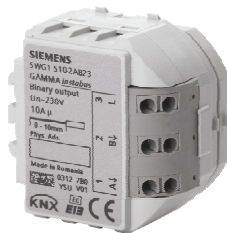


**Binary output (Relay) RS 510/23**

**5WG1 510-2AB23**

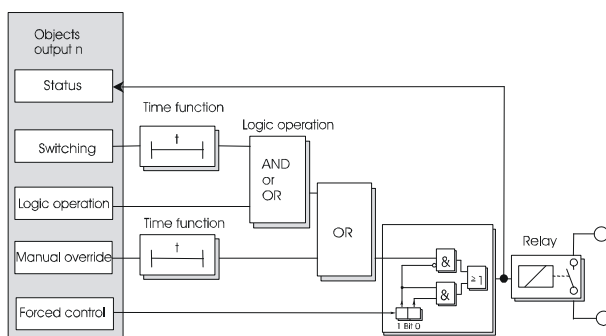
**Product and Application Description**



The RS 510/23 Binary output (relay) is a KNX device with two switching outputs. The device is installed in an AP 118 Control Module Box or an AP 641 Room Control Box. The bus is connected via a bus terminal block. The actuator electronics are supplied via the bus voltage.

The RS 510/23 can switch resistive loads (e.g. electrical heaters, incandescent lamps, high voltage halogen lamps), inductive loads (e.g. motor, low voltage halogen lamps with intermediate conventional transformers), or capacitive loads (e.g. low voltage halogen lamps with intermediate electronic transformers).

Each actuator output may be configured independently to provide switching, manual override, forced control, logical gate, and status reporting. Furthermore, if required, time-limited switching instead of permanent switching on can be enabled for each channel via an optional "Night mode" object (e.g. for lighting while cleaning), if need be with a warning before switching off by multiple switching the output on and off (flashing).



Amongst others, the application program includes optional a switching cycle and operating hours count with threshold monitoring for each output and an integrated 8-bit scene control, in which each output can be incorporated into up to 8 scenes.

Each output of the actuator may be set to one of the following operating modes:

- Normal operation
- Timer operation

**Behavior at bus voltage failure / recovery**

On bus voltage failure the current switching status value is saved for restoration on bus voltage recovery.

On bus voltage recovery the configured actions are executed and, if applicable, new status values are reported.

**Building site function**

The building site function provided ex-factory enables switching the building site lighting on and off via bus wall switches and actuators, even if these devices have not yet been commissioned with ETS.

**Behavior on unloading the application program**

When the application program is unloaded with ETS the device does not function.

**Resetting the device to ex-factory settings**

When the programming button is pressed for more than 20 seconds the device is reset to the ex-factory settings. All configuration settings are lost. The building site function is re-activated.

The device is configured and commissioned with the ETS (Engineering Tool Software) version ETS3 v3.0f or later.

**Application Programs**

The RS 510/23 Binary output (relay) needs the application program "07 B0 A2 Switching Actuator 982E01".

### Example of operation

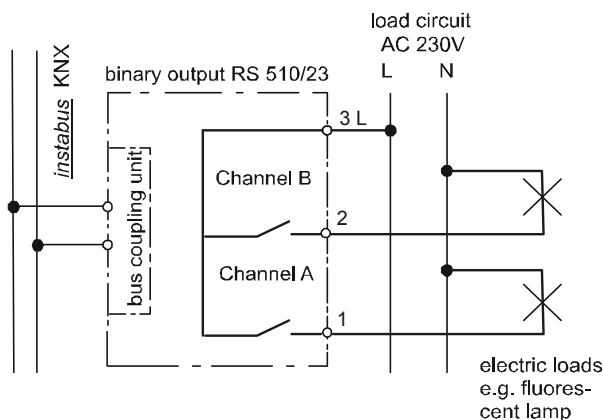


figure 1: Example of operation

### Installation instructions

- The device is intended for installation in an AP 118 Control Module Box or an AP 641 Room Control Box.



