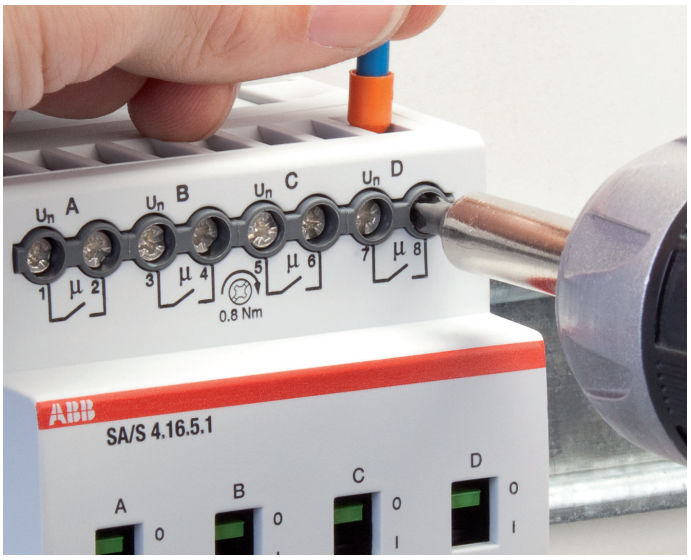
			16/20 AX C-Load with or without Current Detection	
–	SA/S 2.10.2.1	SA/S 2.16.2.1	SA/S 2.16.5.1	SA/S 2.16.6.1
SA/S 4.6.1.1	SA/S 4.10.2.1	SA/S 4.16.2.1	SA/S 4.16.5.1	SA/S 4.16.6.1
SA/S 8.6.1.1	SA/S 8.10.2.1	SA/S 8.16.2.1	SA/S 8.16.5.1	SA/S 8.16.6.1
SA/S 12.6.1.1	SA/S 12.10.2.1	SA/S 12.16.2.1	SA/S 12.16.5.1	SA/S 12.16.6.1

Note:
The codes represent the following:

SA/S	=	**S**witch **A**ctuator
SA/S **x.**	x	= number of outputs
SA/S 8.**y.**	y	= rated current in Ampere
SA/S 8.16.**1**	1	= without manual operation
SA/S 8.16.**2**	2	= with manual operation
SA/S 8.16.**5**	5	= type with higher switch capacity C-Load (200 µF)
SA/S 8.16.**6**	6	= type with higher switch capacity C-Load (200 µF) and current detection
SA/S 8.16.6.**z**	z	= version number

ABB i-bus® KNX Switch Actuators
Simple and Safe Installation

Simple connection
The use of a 6 mm terminal and a universal head screw makes connecting cables with large diameters easy:
- Load current circuits (2 terminals per relay)
  Universal head screw terminal (PZ 1):
  0.2…4 mm² stranded, 2 x 0.2…2.5 mm²,
  0.2…6 mm² solid, 2 x 0.2…4 mm²
- Ferrules without/with plastic sleeves:
  0.25…2.5/4 mm²
- TWIN ferrules:
  0.5…2.5 mm².



Simple supply
An auxiliary voltage supply is not required for device function. The device is supplied by the KNX bus voltage.

Simple test
After connection of the loads, the installation can be directly manually tested on the devices with manual operation. The function is possible without bus voltage.

High relay loading capacity
Reliable switching for all intelligent installation system applications.

The Switch Actuators are suitable for fitting in distribution boards or small housings, fixed by snap-on mounting on a 35 mm mounting rails. They are electrically connected via screw terminals. The supplied bus terminal is used for connection to the KNX network.

