

Switching actuator, main module N 512/11
3x AC 230/400V, 16A, C-load, load-check

5WG1 512-1AB11

Product and functional description



The switching actuator main module N 512/11 is a 3 MU (module units) wide device for DIN-rail mounting in N-system dimensions, with 3 switching outputs (relay contacts) for AC 230/400V, 16A, C-load, each with load current measurement and monitoring (load-check).

To a switching actuator main module N 512/11 (see device A in figure 1) up to 4 switching actuator sub-modules N512/21 (see device B in figure 1) can be connected in series via a 6-pin interface with a special jumper. Through this a switching actuator main module can be extended simply from 3 outputs to a maximum of 15 outputs and thus be matched flexibly to the number of loads to be switched.

The electronics of the N 512/11 and of all connected sub-modules N 512/21 are supplied via the bus voltage. The bus connection is carried out only at the main module via a bus terminal block.

Bus mode / direct mode

Five green light emitting diodes (LED) on the top of the main module (see figure 2, A5) indicate which module is selected (LED = ON). A module can be selected by tapping the pushbutton "Direct mode" (see figure 2, A6) once or several times until the LED of the desired module A to E illuminates. If any of the green LED A to E is flashing a fault was detected at this module. For example, this is the case if more modules are configured than are actually connected or if the configured module type does not correspond with the module type actually connected or if a module is detected as faulty.

The direct mode pushbutton (see figure 2, A6) with an integrated yellow LED may be used to toggle between bus mode and direct mode. If this pushbutton is pressed briefly, the associated green LED indicates for 30 seconds which of the modules A to E (see figure 2, A5) was selected last and the switching state of the corresponding outputs is indicated by the red LED integrated in buttons 1 to 3 (see figure 2, A9; relay contact closed: LED = ON, contact open: LED = OFF).

However, if the button to switch on direct mode is held down for at least 3 seconds, then the yellow LED to indicate direct mode turns on permanently. In direct mode, each output of the currently selected module can be switched via the allocated pushbutton on the top of the main module through a toggling function: a first press on the pushbutton switches the output on if it is switched off, a second press switches it off again. The switching state of the output is indicated by the red LED incorporated in the pushbutton. (Note: Pushbuttons 4 to 6 and the incorporated LED are not used in the N 512/11.)

To change the switching state of the outputs of another module, this module must be selected first. To do this, you must briefly press the direct mode pushbutton several times until the LED of the desired module A to E illuminates. Modules that are connected but not yet set up as connected cannot be selected.

A parameter determines whether direct mode can be switched on permanently or for a limited period. The factory default setting limits the direct mode period to 15 minutes. Each time the pushbutton is pressed the timer is reset to 15 minutes. After the period has elapsed without a further key press, direct mode is switched off automatically and bus mode is re-enabled accordingly (if communication via the bus is possible). Alternatively, direct mode can be left at any time by pressing the direct mode pushbutton for at least 3 seconds. Then the yellow LED for indicating direct mode turns off and the actuator operates in bus mode. In bus mode, pressing the pushbutton for direct switching of an output off or on does not work. If direct mode is active, switching and scene recall commands received via the bus are buffered and automatically executed after switching back to bus mode.

Behavior in case of mains failure / recovery

Because the actuator electronics are fed from the bus, a mains failure then leads solely to a failure of the actuator function if the bus voltage also fails as the result of a mains failure. However, it can be set for each actuator output individually which switching state it is to assume on a bus voltage failure and after the bus voltage recovery: as before bus voltage failure, ON or OFF.

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5WG1 512-1AB11**Application program**

The N 512/11 switching actuator needs the application program "07B0 A15 Switching Actuator 981B01". This controls the outputs of the main module as well as the outputs of all connected submodules via their 6-pole interface.

In bus mode, a communication object can be available for each actuator output - for switching, for manual override, for a forced control, for a logical combination and for status query. 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). It can also be selected whether all a module's outputs are to be set jointly and thus identically or whether each output is to be set separately and individually.

Amongst others, the application program includes optional detection and monitoring of the load current for each output on load failure and/or overload, simultaneous switching of all 3 outputs (3-phase switching), conversion of a speed given as a percentage value into 1- to 3-stage switching commands (fan speed control), conversion of a valve setting given as a percentage value into a pulse width modulated (PWM) switching command (thermal drive control), 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.

To load the application program, the Engineering Tool Software (ETS) is required as version 3.0 f or higher.

