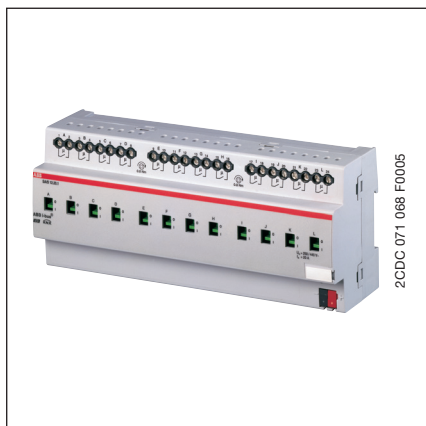


# Switch Actuator, x-fold, 20 AX, with Current Detection, MDRC SA/S x.20.1S, 2CDG 110 0xx R0011



The 20 AX Switch Actuators are modular installation devices in proM design for installation in the distribution board on 35 mm mounting rails. The connection to the ABB i-bus® EIB / KNX is implemented via a screwless Bus Connection Terminal.

The 2-, 4- and 8-fold switch actuators feature a load current detection on every output. A separate external voltage supply for the actuator is not required.

The actuator switches up to 12 independent electrical loads via potential free contacts. The outputs are connected

using screw terminals with combination drive head screws. Each output is controlled and monitored separately via the EIB / KNX.

The switch actuators can be manually operated via an operating element which simultaneously indicates the switch status.

The actuators are particularly suitable for switching loads with high peak inrush currents such as fluorescent lighting with compensation capacitors or fluorescent lamp loads (AX) according to EN 60669.

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## Technical data

<b>Power supply</b>	– Operating voltage	21...30 V DC, made available by the bus			
	– Current consumption EIB / KNX	< 12 mA			
	– Power consumption EIB / KNX	Max. 250 mW			
<b>Output nominal values</b>	– SA/S - type	2.20.1S	4.20.1S	8.20.1S	12.20.1
	– Current detection	yes	yes	yes	no
	– Number of contacts (potential free)	2	4	8	12
	– U <sub>n</sub> rated voltage	250 / 440 V AC (50/60 Hz)			
	– I <sub>n</sub> rated current	20 AX			
	– Power loss per device at max. load	3.0 W	5.5 W	11.0 W	16.0 W
<b>Output switching currents</b>	– AC3 operation (cosφ = 0.45) EN 60 947-4-1	16 A / 230 V			
	– AC1 operation (cosφ = 0.8) EN 60 947-4-1	20 A / 230 V			
	– Fluorescent lighting load AX to EN 60669-1	20 AX / 250 V (140 μF) <sup>2)</sup>			
	– Minimum switching performance	100 mA / 12 V			
		100 mA / 24 V			
	– DC current switching capacity (ohmic load)	20 A / 24 V DC			
<b>Output life expectancy</b>	– Mechanical endurance	> 10 <sup>6</sup>			
	– Electrical endurance to IEC 60 947-4-1			Operations (state change)	
	– AC1(240 V/cosφ = 0.8)	> 10 <sup>5</sup>			
	– AC3 (240 V/cosφ = 0.45)	> 3 x 10 <sup>4</sup>			
	– AC5a (240 V/cosφ = 0.45)	> 3 x 10 <sup>4</sup>			
<b>Current detection (load current)</b> SA/S 2.16.5S, SA/S 4.16.5S, SA/S 8.16.5S	– Detection range (sine r.m.s. value)	0.1 A ... 20 A			
	– Accuracy	+/- 8 % of current value (sine) and +/- 100 mA			
	– Frequency	50/60 Hz			
	– Resolution 1-Byte / 2-Byte	100 mA / 1 mA			
	– Detection speed limited by low-pass filter with τ	100 ms			
<b>Output switching times<sup>1)</sup></b>	– Max. number of relay position changes per output and minute, if all relays are switched simultaneously. The position changes should be distributed equally within the minute.	2.20.1S	4.20.1S	8.20.1S	12.10.1
		30	15	7	5
	– Max. number of relay position changes per output, and minute if only one relay is switched	60	60	60	60

<sup>1)</sup> The specifications apply only after the bus voltage has been applied to the device for at least 30 seconds. The typical elementary delay of the relay is approx. 20 ms.

