

Product and Application Description

The switching actuator main module N 513/11 is a DIN-rail mounted device in N-system dimensions. It can switch three groups of electrical consumers, independent of each other, via its three relay contact outputs, each with load current measurement and monitoring (load-check). The bus is connected via a bus terminal block. The actuator electronics are supplied via the bus voltage. A switching actuator sub-module N 513/21 can be connected to the switching actuator main module N 513/11 via the 6-pin interface with a special bridging connector. A further switching actuator sub-module can be connected likewise to a previous switching actuator sub-module. In total up to 4 switching actuator sub-modules N 513/21 can be

connected in series to a switching actuator main module N 513/11, so that a main module, if need be, can be extended simply from a 3-fold to a 6-, 9-, 12- or 15-fold switching actuator and thus be matched flexibly to the size and number of loads to be switched.

Five green light emitting diodes (LED) on the top of the main module indicate which module is selected (LED = ON). A module can be selected by tapping the pushbutton "Direct mode" 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.

The direct mode pushbutton 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 was selected last and the switching state of the corresponding outputs is indicated by the red LED integrated in buttons 1 to 3 (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 513/11.)

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.

Application Program

The switching actuator main module N 513/11 needs the application program **07B0 A15 Switching actuator 982003**.

Available functions per output:

- Logical functions (AND/OR) can be set
- defined pre-set initial value of the voltage restoration
- initial value of the relation at bus voltage recurrence
- on/off-delay mode available
- operation mode of the relay: NO/NC

Technical Specifications

Control power supply
class 2 via bus line

Power supply

- Bus voltage: supplied via the bus line
- Bus current, main module: typically 7 mA, max. 22 mA
main module + 4 x sub-module:
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

Device Rating 480 Vac

Outputs: 3 switching outputs, potential-free relay contacts:

- rated voltage: AC 12-277V, 50/60 Hz
- rated current: 20 AX (200 µF) to EN 60669-1,
20 A in AC1 mode (cos φ = 0.8) and 16 A in AC3 mode
(cos φ = 0.45) to EN 60947-4-1
- DC switching capacity: 20A at 24V DC
- Min. switching capacity: 100 mA at 12V AC
- Incandescent lamp load: max. 1,840 W @ AC 120V
- LV halogen lamps, inductive transformer:
1,000 VA @ AC 120V
- LV halogen lamps, electronic transformer:
1,250 VA @ AC 120V
- Mech. lifetime: > 100000 switching cycles
- Electr. lifetime: > 100000 at AC1, > 30000 at AC3
- Load current measuring range: 0.1...20.5 A, sinusoidal
- Measuring accuracy: +/- 9 % 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

Maximum loads per output

- 20 A @ 277 Vac, General Purpose
- 20 A @ 277 Vac, Magnetic Ballast (140µF max.)
- 16 A @ 347 Vac, Electronic Ballast (200µF max.)
- 5 HP @ 277 Vac
- 2 HP @ 120 Vac

Control elements

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

Display elements

- 1 red LED for checking the bus voltage and for displaying 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: load circuit, physical: AWG# 20-12 solid or stranded Cu
Maximum torque for terminals: 0.5 Nm (7 lb-in)
- KNX bus line: bus terminal block, AWG #20-18 solid Cu
- Sub-module: 6-pole jack for bridging connector.

Physical specifications

- housing: plastic
- DIN-rail mounted device in N-system dimensions, width: 3 module units (1 MU = 18 mm)
- Weight: approx. 240 g (8.5oz)
- Fire load: approx. 3400 kJ
- installation: snap-on mounting on DIN rail EN 60715-TH35-7.5

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

Environmental conditions

- ambient temperature operating:
at max load 16A per relay output, -5...+45°C (23...113°F)
at max load 20A per relay output, -5...+35°C (23...95°F)
- storage temperature range: -25...+70°C (-13...158°F)
- relative humidity (non-condensing): 5 % to 93 %

Listings and Certifications

cUL listed (E464611)

UL 916, Energy Management Equipment

CE marked

complies with EMC directive (residential and non-residential buildings) and low voltage directive

Markings

KNX, EIB, CE, cULus, RCM

Electromagnetic compatibility

USA: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

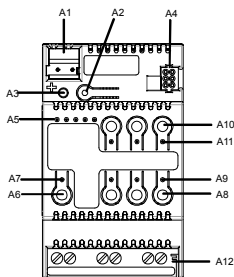
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Canada: CAN ICES-3(B)/NMB-3(B)



