ABB i-bus® EIB / KNX

SA/S Switch Actuators

Range of Products

SA/S x.x.x

- New development of a complete range of Switch Actuators (Binary outputs)
- Fulfils current demands from the market and opens up new applications
- Structured product line according techniques
- Consistent high class appearance
  (Indication, manual operation, terminals, design and software functionality)

6 A (AC3) Outputs

SA/S x.6.1

SA/S 4.6.1
6A – AC3
2 MW

SA/S 8.6.1
6A – AC3
4 MW

SA/S 12.6.1
6A – AC3
6 MW

- Compact size, two outputs each module

- Two outputs with common base

- 4 mm² terminals with Slotted Head Screws

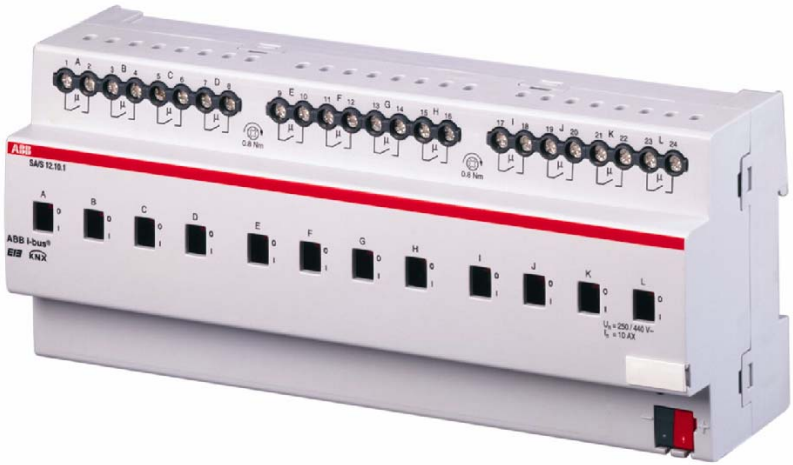
10 AX (AC1) Outputs

SA/S x.10.1

SA/S 2.10.1
10AX
2 MW

SA/S 4.10.1
10AX
4 MW

SA/S 8.10.1
10AX
8 MW



SA/S 12.10.1; 10AX, 12 MW

- Independent potential free outputs
- 6 mm² terminals with Universal Head Screws
- Current 10A
- Especially appropriate for fluorescent lamps (AX)

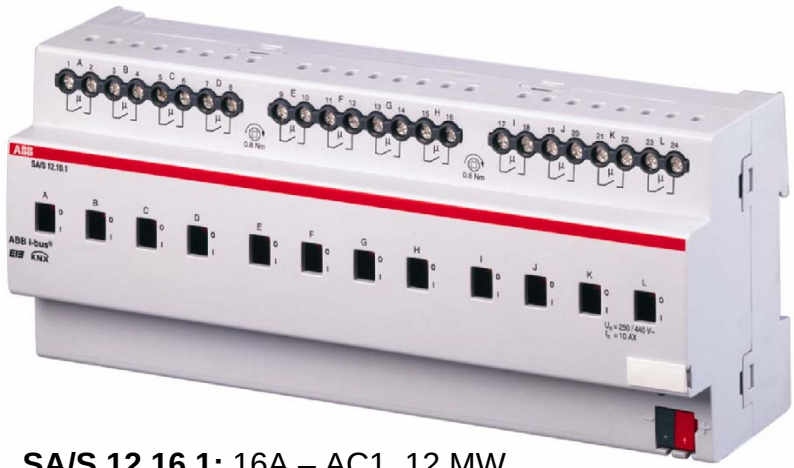
16 A (AC1) Outputs

SA/S x.16.1

SA/S 2.16.1
16A – AC1
2 MW

SA/S 4.16.1
16A – AC1
4 MW

SA/S 8.16.1
16A – AC1
8 MW



SA/S 12.16.1; 16A – AC1, 12 MW

- Independent potential free outputs
- 6 mm² terminals with Universal Head Screw
- Current 16A
- Primary for switching of ohm resistive load (16A - AC1)

