

The 16 A 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 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 actuators switch 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.

#### Technical data

<b>Power supply</b>	– Operating voltage – Current consumption EIB / KNX – Power consumption EIB / KNX	21...30 V DC, made available by the bus < 12 mA Max. 250 mW
<b>Output nominal values</b>	– SA/S - type – Current detection – Number of contacts (potential free) – $U_n$ rated voltage – $I_n$ rated current – Power loss per device at max. load	2.16.5S 4.16.5S 8.16.5S 12.16.5 yes yes yes no 2 4 8 12 250 / 440 V AC (50/60 Hz) 16 AX, C-Load 2.0 W 4.0 W 8.0 W 12.0 W
<b>Output switching currents</b>	– AC3 operation ( $\cos\phi = 0.45$ ) EN 60 947-4-1 – AC1 operation ( $\cos\phi = 0.8$ ) EN 60 947-4-1 – Fluorescent lighting load AX to EN 60669-1 – Minimum switching performance – DC current switching capacity (ohmic load)	16 A / 230 V 16 A / 230 V 16 AX / 250 V (200 $\mu$ F) <sup>2)</sup> 100 mA / 12 V 100 mA / 24 V 16 A / 24 V DC
<b>Output life expectancy</b>	– Mechanical endurance – Electrical endurance to IEC 60 947-4-1 – AC1 (240 V/ $\cos\phi = 0.8$ ) – AC3 (240 V/ $\cos\phi = 0.45$ ) – AC5a (240 V/ $\cos\phi = 0.45$ )	$> 10^6$ $> 10^5$ $> 3 \times 10^4$ $> 3 \times 10^4$ Operations (state change)
<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) – Accuracy – Frequency – Resolution 2-Byte – Detection speed limited by low-pass filter with $\tau$	0.1 A ... 16 A +/- 8 % of current value (sine) and +/- 100 mA 50/60 Hz 1 mA (DTP 7.012) 100 ms
<b>Output switching times</b> <sup>1)</sup>	– 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. – Max. number of relay position changes per output, and minute if only one relay is switched	2.16.5S 4.16.5S 8.16.5S 12.16.5 30 15 7 5 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: 16 A, AC3, C-Load Switch Actuator SA/S x.16.5S, technical data

<b>Connections</b>	<ul style="list-style-type: none"> <li>– EIB / KNX</li> <li>– Load current circuits</li> <li>– cable shoe</li> <li>– Tightening torque</li> </ul>	<ul style="list-style-type: none"> <li>Bus Connection Terminal, 0.8 mm Ø, single core</li> <li>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>)</li> <li>0.2...6 mm<sup>2</sup> single core, 2 x (0.2 – 4 mm<sup>2</sup>)</li> <li>contact pin minimum 10 mm</li> <li>Max. 0.8 Nm</li> </ul>
<b>Operating and display elements</b>	<ul style="list-style-type: none"> <li>– Red LED and EIB / KNX push button</li> <li>– Contact position indication</li> </ul>	for assignment of the physical address
<b>Housing</b>	– IP 20	Relay lever to EN 60 529
<b>Safety class</b>	– II	to EN 61 140
<b>Isolation category</b>	<ul style="list-style-type: none"> <li>– Overvoltage category</li> <li>– Pollution degree</li> </ul>	<ul style="list-style-type: none"> <li>III to EN 60 664-1</li> <li>2 to EN 60 664-1</li> </ul>
<b>EIB / KNX voltage</b>	– SELV 24 V DC (safety extra low voltage)	
<b>Temperature range</b>	<ul style="list-style-type: none"> <li>– Operation</li> <li>– Storage</li> <li>– Transport</li> </ul>	<ul style="list-style-type: none"> <li>– 5 °C ... + 45 °C</li> <li>– 25 °C ... + 55 °C</li> <li>– 25 °C ... + 70 °C</li> </ul>
<b>Environment conditions</b>	– humidity	max. 93 %, without bedewing
<b>Design</b>	<ul style="list-style-type: none"> <li>– Modular DIN-Rail Component (MDRC)</li> <li>– SA/S - type</li> <li>– Dimensions (H x W x D)</li> <li>– Width W in mm</li> <li>– Mounting width (modules at 18 mm)</li> <li>– Mounting depth in mm</li> </ul>	<ul style="list-style-type: none"> <li>Modular installation device, ProM</li> <li>2.16.5S 4.16.5S 8.16.5S 12.16.5</li> <li>90 x W x 64</li> <li>36 72 144 216</li> <li>2 4 8 12</li> <li>64 64 64 64</li> </ul>
<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: 16 A, AC3, C-Load Switch Actuator SA/S x.16.5S, technical data