<sup>2)</sup> The maximum inrush-current peak (see table 2) may not be exceeded

Table 1 – Part 1: 20 AX Switch Actuator SA/S x.20.1S, technical data

<b>Connections</b>	- EIB / KNX	Bus Connection Terminal, 0.8 mm Ø, single core			
	- Load current circuits (2 terminals per contact)	Screw terminal with universal head (PZ 1) 0.2...4 mm <sup>2</sup> finely stranded, 2 x (0.2 – 2.5 mm <sup>2</sup> ) 0.2...6 mm <sup>2</sup> single core, 2 x (0.2 – 4 mm <sup>2</sup> )			
	- Tightening torque	Max. 0.8 Nm			
<b>Operating and display elements</b>	- Red LED and EIB / KNX push button	for assignment of the physical address			
	- Contact position indication	Relay lever			
<b>Housing</b>	- IP 20	to EN 60 529			
<b>Safety class</b>	- II	to EN 61 140			
<b>Isolation category</b>	- Overvoltage category	III to EN 60 664-1			
	- Pollution degree	2 to EN 60 664-1			
<b>EIB / KNX voltage</b>	- SELV 24 V DC (safety extra low voltage)				
<b>Temperature range</b>	- Operation	- 5 °C... + 45 °C			
	- Storage	- 25 °C... + 55 °C			
	- Transport	- 25 °C... + 70 °C			
<b>Design</b>	- Modular DIN-Rail Component (MDRC)	Modular installation device, ProM			
	- SA/S - type	2.20.1S	4.20.1S	8.20.1S	12.20.1
	- Dimensions (H x W x D)	90 x W x 64			
	- Width W in mm	36	72	144	216
	- Mounting width (modules at 18 mm)	2	4	8	12
	- Mounting depth in mm	64	64	64	64
<b>Weight</b>	- In kg	0.2	0.34	0.64	0.8
<b>Installation</b>	- On 35 mm mounting rail	EN 60 715			
<b>Mounting position</b>	- As required				
<b>Housing, colour</b>	- Plastic housing, grey				
<b>Approvals</b>	- EIB / KNX to EN 50 090-2-2	Certification			
<b>CE mark</b>	- in accordance with the EMC guideline and low voltage guideline				

Table 1 – Part 2: 20 AX Switch Actuator SA/S x.20.1S, technical data

**Lamp loads**

<b>Lamps</b>	- Incandescent lamp load	3680 W
<b>Fluorescent lamps T5 / T8</b>	- Uncompensated luminaire	3680 W
	- Parallel compensated	2500 W
	- DUO circuit	3680 W
<b>Low-volt halogen lamps</b>	- Inductive transformer	2000 W
	- Electronic transformer	2000 W
	- Halogen lamp 230V	3680 W
<b>Dulux lamp</b>	- Uncompensated luminaire	3680 W
	- Parallel compensated	3000 W
<b>Mercury-vapour lamp</b>	- Uncompensated luminaire	3680 W
	- Parallel compensated	3680 W
<b>Switching performance (switching contact)</b>	- Max. peak inrush-current $I_p$ (150µs)	600 A
	- Max. peak inrush-current $I_p$ (250µs)	480 A
	- Max. peak inrush-current $I_p$ (600µs)	300 A
<b>Number of electronic ballasts (T5/T8, single element) <sup>1)</sup></b>	- 18 W (ABB EVG 1x58 CF)	26 <sup>2)</sup>
	- 24 W (ABB EVG-T5 1x24 CY)	26 <sup>2)</sup>
	- 36 W (ABB EVG 1x36 CF)	22
	- 58 W (ABB EVG 1x58 CF)	12 <sup>2)</sup>
	- 80 W (Helvar EL 1x80 SC)	10 <sup>2)</sup>

<sup>1)</sup> For multiple element lamps or other types the number of electronic ballasts must be determined using the peak inrush current of the electronic ballasts.