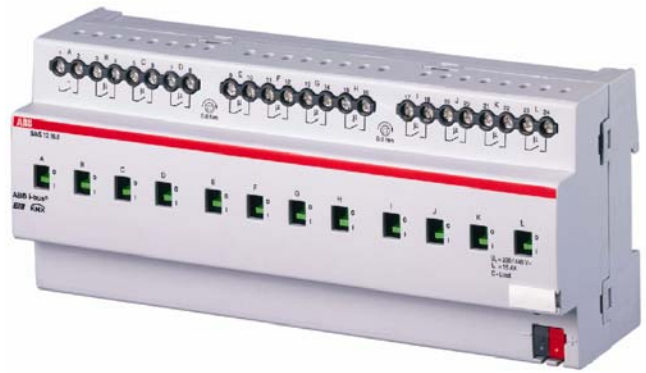
16 AX (C-Load) Outputs

SA/S x.16.5x

SA/S 2.16.5S
16 AX- C-Load, 2 MW

SA/S 4.16.5S
16 AX - C-Load, 4 MW

SA/S 8.16.5S
16 AX - C-Load, 8 MW



SA/S 12.16.5, 16 AX , C-Load, AC3, 12 MW

- 2-, 4- and 8-fold devices with current detection
- Independent potential free outputs
- 6 mm² terminals with Universal Head Screw
- For inductive and capacitive loads and fluorescent lamps
  (AC1, AC3, AX, C-Load, 200 µF)

20 A Outputs

SA/S x.20.1x

SA/S 2.20.1S
20 AX, 2 MW

SA/S 4.20.1S
20 AX, 4 MW

SA/S 8.20.1S
20 AX, 8 MW

SA/S 12.20.1, 20 AX, 12 MW

- 2-, 4- and 8-fold devices with current detection
- Independent potential free outputs
- 6 mm² terminals with Universal Head Screw
- For inductive and capacitive loads and fluorescent lamps
  (20A-AC1, 16A-AC3, 20AX, 140 µF)

Hardware - Range

SA/S x.x.x

- Range:

6 A	- AC3	4-, 8- and 12fold,
10 AX	- AC1	2-, 4-, 8- and 12fold
16 A	- AC1	2-, 4-, 8- and 12fold
16 AX	- C-Load	2-, 4-, 8- and 12fold
20 A	- AC1	2-, 4-, 8- and 12fold

- Size: MDRC with *Pro M* Design

6 A	- 2Mw, 4Mw and 6Mw
10 ... 20 A	- 2Mw, 4Mw, 8Mw and 12Mw

- Circuit:

6 A	- Two outputs with common base
10 ... 20 A	- Independent outputs

Differentiation by Innovation SA/S x.x.x

- Current detection for 16 A and 20 A-Line (2-, 4- and 8 outputs) means a new trend and a technical advantage
- Innovation with a common application design and comprehensive functionality
- Connection of wires with large cross section and easy-to-use loop in by using 6 mm² terminals
- Easier installation by using Universal-Head-Screws
- High breaking capacity

Breaking capacity

- Breaking capacity from industry (IEC 60947)
  - AC1 – related to ohm restive load
    (cos ϕ = 0,8)
  - AC3 – related to inductive motor load
    (cos ϕ = 0,45)
- Breaking capacity from building technology (IEC 60669)
  - AX – related to capacitive load, fluorescent lamps
    (6A devices 70 μF; >6A devices 140 μF)
- AC3 and AX are nearly the same (with 200 μF)

Breaking capacity

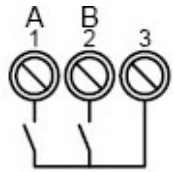
- Overview breaking capacity of SA/S switch actuators