Location and Function of the Control Elements and Display



- 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

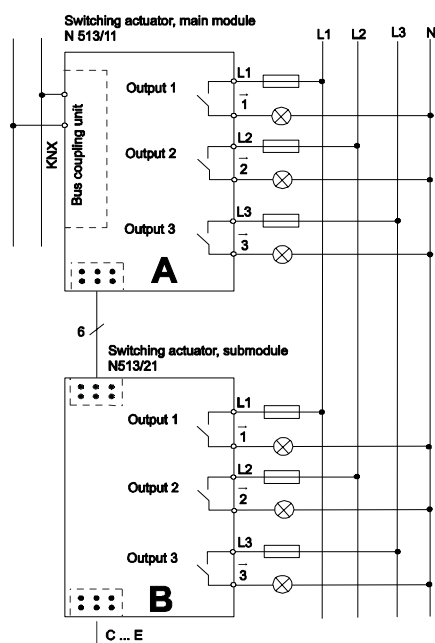
Installation Instructions

The device may be used for permanent interior installations in dry locations within distribution boards or small casings with DIN rail EN 60715-TH35-7,5. This equipment is intended for field installation within the enclosure of another product.

Note:

Ensure that the bus power supply to the main module is disconnected before a bridging connector is plugged in.

Typical circuit



WARNING

Hazardous voltage. Can cause death, or serious injury or property damage. Disconnect and lock off power before installing or working on the device. Risk of Electric Shock – More than one disconnect switch may be required to de-energize the equipment before servicing.

With the last sub-module no bridging connector must be plugged into the jack for a further sub-module on the right sub-module side.

The device must not be opened. A faulty device should be returned to the local Siemens sales office or distributor.

The device must be mounted and commissioned by a factory trained person. The prevailing safety rules must be observed! Mount in dry locations only!

Mounting

General description

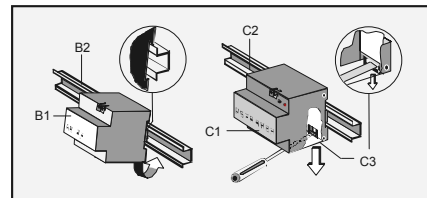
The DIN-rail device (3 MUs) can be installed in the lighting control panel, surface or flush mounted, snapped onto any available DIN-rail EN 60715-TH35-7,5. The connection to the bus line is established by the bus connection block of the main module.

Mounting the Load Switching actuator N 513/11 and N 513/21 to a DIN-rail

Slide the DIN-rail device (B1) onto the DIN-rail (B2) and swivel the DIN-rail device until the slide clicks into place audibly.

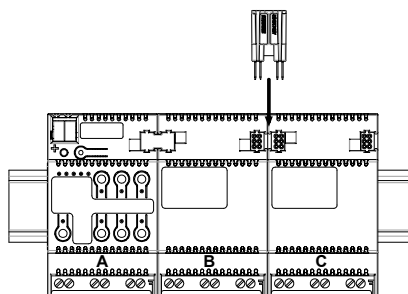
Dismounting DIN-rail devices

- Remove all connected wires and bridging connector.
- Press the slide (C3) with a screw-driver away from the device and swivel the DIN rail device (C1) from the DIN rail (C2).



Connecting a switching actuator sub-module:

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

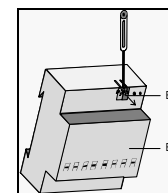


Connecting a switching actuator sub-module

Wiring

Slipping off bus connection block

- The bus connection block (E1) is situated on the top of the Load Switch unit N 513/11 (E2).
- The bus connection block (E1) consists of two components (E1.1 and E1.2) with four terminal contacts each. Take care not to damage the two test sockets (E1.3) by accidentally connecting them to the bus cable or with the screw-driver (e.g. when attempting to unplug the bus connection block).
- Carefully put the screw-driver to the wire-inserting slit of the bus connection block's grey component and pull the bus connection block (E1) from the Load Switch unit N 513/11 (E2).

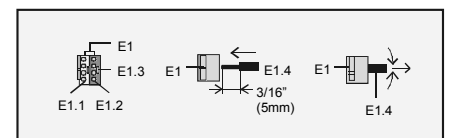


Slipping on bus connection blocks

Slip the bus connection block onto the guides slot and press the bus connection block down to the stop.

Connecting bus cables

- The bus connection block (E1) requires AWG 20-18 solid Cu e.g. Belden # 6230 FE.
- Remove approx. 3/16" (5mm) of insulation from the conductor (E1.4) and plug it into the bus connection block (E1) (red = +, black = -).



Disconnecting bus cables

Unplug the bus connection block (E1) and remove the bus cable conductor (E1.4) while simultaneously wiggling it

Connecting load circuits

Remove approx. 5/16" (8mm) of insulation from the wire, plug it into the terminal and tighten the screws. Torque for terminals 7 lb – in.

Disconnect load circuits

Loosen the screw and slip the conductor out of the block.

Important remark

A faulty device should be returned to the local Siemens sales office or distributor.