#### DANGER

- The device must be mounted and commissioned by an authorized electrician.
- A safety disconnection of the device must be possible.
- The device must not be opened.
- For planning and construction of electric installations, the relevant guidelines, regulations and standards of the respective country are to be considered.
- **When looping through the L-conductor, take care that the maximum permissible terminal load current of 16A is not exceeded!**

### Technical Data

#### Power supply

- via the bus line and the 230 V mains connection
- KNX bus voltage: DC 24V (DC 21...30V) via KNX/EIB bus line
- KNX bus current: < 10 mA

#### Outputs

- Number: 2 outputs (voltage free contacts)
- rated voltage: AC 230V, 47 ... 63Hz
- rated current: 10A resistive load
- switching current at AC 230V: 0,01 ... 10A resistive load
- switching current at DC 24V:
  - 10A resistive load
  - 4A inductive load (L/R = 7ms)
- Switching characteristic: set in parameter list according to application program

#### Switching capacity at AC 230V

- for incandescent lamp load: max. 1000W
- for fluorescent lamp load (LL):
  - uncompensated LL,  $\cos\phi = 0,5$ : max. 500W
  - parallel compensated LL,  $\cos\phi = 1$  (bei  $C_{ges} \leq 14\mu F$ ): 2 x 58W oder 3 x 36W oder 6 x 18W
  - Duo-configuration,  $\cos\phi = 1$ : max. 1000W
  - OSRAM ECG for 58W LL: max. 10 Stk.
  - OSRAM ECG for 36W LL: max. 15 Stk.
  - OSRAM ECG for 18W LL: max. 20 Stk.

#### Control elements

1 learning button:  
for switching between normal operating mode and addressing mode  
(situated on bus connection module shipped with device)

#### Display elements

1 red LED:  
for monitoring bus voltage and for displaying normal mode/addressing mode  
(situated on bus connection module shipped with device)

#### Connections

- Bus line : Bus connection pins for connection of the screwless bus terminal block (red-black) 0.6...0.8 mm  $\varnothing$  single core, strip insulation 5mm
- Load circuit: screwless terminals 0.5 ... 2.5mm<sup>2</sup> single-core, stranded or multi-core, untreated, strip insulation 9 ... 10mm

## Binary output (Relay) RS 510/23

5WG1 510-2AB23

**Physical specifications**

- housing: plastic
- dimensions (L x W x D): 78 x 50 x 38 mm
- weight: approx. 45 g
- fire load: approx. 900 kJ
- Installation: Mounting location for RS / RL module in AP 118 Control Module Box or AP 641 Room Control Box
- Thermal dissipation loss:  
Device: 0,15 W (= min. total thermal dissipation loss) per output:  $0,022\Omega \cdot I^2$  [W]  
min. total thermal dissipation loss: 0,15 W (load: 0A)  
max. total thermal dissipation loss: 3,14 W (load: 10A + 6A, at 100% on-time)

**Electrical safety**

- Degree of pollution (according to IEC 60664-1): 2
- Type of protection (according to EN 60529): IP 20
- Overvoltage category (according to IEC 60664-1): III
- Bus: safety extra low voltage SELV DC 24 V
- Device complies with: EN 50428

**Electromagnetic compatibility**

complies with EN 50428

**Environmental conditions**

- Climatic conditions: EN 50090-2-2
- Ambient operating temperature: - 5 ... + 45 °C
- Storage temperature: - 25 ... + 70 °C
- Relative humidity (not condensing): 5 % ... 93 %

**Reliability**

- Failure rate: 316 fit at 40°C

**Markings**

KNX, EIB

**CE norm**

- complies with the EMC regulations (residential and functional buildings),  
low voltage regulations

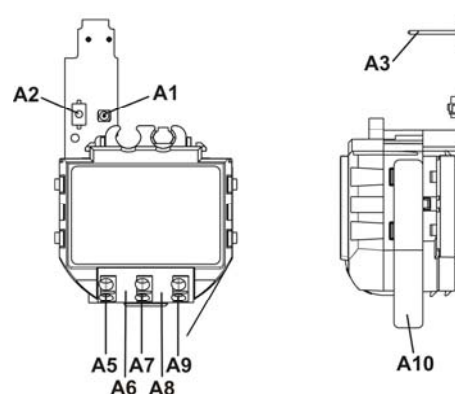
**Location / Function of the Display and Operating elements**

figure 2: Location / function of the display and operating elements

- A1 LED for indicating normal operating mode (LED off) or addressing mode (LED on); returns to normal operating mode automatically after receiving the physical address
- A2 Learning button for switching between normal operating mode and addressing mode and for receiving the physical address
- A3 Bus connection pins to connect the bus connection block for single core conductors with 0,6...0,8 mm Ø
- A4 Type label (with space for physical address of the actuator)
- A5 Terminal Channel A
- A6 Distance plate
- A7 Terminal L
- A8 Distance Plate
- A9 Terminal N
- A10 Identification number of the device