	SA/S 4.6.1 SA/S 8.6.1 SA/S 12.6.1	SA/S 2.10.1 SA/S 4.10.1 SA/S 8.10.1 SA/S 12.10.1	SA/S 2.16.1 SA/S 4.16.1 SA/S 8.16.1 SA/S 12.16.1	SA/S 2.16.5S SA/S 4.16.5S SA/S 8.16.5S SA/S 12.16.5	SA/S 2.20.1S SA/S 4.20.1S SA/S 8.20.1S SA/S 12.20.1
AC1-Betrieb (cosφ = 0,8) DIN EN 60947-4-1 "ohmsche Laste"	6A	10A	16A	16A	20A
AC3-Betrieb (cosφ = 0,45) DIN EN 60947-4-1 "induktive Last"	6A	8A	-	16A	16A
Leuchstofflampenlast **AX** DIN EN 60669-1 "kapazitive Last"	6A (35µF)	10AX (140µF)	16A (70µF)	16AX (200µF)	20AX (140µF)

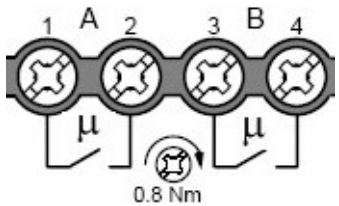
Hardware - Terminals

- Screw terminals

6 A - 4 mm² terminals (Slotted Head Screw)



10 ... 20 A - 6 mm² terminals (Universal Head Screw)

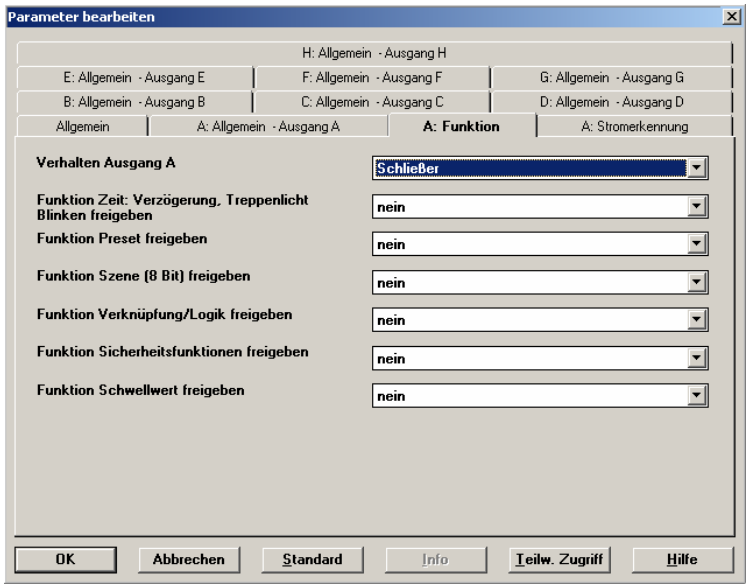


Only one application program

SA/S x.x.x

Software and

application



One application program SA/S x.x.x

- Current detection, transmission of measured current in mA (2 Byte)
- 2 independent thresholds for detected current
- 2 independent thresholds for received 1 Byte or 2 Byte telegrams
- Time functions, On/Off delay
- Staircase function with warning and changeable time
- Setting and recall off scenes / presets
- Logical functions AND, OR, XOR and Gate

... Further functions

- Status feedback
- Inverting of outputs
- Forced position and security functions
- Control of electrothermal valves (continuous control, 2 step control or PWM)
- Preferred position of relays in case of bus voltage failure or recovery
- Remark: Control of Fan coil units under development

Applications with current detection SA/S x.x.x

- Current detection with electrical load (> 100 mA)
- Recognition of equipment failure (Lamp load >40W)
- Preventive detection of breakdown by continuous current monitoring
- Registration of operating hours (real time)
- Signalling of maintenance or service
- Detection of circuit interruption
- Registration of switching operations per time slice
- Energy- and load management
- Supervision and signalling