**Lamp loads**

<b>Lamps</b>	<ul style="list-style-type: none"> <li>– Incandescent lamp load</li> </ul>	3680 W
<b>Fluorescent lamps T5 / T8</b>	<ul style="list-style-type: none"> <li>– Uncompensated luminaire</li> <li>– Parallel compensated</li> <li>– DUO circuit</li> </ul>	<ul style="list-style-type: none"> <li>3680 W</li> <li>2500 W</li> <li>3680 W</li> </ul>
<b>Low-volt halogen lamps</b>	<ul style="list-style-type: none"> <li>– Inductive transformer</li> <li>– Electronic transformer</li> <li>– Halogen lamp 230 V</li> </ul>	<ul style="list-style-type: none"> <li>2000 W</li> <li>2500 W</li> <li>3680 W</li> </ul>
<b>Dulux lamp</b>	<ul style="list-style-type: none"> <li>– Uncompensated luminaire</li> <li>– Parallel compensated</li> </ul>	<ul style="list-style-type: none"> <li>3680 W</li> <li>3000 W</li> </ul>
<b>Mercury-vapour lamp</b>	<ul style="list-style-type: none"> <li>– Uncompensated luminaire</li> <li>– Parallel compensated</li> </ul>	<ul style="list-style-type: none"> <li>3680 W</li> <li>3680 W</li> </ul>
<b>Switching performance (switching contact)</b>	<ul style="list-style-type: none"> <li>– Max. peak inrush-current <math>I_p</math> (150µs)</li> <li>– Max. peak inrush-current <math>I_p</math> (250µs)</li> <li>– Max. peak inrush-current <math>I_p</math> (600µs)</li> </ul>	<ul style="list-style-type: none"> <li>600 A</li> <li>480 A</li> <li>300 A</li> </ul>
<b>Number of electronic ballasts (T5/T8, single element)<sup>1)</sup></b>	<ul style="list-style-type: none"> <li>– 18 W (ABB EVG 1x58 CF)</li> <li>– 24 W (ABB EVG-T5 1x24 CY)</li> <li>– 36 W (ABB EVG 1x36 CF)</li> <li>– 58 W ABB EVG 1x58 CF)</li> <li>– 80 W (Helvar EL 1x80 SC)</li> </ul>	<ul style="list-style-type: none"> <li>26<sup>2)</sup></li> <li>26<sup>2)</sup></li> <li>22</li> <li>12<sup>2)</sup></li> <li>10<sup>2)</sup></li> </ul>

<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.16.5S

**Application programs**

Type	Name	Max. number of communication objects	Max. number of group addresses	Max. number of associations
SA/S 2.16.5S	Switch 2f 16CS/2	42	254	254
SA/S 4.16.5S	Switch 4f 16CS/2	80	254	254
SA/S 8.16.5S	Switch 8f 16CS/2	160	254	254
SA/S 12.16.5	Switch 12 f16C/2	220	254	254

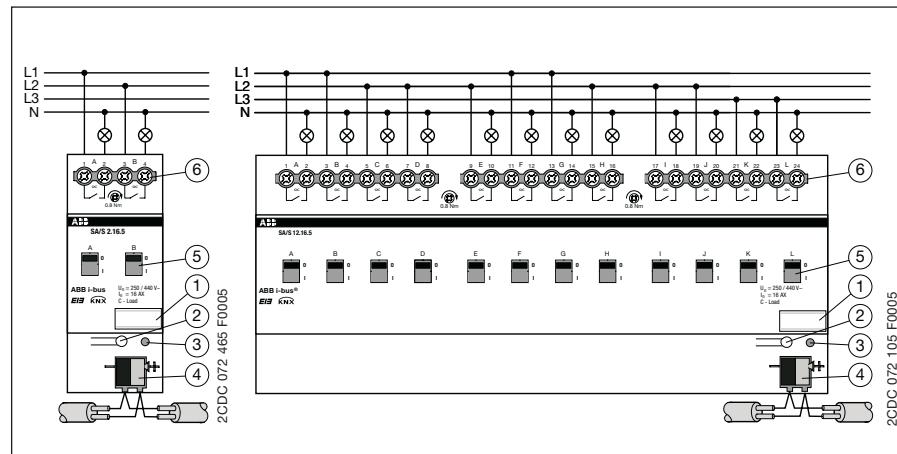
Table 3: Application programs SA/S x.16.5S

**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, xf16S/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).

## Wiring diagram

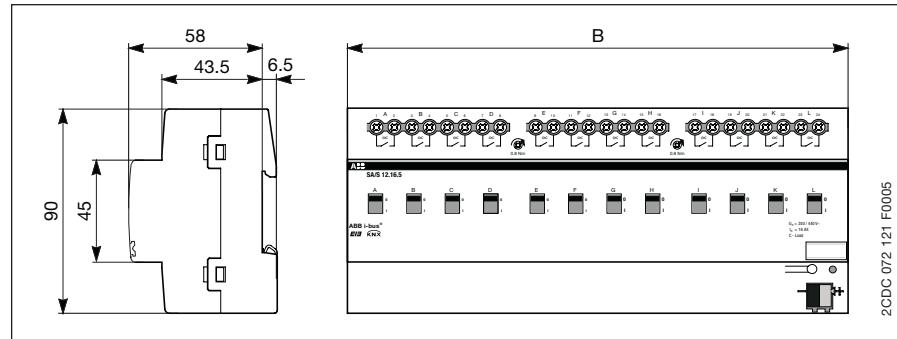


1 Label carrier  
2 Programming button  
3 Programming LED  
4 Bus Connection Terminal

5 Contact position indicator  
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 2.16.5S	SA/S 4.16.5S	SA/S 8.16.5S	SA/S 12.16.5
B	36 mm 2 module widths	72 mm 4 module widths	144 mm 8 module widths	216 mm 12 module widths