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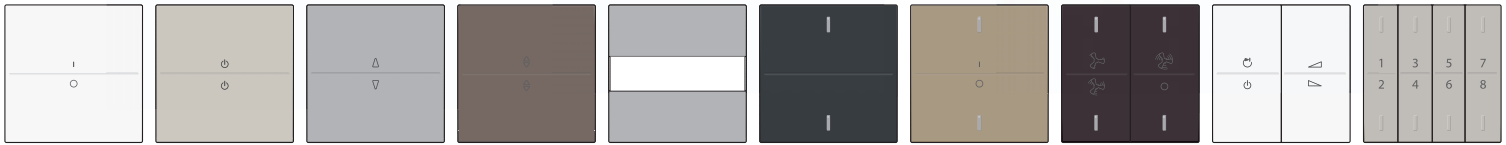
Today, you can realize a home that perfectly meets your customer requirements. Niko helps you a hand with an **intelligent management system** that controls the complete electronic installation of your home. Nikobus is the nerve centre of the modern home: switching the light on or off, dimming, controlling shutters and awnings, switching electrical appliances on or off. Everything can be controlled separately or in groups. Programming the functions can be carried out **manually** or via the **pc**.

The Nikobus home automation system is **easily** programmable and extremely **flexible**: the installation can be adjusted or extended at any time. The applications of the Nikobus system are unlimited, the combinations infinite. As an installer, you can meet the wishes of your most demanding customers.



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There are many advantages, for both the user and for the installer.

Advantages for the user
Tailor-made convenience
User-friendly
Smoothly adaptable
Increased safety
Rational consumption of energy
Budget-friendly
Guaranteed Niko quality
Remote control (wireless)

Advantages for the installer
Simple programming, with or without the PC
Nikobus training and help desk
Simple and flexible installation
Modular extendibility: DIN-rail mounting
Less cutting and breaking into walls
Remote operation possible
Gaining customer confidence
Professional upgrading

Niko continuously puts great effort into adapting the Nikobus system to the technological progress. From the first launch of the system, we have ensured the compatibility of all parts that were to follow. Certain functions described in this manual, however, are only applicable to the latest generation of Nikobus products (switch module 05-000-02, compact switch module 05-002-02, shutter module 05-001-02, dim controller 05-007-02 and compact dim controller 05-008-02).

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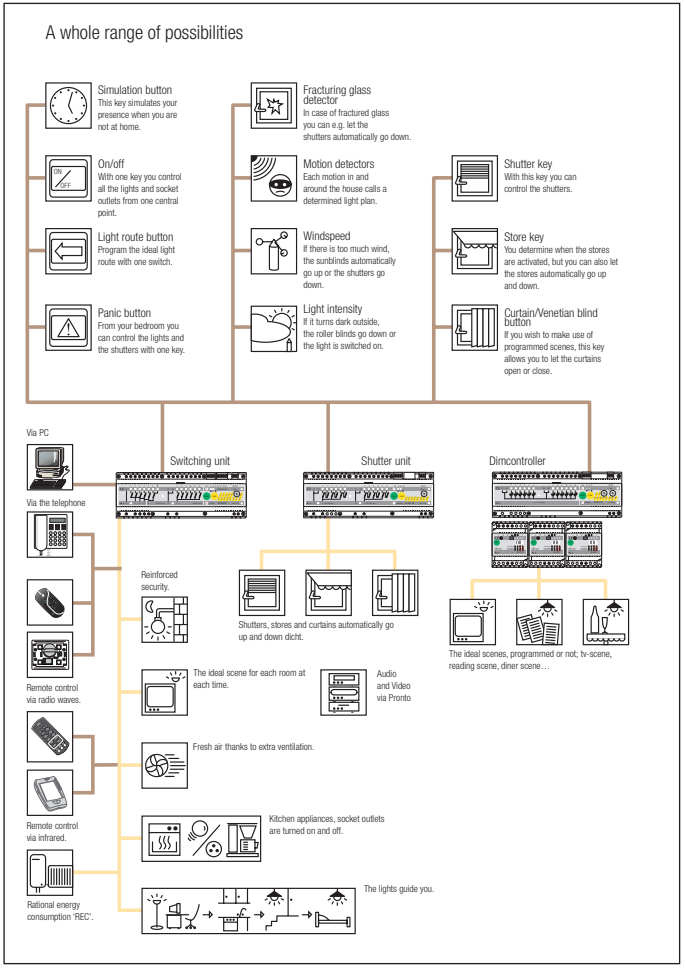
The Nikobus system consists of two basic components:
- Nikobus push buttons (= sensors)
- Intelligent switch and blind modules and dimcontrollers (= actors)