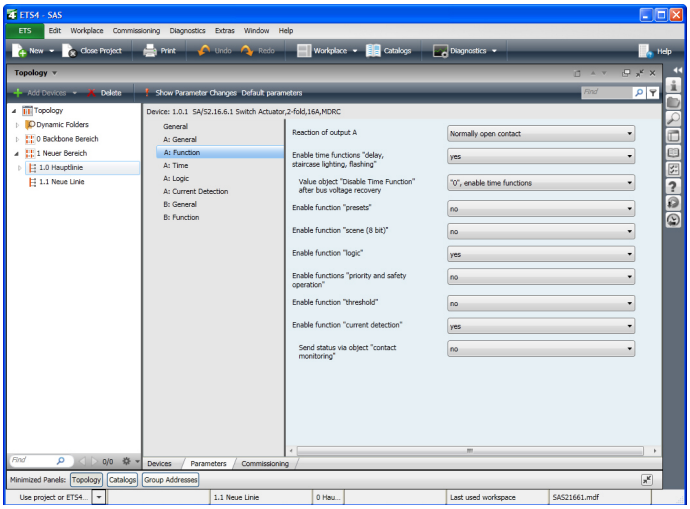
ABB i-bus® KNX Switch Actuators
Overview of Switching Performance

The following table shows the rated values, switching capacities, lamp loads and/or the number of lamps that can be connected to each contact.

	SA/S 4.6.1.1 SA/S 8.6.1.1 SA/S 12.6.1.1	SA/S 2.10.2.1 SA/S 4.10.2.1 SA/S 8.10.2.1 SA/S 12.10.2.1	SA/S 2.16.2.1 SA/S 4.16.2.1 SA/S 8.16.2.1 SA/S 12.16.2.1	SA/S 2.16.5.1 SA/S 4.16.5.1 SA/S 8.16.5.1 SA/S 12.16.5.1	SA/S 2.16.6.1 SA/S 4.16.6.1 SA/S 8.16.6.1 SA/S 12.16.6.1
I_n Rated current (A)	6 A	10 AX	16 A	16/20 AX C-Last	16/20 AX C-Last
U_n rated voltage (V)	250/440 V AC	250/440 V AC	250/440 V AC	250/440 V AC	250/440 V AC
AC1 operation (cos φ = 0.8) EN 60947-4-1	6 A	10 A	16 A	20 A	20 A
AC3 operation (cos φ = 0.45) EN 60947-4-1	6 A	8 A	–[4]	16 A	16 A
C-Load switching capacity	–	–	–	20 A	20 A
Fluorescent lighting load AX to EN 60669-1	6 A (35 µF) [3]	10 AX (140 µF) [3]	16 A (70 µF) [3]	20 AX (200 µF) [3]	20A X (200 µF) [3]
Minimum switching capacity	10 mA/12 V	100 mA/12 V	100 mA/12 V	100 mA/12 V	100 mA/12 V
DC current switching capacity (resistive load)	7 A/24 V =	10 A/24 V =	16 A/24 V =	20 A/24 V =	20 A/24 V =
Mechanical contact endurance	> 10^7	> 3 x 10^6	> 3 x 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	100,000	100,000
– Rated current AC3 (240 V/0.45)	15,000	30,000	30,000	30,000	30,000
– Rated current AC5a (240 V/0.45)	15,000	30,000	30,000	30,000	30,000
Incandescent lamp load at 230 V AC	1,200 W	2,500 W	2,500 W	3,680 W	3,680 W
Fluorescent lamp T5 / T8:					
