TECHNICAL DATA

ABB i-bus® KNX

SAH/S 8.16.7.1
Switch/Shutter Actuator

Device description

The device is a modular installation device (MDRC) in pro*M* design. It is designed for installation in electrical distribution boards and small housings with a 35 mm mounting rail (to EN 60715).

The device is KNX-certified and can be used as a product in a KNX system → EU declaration of conformity.

The device is powered via the bus (ABB i-bus® KNX) and requires no additional auxiliary voltage supply. The connection to the bus is made via a bus connection terminal on the front of the housing. The loads are connected to the outputs using screw terminals → terminal designation on the housing.

The software application Engineering Tool Software (ETS) is used for physical address assignment and parameterization.

Device functions

The device possesses mutually independent switching relays with which the following functions can be implemented:

- Switching primarily resistive loads in single- or multi-phase electrical networks (Switch Actuator outputs)
- Activation of AC shutter/blind drives (Shutter Actuator output pairs)

Switch outputs and shutter outputs can be mixed in the device. On-site operation of the outputs is possible by manual operation. LEDs additionally indicate the switch/shutter status.

CAUTION

The outputs on the device are not interlocked mechanically. Connecting shutter/blind motors to Switch Actuator outputs will result in damage to the shutter/blind motor.

- ▸ Connect shutter/blind motors only to Shutter Actuator output pairs.

Connections

The devices possess the following connections:

- Depending on the device type, 8, 16 or 24 relay outputs for switching electrical loads (individually) or 230 V AC shutter drives (in pairs)
- 1 bus connection

CAUTION
The outputs on the device are not interlocked mechanically. Connecting shutter/blind motors to Switch Actuator outputs will result in damage to the shutter/blind motor.

- ▸ Connect shutter/blind motors only to Shutter Actuator output pairs.

Inputs

This section is not relevant for these devices.

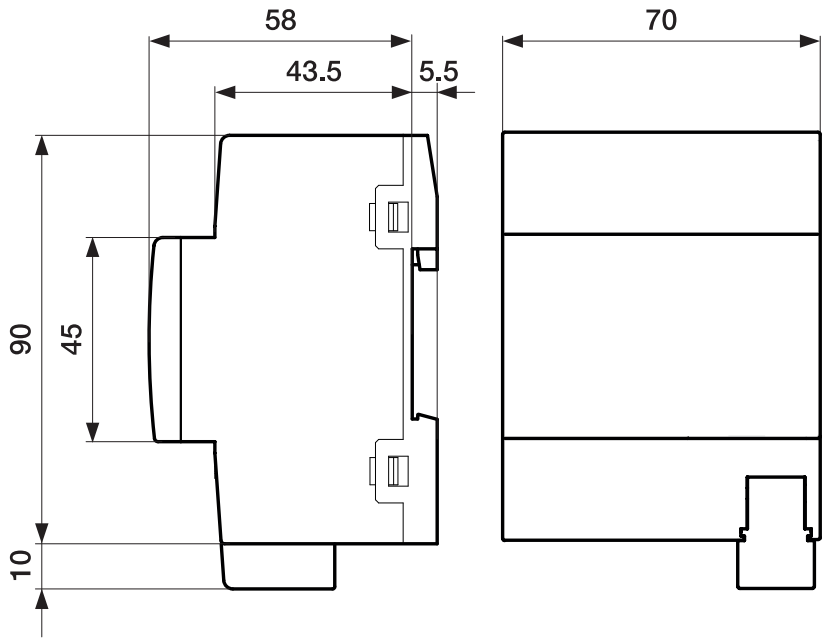
Outputs

Note
A device with 24 channels (A … X) is described below.

The outputs can be used individually to switch electrical loads or in pairs to activate 230 V AC blind and shutter drives. Switch, shutter and blind outputs can be mixed.

Function	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
Switch	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Shutter	x		x		x		x		x		x		x		x		x		x		x		x	