The connection between the switch and shutter modules, the dimcontroller and the Nikobus push buttons takes place by means of a twin wire, the Nikobus. This Nikobus wiring is galvanically separated from the 30V~ mains, and works with the very low safety voltage (VLSV) of 9V DC.

It goes without saying that the Niko RF and IR ranges can be fully integrated in the Nikobus system, so that it is also possible to work with remote control. External sensors, such as movement detectors, door and window contacts, dimmer and time switches, CAB-contacts, thermostats and wind detectors, glass breakage detectors, splash-proof push buttons, etc., can be connected to the Nikobus through interfaces.

The allocation of certain functions to the bus push buttons and the sensors is carried out by means of a selection procedure, without complicated programming techniques. Any installer is therefore able to install and set up the Nikobus switch and shutter modules, as well as the Nikobus dimcontrollers. Specialized equipment, such as a PC, is not required for this. It is, however, possible to conveniently carry out the programming through a computer. This allows for more options and a better overview of the program.



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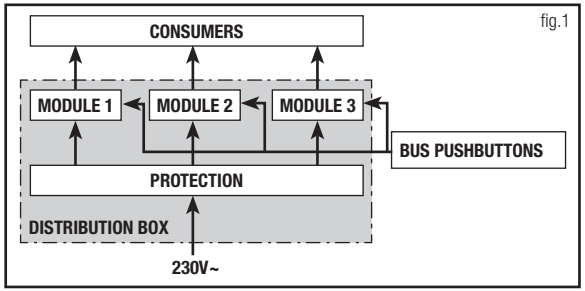
Installation

The various modules can be positioned either centrally or de-centrally. With central installation, all the modules are placed inside the same fuse box. From there, the Nikobus wiring goes to the bus push buttons. All the consumers are always directly connected to the modules (in a star topology).

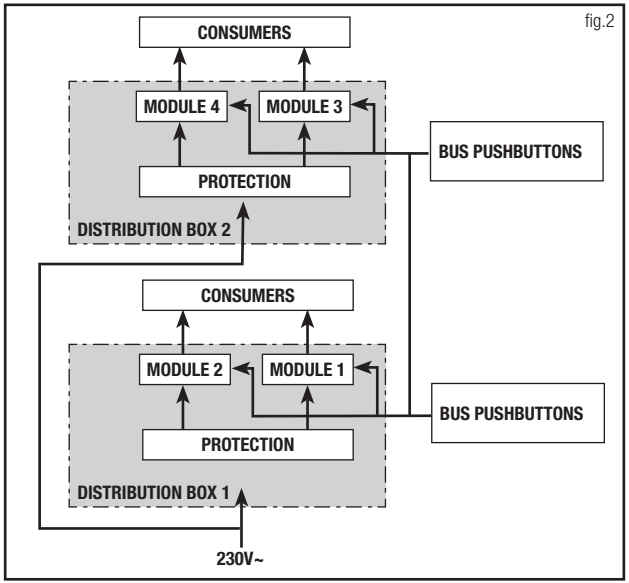
As the bus is polarized, it must be correctly connected if several modules are being used. To do this, the connectors marked “B1” are connected to each other. The connectors marked “B2” will also be connected to each other. Polarization is not important for the bus push buttons.

