

Product and Applications Description

The switching actuator sub-module N 513/21 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 sub-module cannot be operated stand-alone or be directly connected to the bus. But it can be connected via a special 6-

pole bridging connector either with a switching actuator main module N 513/11 or with another sub-module N 513/21, which is already connected to a main module. The sub-module electronics are supplied by bus voltage via the 6-pole bridging connector.

In total up to 4 switching actuator sub-modules can be connected in series to a switching actuator main module, 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 number of loads to be switched. It is indicated by flashing of the corresponding green LED A to E on the top of the main module if more sub-modules are set than are actually connected or if the set sub-module type does not correspond with the sub-module type actually connected or if a sub-module is detected as faulty. The comprehensive application program of the main module controls both the main module outputs and the outputs of all connected sub-modules. Besides other functions, this includes measuring and monitoring the load current for each output on load failure and overload, simultaneous switching of all 3 outputs (3-phase switching), converting a speed preset as a percentage into 1- to 3-stage switching commands (fan speed control), conversion of a valve setting preset as a percentage into a pulse width modulated switching command (ther-

mal drive control), a switching cycle and runtime 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.

Application Programs

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
- operation mode: normal / timer
- forced control
- behavior in case of bus voltage failure/bus voltage restoration can be set in parameter list
- current measuring, optionally with monitoring of an upper or lower limit
- counting of switching cycles without or with monitoring of an upper limit
- counting of operating hours without or with monitoring of an upper limit
- optional control of thermal drives

Technical Specifications

Control power supply

class 2 via the 6-pole bridging connector

Power supply

- Bus voltage: via the 6-pole bridging connector
- Bus current per sub-module: typically 1 mA
- Power dissipation: if all outputs = OFF: 0.03 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. 1840W@AC 120V
 - LV halogen lamps, inductive transformer: 1,000 VA @ AC 120V
 - LV halogen lamps, electronic transformer: 1,250 VA @ AC 120V
 - Mech. lifetime: > 1,000,000 switching cycles
 - Electr. lifetime: > 100,000 at AC1, > 30,000 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

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)
- 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. 225 g (8 oz) (inclusive of bridging connector)
- Fire load: approx. 2800 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
- 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)



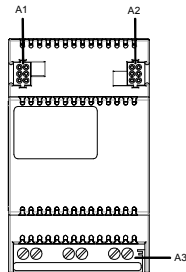
E464611



instabus - Technical Manual
**Switching actuator N 513/21,
sub-module, C-load, load-check**
3 x AC 277V / 347V,
5WG1 513-1AB21

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Location and Function of the Control Elements and Display



- A1 Jack for connection of a switching actuator sub-module to a switching actuator main module or to a preceding sub-module
- A2 Jack for connection of a further switching actuators sub-module
- A3 Screw-type terminals of outputs 1...3

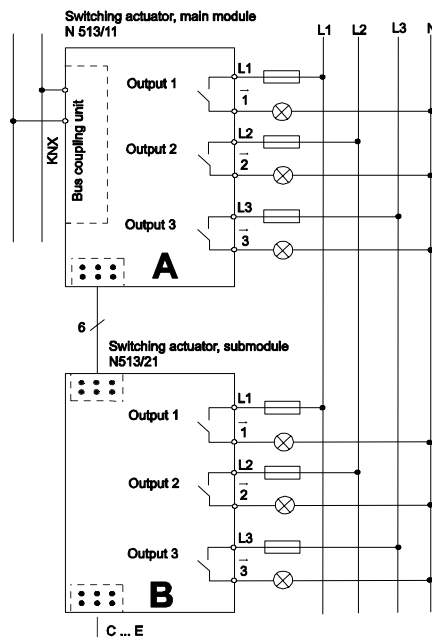
Installation Instructions

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

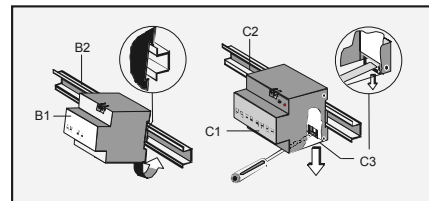
General description

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.

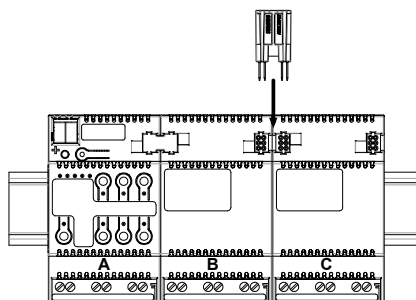


Dismounting DIN-rail devices

- 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 submodule