Note: If the N 512/11 application program is "unloaded" with the ETS, then you will no longer be able to activate direct mode, i.e. the LED status display and local switching of the outputs using the buttons on the front panel of the actuator are disabled. Only after reloading the application program can you re-enable the status display and direct mode.

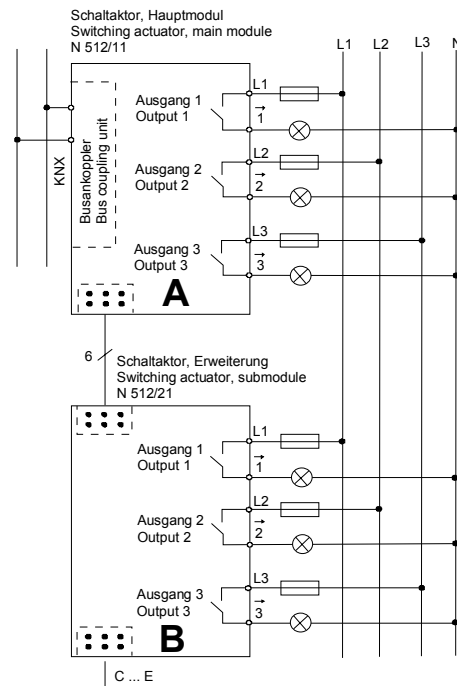
Connection example

Figure 1. Connection example

Installation notes

- The device can be used for permanent installation in dry interior rooms and for insertion in distribution boards or miniature housings.

**DANGER**

- The device must be mounted and commissioned by an authorised electrician.
- When connecting the device, it should be ensured that the device can be isolated.
- 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.
- With the last submodule no bridging connector must be plugged into the jack for a further submodule on the right submodule side.

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Technical data

Power supply

- Bus voltage: supplied via the bus line
- Bus current, main module: typically 7 mA, max. 22 mA
main module + 4x submodule: typ. 11 mA, max. 26 mA
- Power dissipation: if all outputs = OFF: 0.2 W,
at max. load and all outputs = ON: approx. 3.5 W

Outputs

- 3 switching outputs, potential-free relay contacts:
 - rated voltage: AC 230/400 V, 50/60 Hz
 - rated current: 16 AX (200 μ F) to DIN EN 60669-1,
16 A in AC1 mode ($\cos \varphi = 0.8$) and in AC3 mode
($\cos \varphi = 0.45$) as to DIN EN 60947-4-1,
 - DC switching capacity: 16A at 24V DC
 - Min. switching capacity: 100 mA at 12V AC
 - Incandescent lamp load: max. 3,680 W
 - LV halogen lamps, inductive transformer: 2,000 W
 - LV halogen lamps, electronic transformer: 2,500 W
 - Number of OSRAM ballasts for T5/T8:
 - QTI 1x28/54W: 56, QTP 1x36W: 31,
 - QT-M 1x26-42W:21, QTP 2x58W: 9,
 - QT-FQ 1x80W: 9
 - Mech. lifetime: > 1,000,000 switching cycles
 - Electr. lifetime: > 100,000 at AC1, > 30,000 at AC3
 - Load current measuring range: 0.1...20 A, sinusoidal
 - Load current frequency range: 50/60 Hz, +/- 5 Hz,
 - Measuring accuracy: +/- 9 % of the current measured
value and +/- 130 mA,
 - Max. relay position changes per output and evenly
distributed per minute with simultaneous switching of
all relays: 20 with 3 outputs, 10 with 6 outputs, 7 with
9 outputs, 5 with 12 outputs, 4 with 15 outputs

Operating elements

- 1 commissioning push button:
for toggling between normal mode / addressing mode
- 1 push button:
for toggling between bus mode / direct mode
- 6 push buttons:
for direct operation (toggling) of up to 6 actuator out-
puts, independent of the bus

Display elements

- 1 red LED: for checking the bus voltage and for display-
ing normal mode / addressing mode
- 5 green LED: for display of the selected device
- 1 yellow LED: for displaying direct mode / bus mode
- 1 red LED per push button for direct operation:
for displaying whether the output is switched on or off

Connections

- Output circuits: screw-type terminals,
insulation strip length 7... 9 mm
The following conductor cross-sections are permitted:
 - 0.5... 4.0 mm² single-core,
 - 0.5... 2.5 mm² finely stranded without / with connec-
tor sleeve
- Each L-conductor connection to the N 512/11 must be
fused with a circuit-breaker of characteristic B or C for
a max. nominal current of 16 A!
- KNX bus line: bus terminal block
- Submodule: 6-pole jack for bridging connector.