In a large apartment or property, it is easier to decentralize the modules. This means that some modules will, for example, be placed in a fuse box in the garage, and that the other modules will, for example, be placed in a fuse box in the attics. As a result, the wiring distance from the consumers to the modules is shortened quite a bit, which in turn results in savings of material and time.

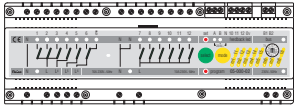
CENTRAL INSTALLATION



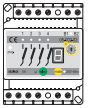
DECENTRAL INSTALLATION



The main components

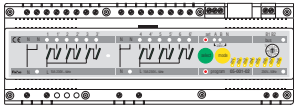


05-000-02



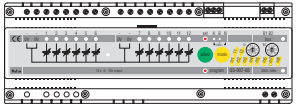
05-002-02

The switch module has the possibility of switching 12 consumers on and off by means of internal 10A 230V~ relays.

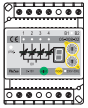


05-000-02

Up to 6 motors can be connected to the shutter module. We are talking here about motors that can turn in two directions. As a result, motors for shutters, sun blinds and curtains can be included in the home automation controls.



05-000-02

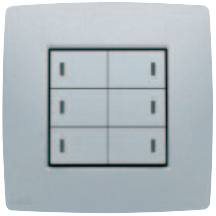


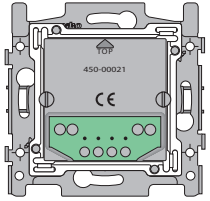
05-002-02

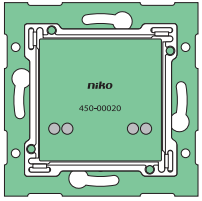
The dimcontroller has 12 outputs available for 0-10V-controls. These can be used for controlling the dimmers. The dimcontroller is not a dimmer in itself, but controls dimmers.

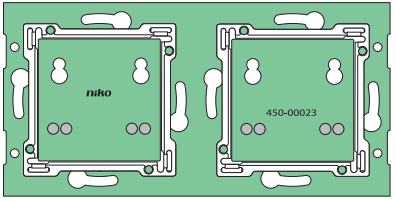
The bus push buttons are the elements that are mostly used for operating the Nikobus home automation system. They exist in different designs: two-way, four-way and eight-way, with or without LED, with or without IR receiver, with or without area for writing. They are obtainable for every Niko mounting range: **Niko** *Intense*, **Niko** *Pure* and **Niko** *Original*.

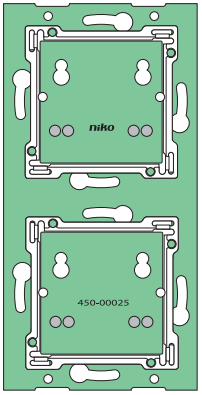
Only one mounting box must be foreseen for each location where one or several push buttons are placed, as the bus push buttons are mounted on wall prints. These are available in different sizes and are available for horizontal or vertical mounting.











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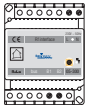
The other Nikobus components



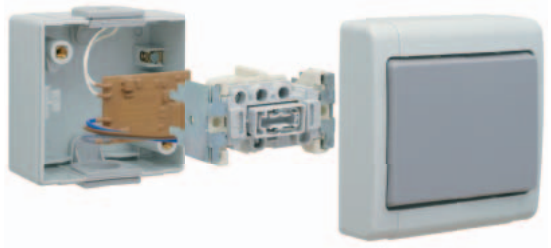
The Nikobus system can be controlled by means of several remote controls. First of all, the RF remote control that is used in combination with the RF interface. Using this RF interface, it is possible to integrate all RF wall transmitters and the RF hand transmitters into the Nikobus home automation system. This makes wireless control possible.

05-300

Two further IR remote controls are available that are multi-functional. This means that additional devices, such as television, the audio-installation, etc, can also be controlled from the same remote control device.

05-312 **05-090-12**

Using the Nikobus movement detector, easy and user-friendly lighting controls can be achieved in corridors, cellars, attics, etc.