– Uncorrected	800 W	2,500 W	2,500 W	3,680 W	3,680 W
– Parallel compensated	300 W	1,500 W	1,500 W	2,500 W	2,500 W
– DUO circuit	350 W	1,500 W	1,500 W	3,680 W	3,680 W
Low-voltage halogen lamps:					
– Inductive transformer	800 W	1,200 W	1,200 W	2,000 W	2,000 W
– Electronic transformer	1,000 W	1,500 W	1,500 W	2,500 W	2,500 W
Halogen lamps 230 V	1,000 W	2,500 W	2,500 W	3,680 W	3,680 W
Dulux lamps:					
– Uncorrected	800 W	1,100 W	1,100 W	3,680 W	3,680 W
– Parallel compensated	800 W	1,100 W	1,100 W	3,000 W	3,000 W
Mercury-vapour lamps:					
– Uncorrected	1,000 W	2,000 W	2,000 W	3,680 W	3,680 W
– Parallel compensated	800 W	2,000 W	2,000 W	3,000 W	3,000 W
Sodium vapour lamps:					
– Uncorrected	1,000 W	2,000 W	2,000 W	3,680 W	3,680 W
– Parallel compensated	800 W	2,000 W	2,000 W	3,000 W	3,000 W
Max. peak inrush-current Ip (150 µs)	200 A	400 A	400 A	600 A	600 A
Max. peak inrush-current Ip (250 µs)	160 A	320 A	320 A	480 A	480 A
Max. peak inrush-current Ip (600 µs)	100 A	200 A	200 A	300 A	300 A
Number of electronic ballasts (T5/T8, single element): [2]					
18 W (ABB EVG 1 x 18 SF)	10 ballasts	23 ballasts	23 ballasts	26[1] ballasts	26[1] ballasts
24 W (ABB EVG 1 x 24 CY)	10 ballasts	23 ballasts	23 ballasts	26[1] ballasts	26[1] ballasts
36 W (ABB EVG 1 x 36 CF)	7 ballasts	14 ballasts	14 ballasts	22 ballasts	22 ballasts
58 W (ABB EVG 1 x 58 CF)	5 ballasts	11 ballasts	11 ballasts	12[1] ballasts	12[1] ballasts
80 W (Helvar EL 1 x 80 SC)	3 ballasts	10 ballasts	10 ballasts	12[1] ballasts	12[1] ballasts