Mechanical data

- Housing: plastic
- Dimensions: DIN rail mounted device in N dimensions,
width 3 module units (1 module unit = 18 mm)
- Weight: approx. 240 g
- Fire load: approx. 3400 kJ
- Installation: Snap-on mounting on DIN rail
EN 60715-TH35-7.50

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 50090-2-2 and EN 60669-2-1

EMC requirements

- Complies with EN 50090-2-2, EN 50428 and
EN 60669-2-1

Environmental conditions

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

Markings

- KNX *EIB*

CE mark

- In accordance with the EMC guideline (residential and
functional buildings), low voltage guideline

Location and function of the display and operating elements

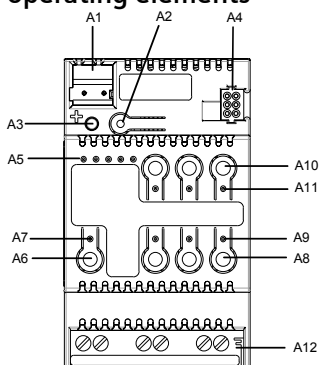


Figure 2. Display and operating elements

- A1 Plug for bus connection terminal block
- A2 Button for switching between normal mode and addressing mode for transferring the physical address.
- A3 LED for indicating normal mode (LED Off) or addressing mode (LED On); it turns off automatically after transferring the physical address
- A4 Jack for connection of a switching actuator sub-module
- A5 LED to indicate the selected device
- A6 Pushbutton to toggle between Bus and Direct mode
- A7 LED to indicate Direct mode = On
- A8 Pushbutton for direct operation of outputs 1...3
- A9 LED to indicate whether the corresponding output is switched on or off.
- A10 Without function
- A11 Without function
- A12 Screw-type terminals of outputs 1...3

Installation and wiring

Mounting / dismantling the device:
see figure 3 and 4

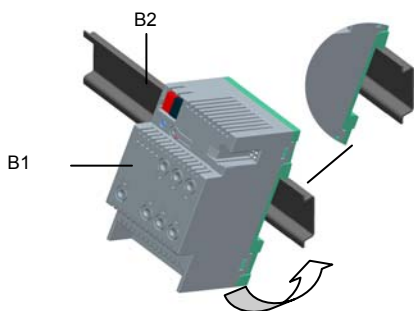


Figure 3. Mounting the device

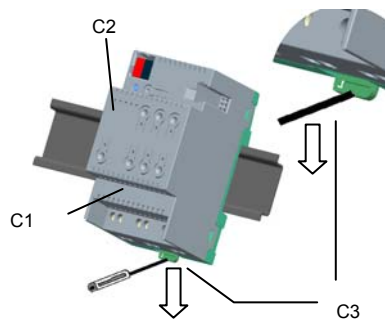


Figure 4. Dismounting the device

Connecting / disconnecting the bus cable: see figure 5

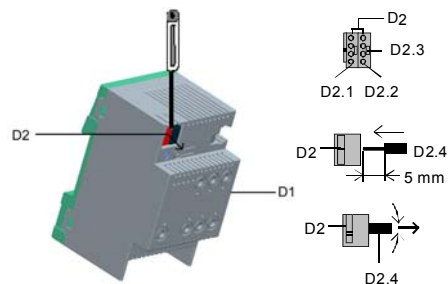


Figure 5. Connecting / disconnecting the bus cable

Connecting a switching actuator submodule: see figure 6

Snap the switching actuator submodule on to the rail and push it to the left against the switching actuator main module or against the switching actuator submodule. Connect both devices using the bridging connector supplied.

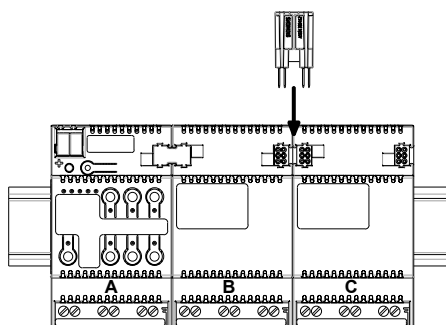


Figure 6. Connecting a switching actuator submodule

General notes

- Any faulty devices should be returned to the local Siemens office.
- If you have further questions about the product, please contact our Technical Support:

+49 (0) 180 50 50-222

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✉ www.siemens.com/automation/support-request