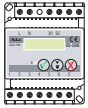
A number of mounting interfaces are available for the connection of traditional switches and push buttons to the Nikobus system. These can easily be used in combination with the Hydro 55+ splash-water proof material.

A modular 2-channel clock has been included in the Nikobus range that can be connected to the Nikobus via the modular interface. This clock can be equipped with a DCF77 receiver, so that the it always shows the correct time, and does not need to be re-set, for example, when changing from winter time to summer time, or vice versa.

05-183

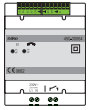
To the binary input module 05-206, you can connect a modular light sensor. The light sensor can be set between 3 and 300Lux.

350-10000



To the modular, binary input module, max. 6 voltage free contacts can be connected. In this way, it is possible to read in the contacts of alarm centres, thermostats, door and window contacts, etc, into Nikobus.

05-206



The Nikobus home automation system has 1 telephone interfaces available. By means of the telephone interface, it is, for example, possible to switch on the heating before going home.

450-00064

Programming the Nikobus home automation system

The Nikobus home automation system can be programmed both with and without the PC. Simple programming without a PC is possible using the keys that are located on the modules (switch module, compact switch module, shutter module, dimcontroller and compact dim controller).

A more extensive programming can take place by connecting a PC to the 05-200 PC-Link or the 05-201 PC-Logic interfaces. Prior to programming with the computer, please refer to the separate manual regarding Nikobus Windows©. The PC-Link module also offers extensive calendar and time functions, as well as presence simulations. The PC-Logic module makes it possible to include extensive logic conditions while programming.

General technical characteristics

Transmission medium: data communication between all the components connected to the Nikobus takes place via a two-wire cable.
Topology: The usual topology is the tree structure type. The bus can also be used in line or star topology.
Transmission: Serial telegram communication with a speed of 35ms for a complete telegram.
Bus power supply: 9V DC
Distance sensor-module: maximum 350m
Allowed cable length: The maximum cable length allowed for the bus wiring is 1000m
Addressing: A fixed, pre-programmed address is allocated to every bus push button or interface.
Number of controls: per installation, max. 256 bus push buttons, 24 bus push buttons with feedback and max. 50 actor/sensor and/or IR bus push buttons can be connected.
Number of inputs: A maximum of 256 inputs can be connected per module.
Number of outputs: 12 outputs have been provided per module (6 pairs for the shutter module)

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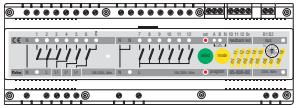
The programming of the Nikobus home automation system can take place in two ways. First of all, with manual programming. This programming method can be carried out on every module (switch module, compact switch module, shutter module, dimcontroller and compact dim controller). In addition, it is possible to program the Nikobus home automation system via the computer, by connecting the system to the PC-Link or the PC-Logic interface*. This results in an improved overview and more options.
In this chapter, we will deal with the basic principle of manual programming. The methodology for programming by means of the PC is included in the separate Nikobus Windows© Manual.

* Applicable for modules with reference numbers ending in – 02 onwards.

Basic principle for manual programming
We will explain the basic principle for manual programming by means of a simple switch module program. The methodology is the same for programming a shutter module or a dimcontroller. Obviously, there is a difference in the selection of the functions of the various modules.

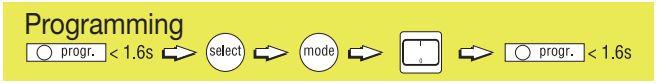


a. Entering the programming mode
On the module (below the green select button) you will find a round opening with “program” written next to it. This is called the Programming button. To enter the programming mode, the programming button is briefly pressed and then released using a fine screwdriver.
The time during which the programming key is pressed in should be shorter than 1.6 s. A repeated sound signal indicates that the module is now in programming mode.

b. Selecting an output
One or several outputs must be selected here in order to indicate that something will take place with this/these output(s).
The green select button is used to do this. Each time this button is briefly pressed, the next output on the module will be selected. The LED of the selected output will be seen to be blinking. If output 12 has been selected, and we again briefly press the select button, output 1 will again be selected, and the LED of output 1 will blink.
This method is used when only one output has to be selected.