Current detection

SA/S x.x.x

- Switch actuators with current detection labeled with “S”
- SA/S 2.16.5S, SA/S 4.16.5S and SA/S 8.16.5S
- SA/S 2.16.5S, SA/S 4.16.5S and SA/S 8.16.5S
- Each output with integrated current detection and adjustable evaluation
- Detection of continuous sinusoidal load current

Current detection

SA/S x.x.xS

- Detection range: 0,1 A – 20 A
- Accuracy: +/- 8% of detected current plus +/- 100 mA
- Response time τ: 100 ms
- Resolution 2Byte: 1 mA
- Load current $I_{Load\ AC}$: 0…20 A, sinusoidal
- $I_{Load\ DC}$: 0 A
- Frequency range: 45...65 Hz
- Ambient temperature: -5°C...+40°C

Current detection

- Current value transmittable via 2 Byte communications object
- Transmission carried out continuously or depending on change of current
- Two thresholds for current detection available
- Each threshold has a 1 Bit communication object sending the status on the bus

Benefits

- Consistent range (2- ...12 Outputs, 6 A ... 20 A)
- Improved connection technology
  (6mm^2, Universal-Head-Screw)
- Huge breaking capacity AC3, AX, C-Load (200 µF)
- Current detection for selected components
- Comprehensive and standardized application program

Overview AT/S vs SA/S

SA/S x.x.x

Overview AT/S vs SA/S								
Channel	MDRC		4A	6A	10A	16A		20A
2fach	AT/S	Type	-	AT/S 2.6.5		-		-
		device width		2 MW				
	SA/S	Type	-	SA/S 2.10.1		SA/S 2.16.1	SA/S 2.16.5S	SA/S 2.20.1S
		device / width		2 MW		2 MW	2 MW	2 MW

Overview AT/S vs SA/S

SA/S x.x.x

Overview AT/S VS SA/S								
Channel	**MDRC**		**4A**	**6A**	**10A**	**16A**		**20A**
2fach	AT/S	**Type**	-	**AT/S 2.6.5**		-		-
		device width		2 MW				
	SA/S	**Type**	-	**SA/S 2.10.1**		**SA/S 2.16.1**	**SA/S 2.16.5S**	**SA/S 2.20.1S**
		device / width		2 MW		2 MW	2 MW	2 MW
4fach	AT/S	**Type**	-	**AT/S4.6.2**		**AT/S 4.16.1**	**AT/S 4.16.5**	**AT/S 4.20.1**
		LP[2] / device / channel		4 MW		4 MW	4 MW	4 MW
	SA/S	**Type**	**SA/S 4.6.1**		**SA/S 4.10.1**	**SA/S 4.16.1**	**SA/S 4.16.5S**	**SA/S 4.20.1S**
		LP2) / device / channel	2 MW		4 MW	4 MW	4 MW	4 MW

Overview AT/S vs SA/S

Overview AT/S vs SA/S								
Channel	**MDRC**		**4A**	**6A**	**10A**	**16A**		**20A**
2fach	**AT/S**	**Type**	**-**	**AT/S 2.6.5**		**-**		**-**
		device width		2 MW				
	SA/S	**Type**	**-**	**SA/S 2.10.1**		**SA/S 2.16.1**	**SA/S 2.16.5S**	**SA/S 2.20.1S**
		device / width		2 MW		2 MW	2 MW	2 MW
4fach	**AT/S**	**Type**	-	**AT/S4.6.2**		**AT/S 4.16.1**	**AT/S 4.16.5**	**AT/S 4.20.1**
		LP[2)] / device / channel		4 MW		4 MW	4 MW	4 MW
	SA/S	**Type**	**SA/S 4.6.1**		**SA/S 4.10.1**	**SA/S 4.16.1**	**SA/S 4.16.5S**	**SA/S 4.20.1S**
		LP2) / device / channel	2 MW		4 MW	4 MW	4 MW	4 MW
6fach	**AT/S**	**Typ**	**-**	**AT/S 6.6.1**		**-**		**-**
		LP[2)] / device / channel		4 MW				
	SA/S		**-**		**-**	**-**		**-**