[1] The number of ballasts is limited by the protection with B16/B20 circuit-breakers.
[2] For multiple element lamps or other types the number of electronic ballasts must be determined using the peak inrush current of the electronic ballasts.
[3] The maximum inrush-current peak may not be exceeded.
[4] Not intended for AC3 operation; maximum AC3 current see Technical data.

ABB i-bus® KNX Switch Actuators
This is How Your Project Works

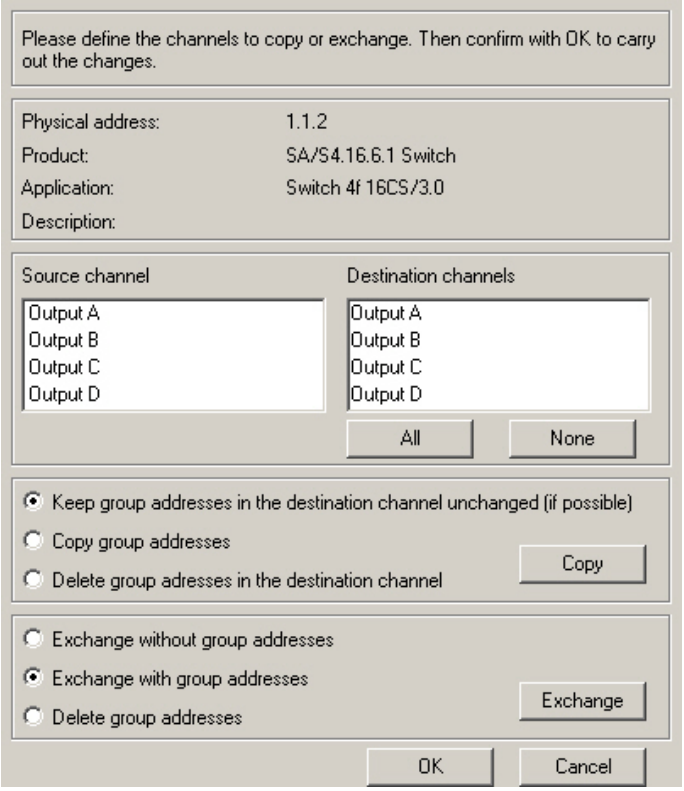


Universal application functionality

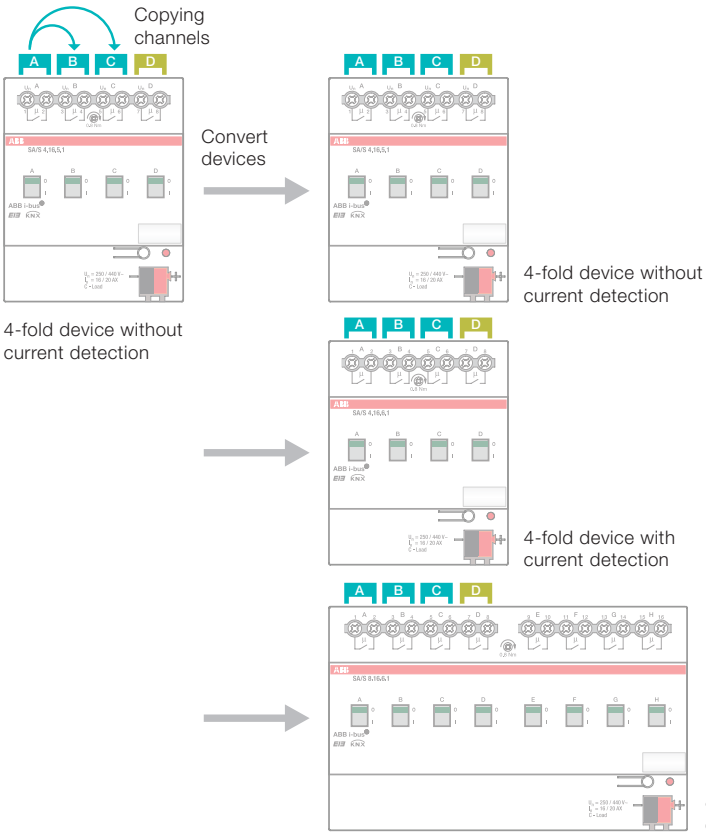
The application software common to all ABB i-bus® KNX Switch Actuators offers a wide range of functionality and enables suitable device functionality. The application has a structured configuration: Only the required functions are activated.
The parameters and communication objects not required are not displayed. This enhances the clarity and simplifies commissioning.

In addition to the well-proven function options, the application program for the C-Load types offers an additional copy and exchange function for parameterised output channels.
This simplifies commissioning and prevents errors when the same parameter settings are to be used on several output channels. Using a conversion function, the parameter settings and the group addresses of the predecessor types can be simply uploaded into the new application. Thus, a problem-free exchange or modification of actuators is guaranteed.

ABB i-bus® KNX Switch Actuators
Copying and Exchanging Parameter Settings



Application example



Parameterization of devices can take a lot of time depending on the complexity of the application and the number of device outputs.