In order to select **several** outputs for the same program (for example an off-function for several light points), proceed as follows. Assume we want to select outputs 1, 2 and 4. After entering the programming mode, pressing the green button briefly will bring us to output 1. The LED of output will now be blinking and the LED’s of the other outputs will be off. We now press the select button longer than 1 s. As a result, the LED of output 1 will light up continually, i.e., the blinking stops. If the select button is pressed again briefly, the LED of output 2 will start blinking. We also want to include this output in our selection, and we therefore press the green button again for a longer period. Briefly pressing

the button once again starts LED 3 blinking. As we do not wish to include this output in our selection, we again briefly press the button, and the LED of output 4 starts blinking. We also wish to include this output in our selection, and we therefore press the select button for a longer time once again. The result of all these actions is that the LED's of the outputs 1 and 4 will be constantly lit. These three outputs have now been selected for inclusion in our program.



c. Selecting a function or mode

When we entered the programming mode, the mode LED (function) M1 lit up. In case of the compact modules, number 1 is displayed. The next mode could be selected by briefly pressing the yellow mode button. At the end of the series, we return to the first mode.
The (compact) switch module has 8 basic functions (M1 to M8) and 5 higher functions (M11 to M15). In the case of the shutter module, it is possible to choose from 7 functions (M1 to M7). The dimcontroller has 8 basic functions (M1 to M8) and 2 higher functions (M11 and M12). The compact dim controller also has functions M13 and M14.
To select one of the higher functions for the switch module and the dimcontroller, the mode button should be pressed for longer than 1.6 s. When this is done, the LEDs of mode M1 and M11 will start blinking. These blinking LEDs indicate that we are now dealing with the higher functions. If the yellow button is briefly
pressed again, the next higher function will be selected, and the next LED will start blinking. It is possible to return to the lower functions by again pressing the yellow button for a longer period.

For certain functions, the position of the setting wheel T1 and/or T2 is important. In most cases, this will involve a time setting. If the position of the setting wheel is also important for the selected mode, it must now be put into the correct position by means of a fine screwdriver. Only then can the next programming step be taken.

d. Assigning the program to a push button

Up to now, we have selected one or several module outputs and a function that must be performed. Our attention is now focussed on the push button that will have to carry out this function for the selected outputs. The assignment takes place quite simply by briefly pressing the bus push button connected to the Nikobus. A longer sound signal indicates that the assignment has taken place.

If a second push button should be assigned the same program as the current program, it is sufficient to briefly press this push button. Once again, a longer sound signal will be given to indicate that the program has also been assigned to this second push button. For all two-button and four-button modes, it is sufficient to only press a component of the push button once during programming. The other operating locations of the bus push buttons will then be programmed automatically.

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e. Exiting the programming

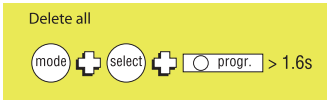
When the program has been assigned to one or more bus push buttons, the programming mode can be exited by briefly (not longer than 1.6 s) pressing the programming button with a screwdriver. It is, however, not necessary to exit the programming mode every time you program a bus push button. In principle, it is possible to remain in programming mode and to make a new output selection, possibly select a different mode, and assign this to another push button. The programming mode only needs to be exited after all the push buttons that carry out a function with this module have been programmed.

Attention: It is also possible to assign several programs to the same push button. One must, however, take into account that a certain output can only be programmed once for the same element of a bus push button. This is logical; you cannot assign an on-function to output 2 and program an off-function for the same output on the same section of the bus push button at the same time. The function that was programmed last will overwrite the previously programmed function.

Manually deleting the programming

a. De-programming an entire module

If an entire module must be de-programmed, proceed as follows.