Overview AT/S vs SA/S

SA/S x.x.x

Overview AT/S VS SA/S								
Channel	**MDRC**		**4A**	**6A**	**10A**	**16A**		**20A**
2fach	AT/S	Type	-	AT/S 2.6.5		-		-
		device width		2 MW				
	SA/S	Type	-	SA/S 2.10.1		SA/S 2.16.1	SA/S 2.16.5S	SA/S 2.20.1S
		device / width		2 MW		2 MW	2 MW	2 MW
4fach	AT/S	Type	-	AT/S4.6.2		AT/S 4.16.1	AT/S 4.16.5	AT/S 4.20.1
		LP2) / device / channel		4 MW		4 MW	4 MW	4 MW
	SA/S	Type	SA/S 4.6.1		SA/S 4.10.1	SA/S 4.16.1	SA/S 4.16.5S	SA/S 4.20.1S
		LP2) / device / channel	2 MW		4 MW	4 MW	4 MW	4 MW
6fach	AT/S	Typ	-	AT/S 6.6.1		-		-
		LP2) / device / channel		4 MW				
	SA/S		-		-	-		-
8fach	AT/S	Type	AT/S 8.4.1	AT/S 8.10.1		AT/S 8.16.5		AT/S 8.20.1
		LP2) / device / channel	4 MW	8 MW		8 MW		8 MW
	SA/S	Type	SA/S 8.6.1		SA/S 8.10.1	SA/S 8.16.1	SA/S 8.16.5S	SA/S 8.20.1S
		LP2) / device / channel	4 MW		8 MW	8 MW	8 MW	8 MW

Overview AT/S vs SA/S

SA/S x.x.x

Overview AT/S vs SA/S								
Channel	**MDRC**		**4A**	**6A**	**10A**	**16A**		**20A**
2fach	AT/S	**Type**	-	**AT/S 2.6.5**		-		-
		device width		2 MW				
	SA/S	**Type**	-	**SA/S 2.10.1**		**SA/S 2.16.1**	**SA/S 2.16.5S**	**SA/S 2.20.1S**
		device / width		2 MW		2 MW	2 MW	2 MW
4fach	AT/S	**Type**	-	**AT/S4.6.2**		**AT/S 4.16.1**	**AT/S 4.16.5**	**AT/S 4.20.1**
		LP[2] / device / channel		4 MW		4 MW	4 MW	4 MW
	SA/S	**Type**	**SA/S 4.6.1**		**SA/S 4.10.1**	**SA/S 4.16.1**	**SA/S 4.16.5S**	**SA/S 4.20.1S**
		LP2) / device / channel	2 MW		4 MW	4 MW	4 MW	4 MW
6fach	AT/S	**Typ**	-	**AT/S 6.6.1**		-		-
		LP[2] / device / channel		4 MW				
	SA/S		-		-	-		-
8fach	AT/S	**Type**	**AT/S 8.4.1**	**AT/S 8.10.1**		**AT/S 8.16.5**		**AT/S 8.20.1**
		LP[2] / device / channel	4 MW	8 MW		8 MW		8 MW
	SA/S	**Type**	**SA/S 8.6.1**		**SA/S 8.10.1**	**SA/S 8.16.1**	**SA/S 8.16.5S**	**SA/S 8.20.1S**
		LP2) / device / channel	4 MW		8 MW	8 MW	8 MW	8 MW
12fach	AT/S		-	-	-	-		-
	SA/S	**Type**	**SA/A 12.6.1**		**SA/S 12.10.1**	-	**SA/S 12.16.5**	**SA/S 12.20.1**
		LP2) / device / channel	6 MW		12 MW		12 MW	12 MW