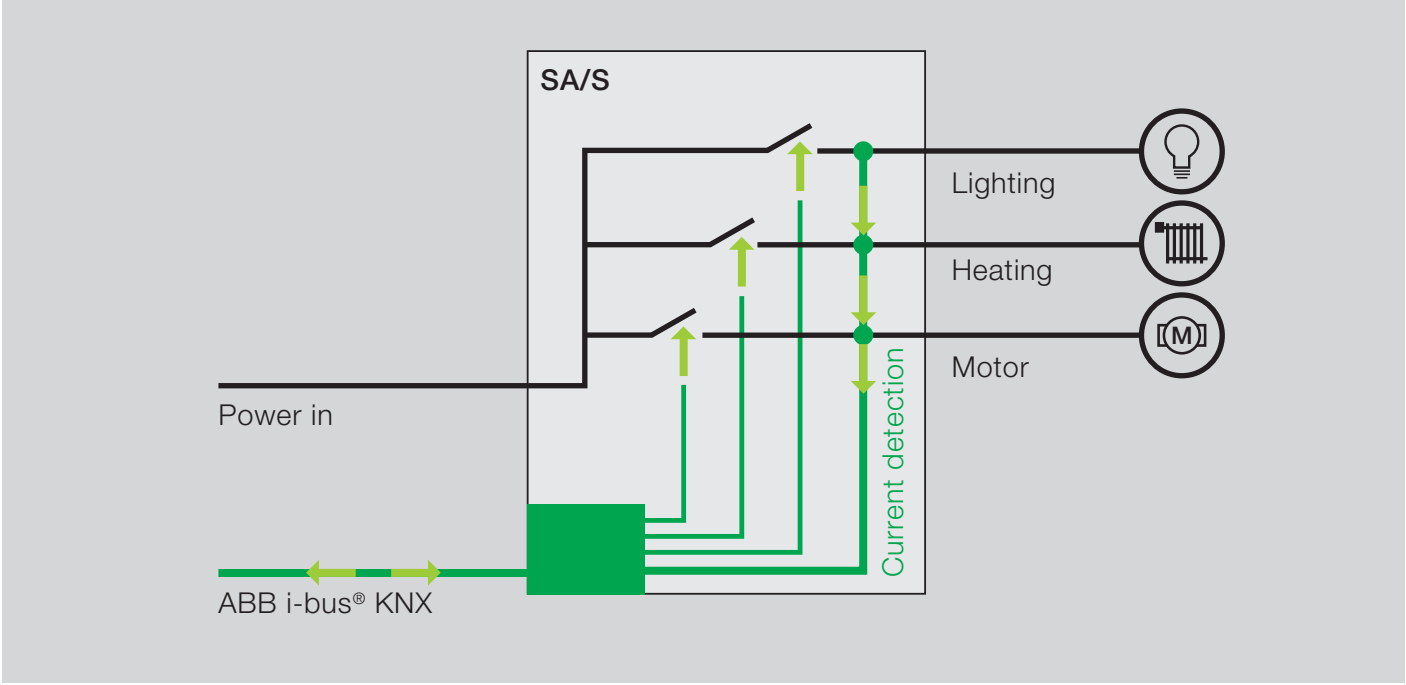
To optimize the commissioning work, the new copy and exchange function can be used to copy or exchange parameter settings of a channel with other freely selectable channels. Optionally, the group addresses can be retained, copied or deleted in the target channel. The copying function is ideal, particularly for devices, where several channels have identical parameter settings.

The exchange of parameter settings is useful, for example, should the terminals be swapped when wiring. The exchange function makes time-consuming rewiring or manual reprogramming of parameters unnecessary.

Furthermore, within the range of the C-Load devices, all devices can be simply exchanged with one another via a conversion function, or the settings of one device can be copied into another device. If the number of outputs of the target device is larger than the number of outputs of the source device, only the first outputs of the target device are programmed with the converted data of the source device. The remaining outputs are reset to the factory settings. Thus, for example, a subsequent expansion of the device function with current detection is easy to implement by exchange of the device and conversion.
Complex reprogramming of the parameters is unnecessary.

These new help functions do not just simplify commissioning, they also reduce the possible sources of errors.

ABB i-bus® KNX Switch Actuators with Current Detection
Signal Operating States, Detect Faults



Switch Actuators with current detection are used predominantly if feedback of the actual status of the connected load is important. This provides transparency about the state of the building and simplifies monitoring. On the ABB i-bus® Switch Actuators with Current Detection, ABB improved the load current detection by a factor of 4 in comparison to preceding types.

The maximum load current per output is 20 A. Thus monitoring of the loads from 0.02 to 20 A is possible and that at an accuracy of +/- 2% of the measured value and a resolution of 0.02 A.
The measured value (RMS value) can be sent as a 2 byte or 4 byte value on the KNX bus or can be evaluated directly.

The response of the switch outputs can be set in dependence on the measured load currents via a threshold function.