Dimension drawing



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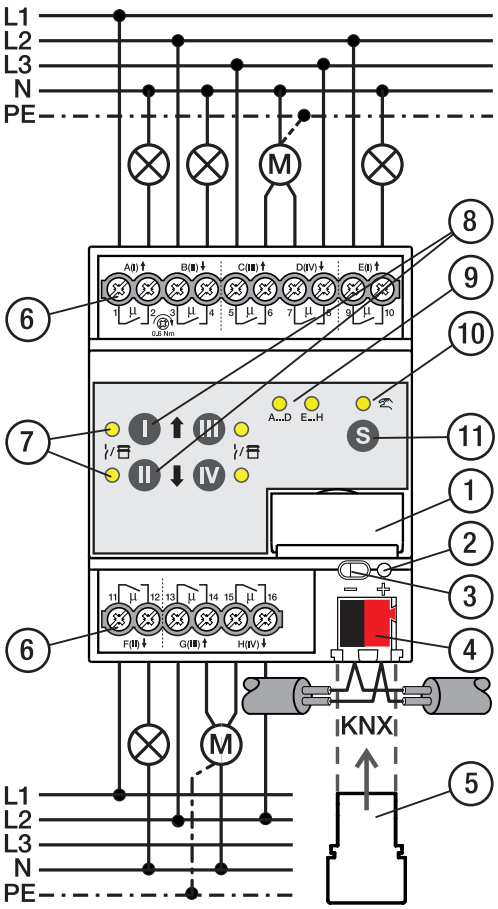
Connection diagram



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Legend

1 Label carriers
2 *Programming* LED
3 *Programming* button
4 Bus connection terminal
5 Cover cap
6 Load circuit, two screw terminals each
7 LED *Output*
8 *Output* button
9 LED *Group*
10 LED *Manual Operation*
11 *S* button

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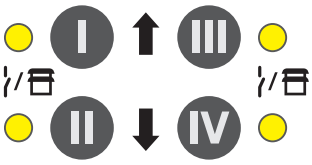
Operating and display elements

> **Note**
> In *Shutter* mode, the function of the *Output* button/LEDs is identical for every shutter output pair. Only the buttons/LEDs I and II are described below.

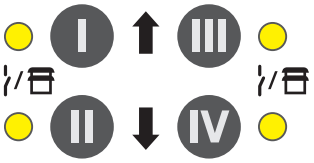
> **Note**
> In the KNX operation operating mode, it cannot be identified from the *Output* LED whether a switching output is blocked.

Operating control/LED	Description/function	Display
 *Programming* button/LED	Assignment of the physical address	LED On: Device in programming mode

Manual mode

Operating control/LED	Description/function	Display
 *S button* / *Manual operation* LED	Short button push < 2 s: Selection of relay group Button push 2 … 5 s: Changeover to *KNX operation* Long button push > 5 s: Selection of all relays	LED On: *Manual operation* active LED Off: *KNX operation* active
 *Group* LED		LED On: Group selected LED Off: Group not selected
 *Output* button/LED	**Switch Actuator application:** Switching of the outputs (toggle function) Button I: First output of group (A/E) Button II: Second output of group (B/F) Button III: Third output of group (C/G) Button IV: Fourth output of group (D/H)	**Switch Actuator application:** LED On: Relay contact closed LED Off: Relay contact open LED flashing (1 Hz): Output blocked; manual operation not possible.
	Shutter Actuator application: Control of the shutter output pairs Button I: • Long button push > 1 s: Shutter Up • Short button push < 1 s: Shutter Stop/ slat adjustment Button II: • Long button push > 1 s: Shutter Down • Short button push < 1 s: Shutter Stop/ slat adjustment	**Shutter Actuator application:** LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Up movement LED I Off and LED II flashing (1 Hz): Down movement LED I flashing (1 Hz) and LED II flashing (1 Hz): Shutter output pair blocked LED I flashing (5 Hz) and LED II flashing (5 Hz): Shutter output pair active (after the group is changed or after change to *Manual operation* operating mode)

KNX operation

Operating control/LED	Description/function	Display
 *S button* / *Manual operation* LED	Short button push < 2 s: Selection of relay group Button push 2 … 5 s: Change to *manual operation* Long button push > 5 s: Selection of all relays	LED On: *Manual operation* active LED Off: *KNX operation* active LED flashing (1 Hz) while button pressed: *Manual operation* not enabled or disabled
 *Group* LED		LED On: Group selected LED Off: Group not selected
 *Output* button/LED	Button without function	**Switch Actuator application:** LED On: Relay contact closed LED Off: Relay contact open
		Shutter Actuator application: LED I On and LED II Off: Upper end position LED I Off and LED II On: Lower end position LED I Off and LED II Off: Intermediate position LED I flashing (1 Hz) and LED II Off: Up movement LED I Off and LED II flashing (1 Hz): Down movement LED I flashing (1 Hz) and LED II flashing (1 Hz): Shutter output pair blocked LED I flashing (5 Hz) and LED II flashing (5 Hz): Shutter output pair active (after the group is changed or after change to *KNX operation*)