**Mounting and Connecting**

- B1 RS module
- B3 Type label
- B4 Mounting location for RS / RL module in AP 118 Control Module Box or AP 641 Room Control Box
- B5 Bus connection module
- B6 Insertion point for bus connection module
- B7 Snap-in point for bus connection module
- B8 Learning button
- B9 LED for indicating normal operating or addressing mode
- B10 Bus connection pins for connection of the bus terminal block
- B11 Insertion point for bus terminal
- B12 Bus connection block
- B14 Terminals

- Mounting of a RS module:
  - Remove the lid of the AP 118 Control Module Box respectively of the AP 641 Room Control Box.
  - AP 641: Remove the SELV (Class 2) cover
  - Insert the bus connection module (B5) in such a way into the insertion point (B6) for the bus connection module that the bus connection pins (B10) point to the insertion point for the bus terminal (B11). The type label (B3) is on top.
  - Press the bus connection module (B5) down until it snaps into the locking position (B7).
  - Insert the RS module (B1) from the top with the terminals (B14) pointing away from the bus terminal insertion point (B11).
  - Insert the bus terminal (B11) of the mounting location (B4) onto the bus connection pins (B10) of the bus connection module (B5).
  - For assignment of the Physical Address press the learning button (B8) for a maximum of 2 seconds. The addressing mode is indicated when the LED is on (B9). It returns to normal operating mode (LED Off) automatically after receiving the physical address.
  - AP641: Insert the SELV (Class 2) cover again.
  - Mount the lid again.

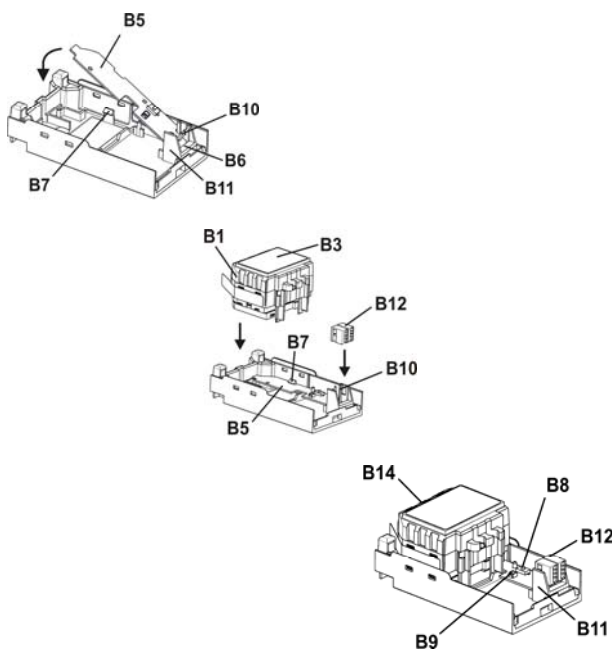


figure 3: Mounting of a RS module

## Binary output (Relay) RS 510/23

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- Dismounting an RS module:
  - Remove the lid of the AP 118 Control Module Box respectively of the AP 641 Room Control Box.
  - AP 641: Remove the SELV (Class 2) cover
  - Remove the wiring from the terminals (B14).
  - To remove the RS module (B1), insert a screw driver between the module and the mounting location siding and push it up to release it from the snap-in hooks. Do this on both sides.
  - Pull the RS module (B1) from the mounting location (B4).
  - If an RL module (B2) shall be inserted into the mounting location, remove the bus terminal (B12). Detach the bus connection module (B5) from the snap-in point (B7), swivel it up and pull it out of the insertion point (B6).
  - AP641: Insert the SELV (Class 2) cover again.
  - Mount the lid again.