Type Description

SA/S x.x.x

----------	SA/S 2.10.1	SA/S 2.16.1	SA/S 2.16.5S	SA/S 2.20.1S
SA/S 4.6.1	SA/S 4.10.1	SA/S 4.16.1	SA/S 4.16.5S	SA/S 4.20.1S
SA/S 8.6.1	SA/S 8.10.1	SA/S 8.16.1	SA/S 8.16.5S	SA/S 8.20.1S
SA/S 12.6.1	SA/S 12.10.1	SA/S 12.16.1	SA/S 12.16.5	SA/S 12.20.1

- **SA/S** - Switch Actuator, DIN Rail mounting
- **SA/S x.** - x = number of outputs
- **SA/S 8.y.** - y = Rate current A
- **SA/S 8.16.z** - z = 5 = C-Load (200 µF)
- **SA/S 8.16.5S** - S = with Current detection

Overview SA/S – AT/S

Existing device (to be discontinued)				New device		
EIB / KNX Switch actuators						
Type	Ident-Nr.	EAN Nr.		**Type**	Ident-Nr.	EAN Nr.
AT/S 4.6.2	GHQ6310033R0111	40 16779 45570 1	→	**SA/S 4.10.1**	2CDG110040R0011	40 167796 4421 1
AT/S 6.6.1	GHQ6310023R0111	40 16779 25880 7	***1)**	**SA/S 8.6.1**	2CDG110037R0011	40 167796 4424 2
AT/S 8.4.1	GHQ6310041R0111	40 16779 49010 8	→	**SA/S 8.6.1**	2CDG110037R0011	40 167796 4424 2
AT/S 8.10.1	GHQ6310075R0111	40 16779 57109 8	→	**SA/S 8.10.1**	2CDG110041R0011	40 167796 4420 4
AT/S 2.6.5	GHQ6310042R0111	40 16779 49070 2	→	**SA/S 2.10.1**	2CDG110039R0011	40 167796 4422 8
AT/S 4.16.1	GHQ6310021R0111	40 16779 25360 4	→	**SA/S 4.16.1**	2CDG110063R0011	40 167796 4876 9
AT/S 4.16.5	GHQ6310028R0111	40 16779 35650 3	→	**SA/S 4.16.5S**	2CDG110044R0011	40 167796 4383 2
AT/S 8.16.5	GHQ6310047R0111	40 16779 50837 7	→	**SA/S 8.16.5S**	2CDG110045R0011	40 167796 4417 4

SA/S x.x.x available in june 2005

*1) Recommended alternative
(6 outputs → 4 x 2 outputs)

Overview SA/S – AT/S

Existing dev. (to be discontinued)		New device					
EIB / KNX Switch actuators			(AT/S → SA/S)				
Type		**Type**	Size	nominal current	breaking capacity	manual	Outputs
AT/S 4.6.2	→	**SA/S 4.10.1**	gleich (4TE)	10A → 10A	10A → 10AX	n → j	4 → 4
AT/S 6.6.1	***1)**	**SA/S 8.6.1**	gleich (4TE)	10A → 6A	10AC1 → 10AC1	nein	6 → 4x2
AT/S 8.4.1	→	**SA/S 8.6.1**	gleich (4TE)	4A → 6A	4AC3 → 6AC3	nein	2x4 → 4x2
AT/S 8.10.1	→	**SA/S 8.10.1**	gleich (8TE)	10A → 10A	6AC3 → 8AC3	n → j	8 → 8
AT/S 2.6.5	→	**SA/S 2.10.1**	gleich (2TE)	10A → 10A	6AC3 → 8AC3	n → j	2 → 2
AT/S 4.16.1	→	**SA/S 4.16.1**	gleich (4TE)	16A → 16A	16AC1 → 16AC1	n → j	4 → 4
AT/S 4.16.5	→	**SA/S 4.16.5S**	gleich (4TE)	16A → 16A	C-Load → C-Load	ja	4 → 4
AT/S 8.16.5	→	**SA/S 8.16.5S**	gleich (8TE)	16A → 16A	C-Load → C-Load	ja	8 → 8

*1) Recommended alternative
(6 outputs ® 4 x 2 outputs)


ABB