<sup>2)</sup> Limited by protection with a B16 miniature circuit breaker

Table 2: Lamp load for SA/S x.20.1S

**Application programs**

Type	Name	Max. number of communication objects	Max. number of group addresses	Max. number of associations
SA/S 2.20.1S	Switch, 2f20S/1	40	254	254
SA/S 4.20.1S	Switch, 4f20S/1	76	254	254
SA/S 8.20.1S	Switch, 8f20S/1	152	254	254
SA/S 12.20.1	Switch, 12f20/1	220	254	254

Table 3: Application programs SA/S x.20.1S

**Note:**

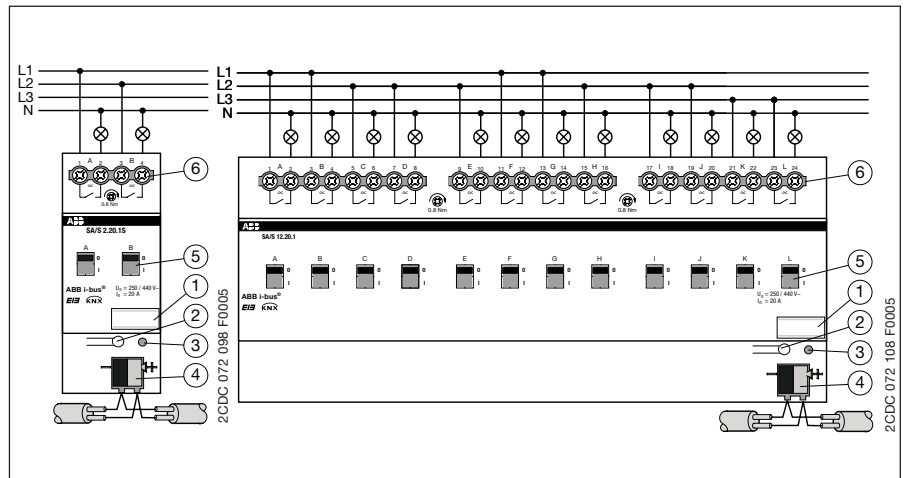
The programming requires the EIB Software Tool ETS2 V1.3 or higher. If the ETS3 is used a “.VD3” type file must be imported.

The application program is located within the ETS2 / ETS3 in the category ABB/output/Binary output, x-fold/switch, xf20S/1 (x = 2, 4, 8 or 12, number of outputs, S = current detection).

Detailed information about the application can be found in the product manual for the “Switch Actuators SA/S”. This manual can be free downloaded under [www.abb.de/eib](http://www.abb.de/eib).

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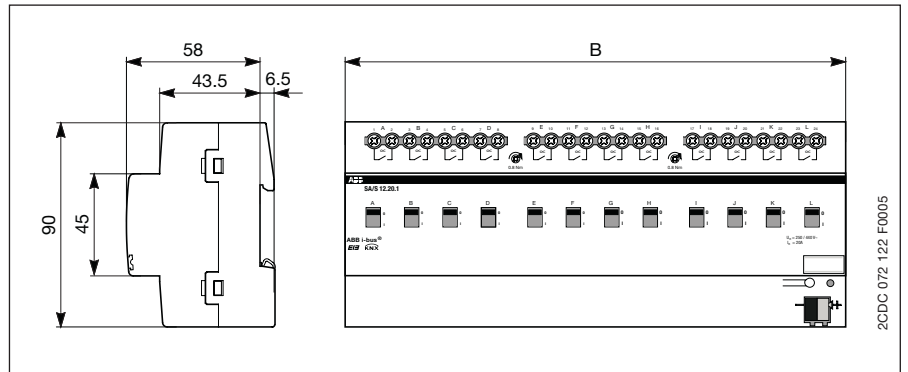
## Wiring diagram



- 1 Label carrier
- 2 Programming button
- 3 Programming LED
- 4 Bus Connection Terminal
- 5 Contact position indication and manual operation
- 6 Load current circuits, per circuit 2 connection terminals

**Note:** All-pole disconnection must be observed in order to avoid dangerous contact voltage which can develop via loads in other phases.

## Dimension drawings



	SA/S 2.20.1S	SA/S 4.20.1S	SA/S 8.20.1S	SA/S 12.20.1
B	36 mm 2 module widths	72 mm 4 module widths	144 mm 8 module widths	216 mm 12 module widths