General technical data

Device	Dimensions	90 × 70 × 63.5 mm (H x W x D)
	Mounting width in space units	4 modules, 17.5 mm each
	Weight	0.27 kg
	Mounting position	Any
	Mounting variant	35 mm mounting rail
	Design	ProM
	Degree of protection	IP 20
	Protection class	II
	Overvoltage category	III
	Pollution degree	2
Materials	Housing	Polycarbonate, Makrolon FR6002, halogen free
Material note	Fire classification	Flammability V-0
Electronics	Rated voltage, bus	30 V DC
	Voltage range, bus	21 … 31 V DC
	Current consumption, bus	< 12 mA
	Maximum current, device	100 A
	Power loss, device	≤ 4 W
	Power loss, bus	≤ 0.25 W
	KNX safety extra low voltage	SELV
Connections	Connection type, KNX bus	Plug-in terminal
	Cable diameter, KNX bus	0.6 … 0.8 mm, solid
	Connection type, load circuit	Screw terminal with universal head (PZ 1)
	Pitch	6.35 mm
	Tightening torque, screw terminals	0.5 … 0.6 Nm
	Conductor cross-section, flexible	1 × (0.2 … 4 mm²) / 2 × (0.2 … 2.5 mm²)
	Conductor cross section, rigid	1 × (0.2 … 6 mm²) / 2 × (0.2 … 4 mm²)
	Conductor cross section with wire end ferrule without plastic sleeve	1 × (0.25 … 2.5 mm²)
	Conductor cross section with wire end ferrule with plastic sleeve	1 × (0.25 … 4 mm²)
	Conductor cross section with TWIN wire end ferrule	1 × (0.5 … 2.5 mm²)
	Length, wire end ferrule contact pin	≥ 10 mm
Certificates and declarations	Declaration of conformity CE	→ 2CDK505206D2701
Ambient conditions	Operation	-5 … +45 °C
	Transport	-25 … +70 °C
	Storage	-25 … +55 °C
	Humidity	≤ 95 %
	Condensation allowed	No
	Atmospheric pressure	≥ 80 kPa (corresponds to air pressure at 2,000 m above sea level)

Outputs – relays 16 A

Rated values	Number of outputs	8 switch/4 shutter
	Rated voltage U_n	230 V AC
	Rated current I_n (per output)	16 A
	Rated frequency	50/60 Hz
	Relay type	Bi-stable
Switching currents	AC-1 operation (cos φ = 0.8)	≤ 16 A
	AC-3 operation (cos φ = 0.45)	≤ 6 A
	Switching current at 12 V AC	≥ 0.1 A
	Switching current at 24 V AC	≥ 0.1 A
	Switching current at 24 V DC (resistive load)	≤ 16 A
Service life	Mechanical service life	≥ 10^6 switching operations
	AC-1 operation (cos φ = 0.8)	≥ 10^5 switching operations
	AC-3 operation (cos φ = 0.45)	≥ 6 x 10^3 switching operations
Switching operations	Switching operations per minute when one relay switches	≤ 120
	Switching operations per minute when all relays switch	≤ 15
Inrush current	Inrush current I_{peak} (150 µs)	≤ 200 A
	Inrush current I_{peak} (250 µs)	≤ 160 A
	Inrush current I_{peak} (600 µs)	≤ 100 A

Note

The inrush current I_{peak} is the typical ballast load current that results during switching. Using the inrush current I_{peak}, it is possible to calculate the maximum number of switchable ballasts at the Switch Actuator output Ballast calculation.

Load table

Lamp type	Symbol	Max. lamp load
Incandescent bulbs		1,200 W
Fluorescent lamps uncompensated		800 W
Low-voltage halogen lamps inductive transformer		800 W
Low-voltage halogen lamps electronic transformer		1,000 W
Low-voltage halogen lamps 230 V		1,000 W
Mercury-vapor lamps uncompensated		1,000 W
Mercury-vapor lamps parallel compensated		800 W
LED lamps		250 W
Rated motor power		1,380 W

Device type

Device type	Switch/Shutter Actuator	SAH/S 8.16.7.1
	Application	Switch/Shutter 8-fold 16 A / …
		… = current version number of the application
	Maximum number of group objects	282
	Maximum number of group addresses	1000
	Maximum number of assignments	1000

Note
Observe software information on the website → www.abb.com/knx.

Note
The device supports the locking function of a KNX device in ETS. If a BAU code was assigned, the device can be read and programmed only with this BAU code.

Ordering details

Description	MW	Type	Order no.	Packaging [pcs.]	Weight (incl. packaging) [kg]
Switch/Shutter	4	SAH/S 8.16.7.1	2CDG110250R0011	1	0.35

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