ABB i-bus® KNX Switch Actuators
An Overview of all Software Functions

Overview

The following table provides an overview of the functions possible with the Switch Actuators and their application programs:

	SA/S 4.6.1.1 SA/S 8.6.1.1 SA/S 12.6.1.1	SA/S 2.10.2.1 SA/S 4.10.2.1 SA/S 8.10.2.1 SA/S 12.10.2.1	SA/S 2.16.2.1 SA/S 4.16.2.1 SA/S 8.16.2.1 SA/S 12.16.2.1	SA/S 2.16.5.1 SA/S 4.16.5.1 SA/S 8.16.5.1 SA/S 12.16.5.1	SA/S 2.16.6.1 SA/S 4.16.6.1 SA/S 8.16.6.1 SA/S 12.16.6.1
Type of installation	MDRC	MDRC	MDRC	MDRC	MDRC
Number of outputs	4/8/12	2/4/8/12	2/4/8/12	2/4/8/12	2/4/8/12
Module width (space unit)	4/6/8	2/4/8/12	2/4/8/12	2/4/8/12	2/4/8/12
Manual operation	–	■	■	■	■
Contact position display	–	■	■	■	■
In rated current (A)	6 A	10 AX	16 A	16/20 AX C-Load	16/20 AX C-Load
Current detection	–	–	–	–	■
Switch function					
– ON/OFF delay	■	■	■	■	■
– Staircase light	■	■	■	■	■
– Warning before end of staircase lighting	■	■	■	■	■
– Staircase lighting time set via object	■	■	■	■	■
– Flashing	■	■	■	■	■
– Switch response can be set (N.O./N.C.)	■	■	■	■	■
– Thresholds	■	■	■	■	■
Current detection	–	–	–	–	■
– Threshold value monitoring	–	–	–	–	■
– Measured value detection	–	–	–	–	■
Function Scene	■	■	■	■	■
Function Logic					
– Logic AND function	■	■	■	■	■
– Logic OR function	■	■	■	■	■
– Logic XOR function	■	■	■	■	■
– Gate function	■	■	■	■	■
Priority object/forced operation	■	■	■	■	■
Heating/fan control					
– Switch ON/OFF (2 point control)	■	■	■	■	■
– Cyclical fault monitoring	■	■	■	■	■
– Automatic purging	■	■	■	■	■
Fan Coil control[1)]	■	■	■	■	■
Special functions					
– Default position on bus voltage failure/recovery	■	■	■	■	■
– Status messages	■	■	■	■	■

[1)] See special ABB i-bus® KNX devices of the HVAC area, e.g. Fan/Fan Coil actuator LFA/S or Fan Coil actuator FCA/S.

■ = possible functions

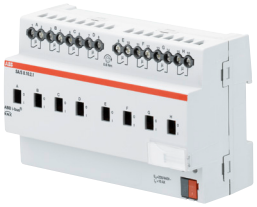
ABB i-bus® KNX Switch Actuators
Device Overview

SA/S 4.6.1.1, SA/S 8.6.1.1, SA/S 12.6.1.1

Switch Actuators, 6 A-AC3, MDRC

Uses potential free contacts to switch 4, 8 or 12 independent electrical loads via the ABB i-bus®. The 6 A-AC3 device is especially suited to switch resistive, inductive or capacitive loads. Attention: New module width.