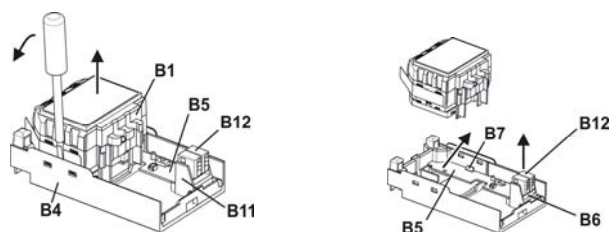


figure 4: Dismounting of a RS module

**Connecting**Slipping off/on bus connection blocks

It consists of two components (C2.1 and C2.2) with four terminal contacts each. Take care not to damage the two test sockets (C2.3) by accidentally connecting them to the bus cable or with the screw driver (e.g. when attempting to unplug the bus connection block).

Slipping off bus connection blocks

- Carefully put the screw driver to the wire insertion slit of the bus connection block's grey component (C2.2) and
- pull the bus connection block (C2) from the module (C1).

**Note**

Don't try to remove the bus connection block from the bottom side. There is a risk of shorting-out the device!

Slipping on bus connection blocks

- Slip the bus connection block (C2) onto the guide slot of the module (C1) and
- press the bus connection block (C2) down to the stop.

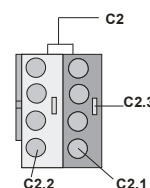


figure 5: Slipping off/on bus connection blocks

Connecting bus cables

- The bus connection block (D1) can be used with single core conductors  $\varnothing$  0.6...0.8 mm.
- Remove approx. 5 mm of insulation from the conductor (D2) and plug it into the bus connection block (D1) (red = +, grey = -)

Disconnecting bus cables

- Unplug the bus connection block (D1) and remove the bus cable conductor (D2) while simultaneously wiggling it.

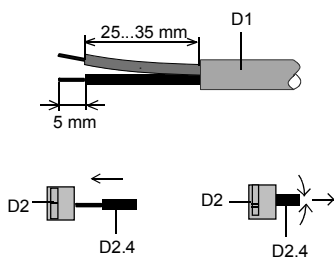


figure 6: Connecting/disconnecting bus cables

Connecting/disconnecting mains and load circuit:

Connect wires

- The load circuits are connected via screwless plug-in terminals (E1).
- Remove approx. 9...10 mm of insulation from the wire (E 1.1) and plug it into the terminal (E1).
- The terminals are designed for connection of two wires allowing to loop through the terminal block.

Note:

The maximum permissible terminal load current is 16A.

Remove wires

- Press the terminal interlocking of the terminal (F1) with a screw-driver and remove the wire (F2) from the terminal (F1).

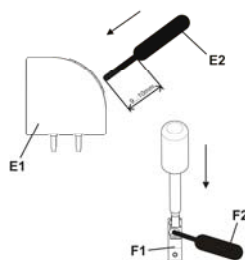
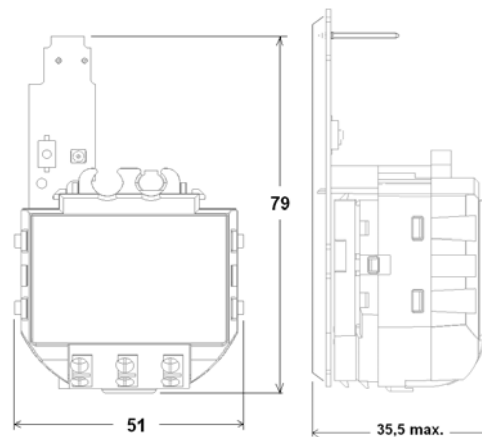


figure 7: Connecting/disconnecting mains and load circuit

**Dimension drawing**

Dimension in mm



**General Notes**

- The operating instructions must be handed over to the client.
- Any faulty device is to be sent together with a return delivery note of the local Siemens office.
- For any technical questions, please consult:
  - ☎ +49 (911) 895-7222
  - ☎ +49 (911) 895-7223
  - ✉ support.automation@siemens.com
  - www.siemens.com/automation/support-request