Description	MW*	Type	Order code	Price 1 pc. €	Pack unit pcs.	Weight 1 pc. kg
4-fold	4	SA/S 4.6.1.1 **NEW**	2CDG110152R0011		1	0.15
8-fold	6	SA/S 8.6.1.1 **NEW**	2CDG110153R0011		1	0.22
12-fold	8	SA/S 12.6.1.1 **NEW**	2CDG110154R0011		1	0.30

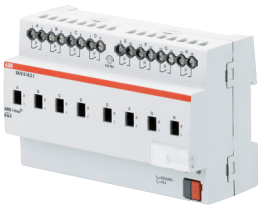


SA/S 2.10.2.1, SA/S 4.10.2.1, SA/S 8.10.2.1, SA/S 12.10.2.1

Switch Actuators, 10 AX, MDRC

Uses potential free contacts to switch 2, 4, 8 or 12 independent electrical loads via the ABB i-bus®. Manual operation and display of the switching state of the contacts.
The 10 AX-AC1 device is especially suited for loads with high surge currents e.g. flourescent lighting (AX) acc. EN 60669.

Description	MW*	Type	Order code	Price 1 pc. €	Pack unit pcs.	Weight 1 pc. kg
2-fold	2	SA/S 2.10.2.1 **NEW**	2CDG110155R0011		1	0.18
4-fold	4	SA/S 4.10.2.1 **NEW**	2CDG110156R0011		1	0.29
8-fold	8	SA/S 8.10.2.1 **NEW**	2CDG110157R0011		1	0.51
12-fold	12	SA/S 12.10.2.1 **NEW**	2CDG110158R0011		1	0.74



SA/S 2.16.2.1, SA/S 4.16.2.1, SA/S 8.16.2.1, SA/S 12.16.2.1

Switch Actuators, 16 AC1, MDRC

Uses potential free contacts to switch 2, 4, 8 or 12 independent electrical loads via the ABB i-bus®. Manual operation and display of the switching state of the contacts. The 16 A-AC1 device is especially suited for resistive loads.

Description	MW*	Type	Order code	Price 1 pc. €	Pack unit pcs.	Weight 1 pc. kg
2-fold	2	SA/S 2.16.2.1 **NEW**	2CDG110159R0011		1	0.17
4-fold	4	SA/S 4.16.2.1 **NEW**	2CDG110160R0011		1	0.29
8-fold	8	SA/S 8.16.2.1 **NEW**	2CDG110161R0011		1	0.51
12-fold	12	SA/S 12.16.2.1 **NEW**	2CDG110162R0011		1	0.67

SA/S 2.16.5.1, SA/S 4.16.5.1, SA/S 8.16.5.1, SA/S 12.16.5.1

Switch Actuators, 16/20 AX, C-Load, MDRC

Uses potential free contacts to switch 2, 4, 8 or 12 independent electrical loads via the ABB i-bus®. Manual operation and display of the switching state of the contacts.
The 16/20 AX, 16 A-AC3 (C-load) device is especially suited for loads with high surge currents e.g. flourescent lighting (AX) acc. EN 60669.

Description	MW*	Type	Order code	Price 1 pc. €	Pack unit pcs.	Weight 1 pc. kg
2-fold	2	SA/S 2.16.5.1	2CDG110132R0011		1	0.21
4-fold	4	SA/S 4.16.5.1	2CDG110133R0011		1	0.38
8-fold	8	SA/S 8.16.5.1	2CDG110134R0011		1	0.69
12-fold	12	SA/S 12.16.5.1	2CDG110137R0011		1	0.90

* Module width in space units.
1 Space unit = 18 mm

ABB i-bus® KNX Switch Actuators
Device Overview

SA/S 2.16.6.1, SA/S 4.16.6.1, SA/S 8.16.6.1, SA/S 12.16.6.1

* Module width in space units.
1 Space unit = 18 mm

Switch Actuators, 16/20 AX, C-Load, with current detection, MDRC

Uses potential free contacts to switch 2, 4, 8 or 12 independent electrical loads via the ABB i-bus®. Each output has an independent load current detection. Manual operation and display of the switching state of the contacts. The 16/20 AX, 16 A-AC3 (C-load) device is especially suited for loads with high surge currents e.g. flourescent lighting (AX) acc. EN 60669.

Description	MW*	Type	Order code	Price 1 pc. €	Pack unit pcs.	Weight 1 pc. kg
2-fold	2	SA/S 2.16.6.1	2CDG110112R0011		1	0.21
4-fold	4	SA/S 4.16.6.1	2CDG110113R0011		1	0.38
8-fold	8	SA/S 8.16.6.1	2CDG110114R0011		1	0.69
12-fold	12	SA/S 12.16.6.1	2CDG110138R0011		1	0.90

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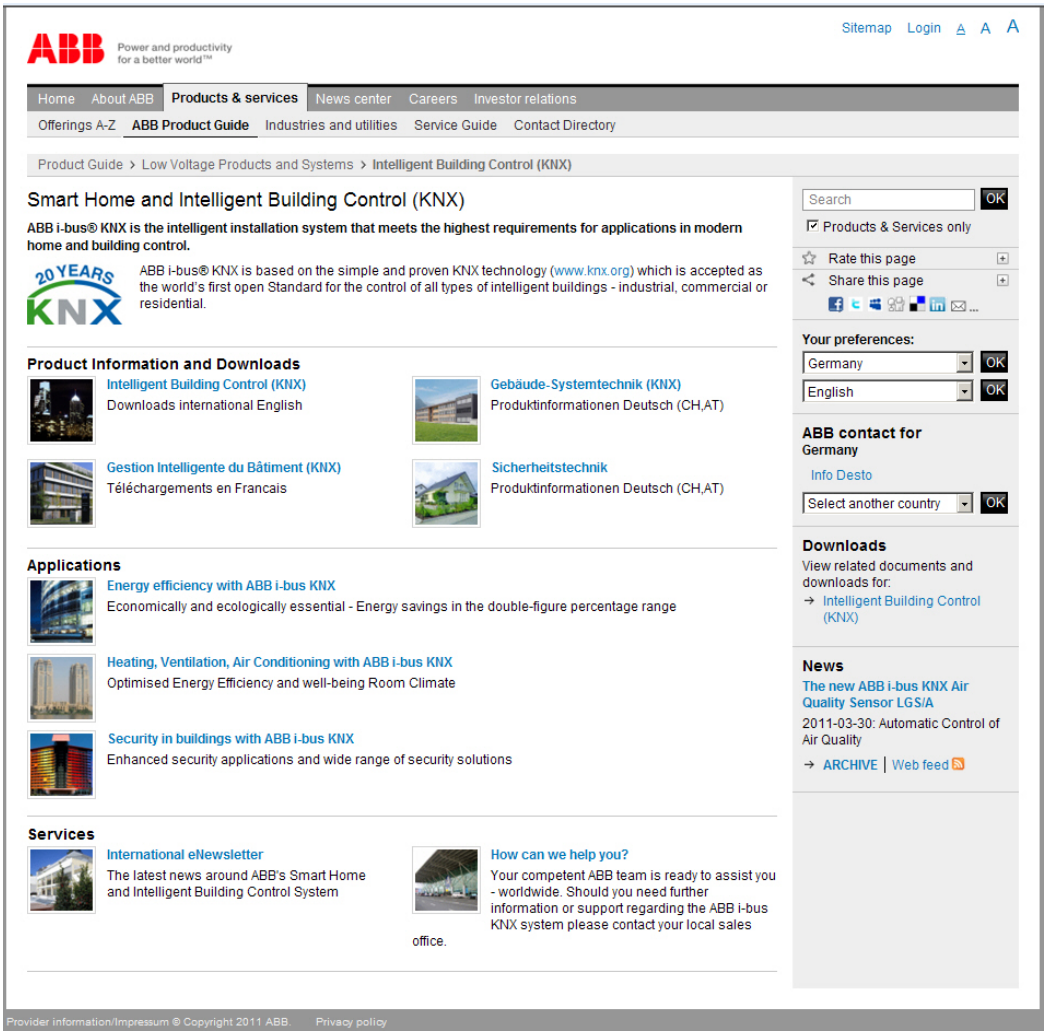

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