Simultaneously press the select button, the mode button and the programming button for a time period longer than 1.6 s. Two brief beeps confirm the de-programming of the entire module.

b. Selectively deleting an output

It is sometimes useful to be able to delete the programming of one specific output.

Enter the programming mode by pressing the programming button for a period less than 1.6 s. Select the output to be deleted using the select button. Following this, press the programming button longer than 1.6 s. The selected output has now been deleted in all programs in which it was included

c. Selectively deleting a bus push button

If you wish to delete a certain output that has been programmed under a certain push button, proceed as follows.

Enter the programming mode by pressing the programming button for a period less than 1.6s. Select the desired output with the select button. Following this, press the bus push button from which this output must be removed. Here also, the delete function is exited by pressing the programming button for longer than 1.6 s.

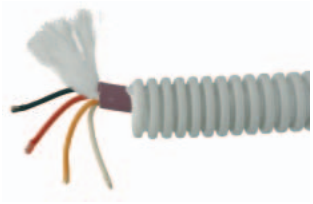
Data communication between the sensors (e.g. bus push buttons) and the actors (the output modules) takes place over a twin cable. This data communication wiring is called the Nikobus. It is galvanically separated from the 230 V mains supply and operates on the very low safety voltage (VLSV) of 9V DC with ripple. The bus wires must never be earthed.

Topology

For the topology for the laying of the bus cabling, it is possible to choose between the bus topology, the star topology, the tree topology, or a combination of all these. This methodology gives the installer the largest possible freedom of action. A new branch can be created at any location on the bus cable.
For larger installations, we recommend a combination of a bus or star topology, e.g., 1 bus per floor. This combination results in simpler wiring and a better overview, which is a distinct advantage if modifications have to be made later on.

Cables to be used

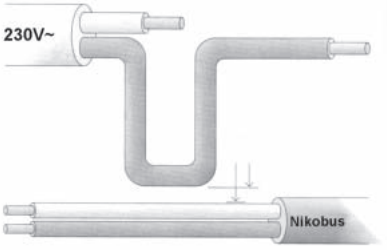
Advantages of the bus wiring:
- simple connection
- adding push buttons without extra wiring
- SELV, so more safety
- more practical for flush mounting due to small wire diameter
- limited flush mounting depth (important in case of thin walls)



Technical specifications

- cable: a) Nikobus cable 2 x 2 x 0,8mm
- max. cable length:
  - a) between push button and module: 350m
  - b) between 2 push buttons: 700m
  - c) total cable length: 1000m

Pay attention to the following:
- insulated wires of the bus cable resp. the power current have to be placed at a distance of minimum 4mm, otherwise, additional insulation is required. This goes for wires of other currents that are not SELV currents.
- bus wires can never be earthed!!!



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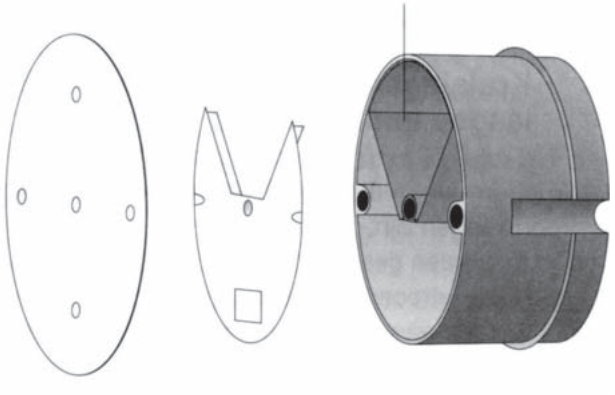
Bus and power current cable can be put in the same flush mounting box if a separation part is providing a safe separation.

In all other cases, separate flush mounting boxes have to be provided for bus cable and power current cable.



Number of required conductors in the bus cable

The Nikobus only uses two conductors of the bus cable. For the bus push buttons with feedback LEDs, the IR bus push button, the motion detector, the thermostat and the digital clock, a separate power supply is required. You can use the two other wires of the bus cable.

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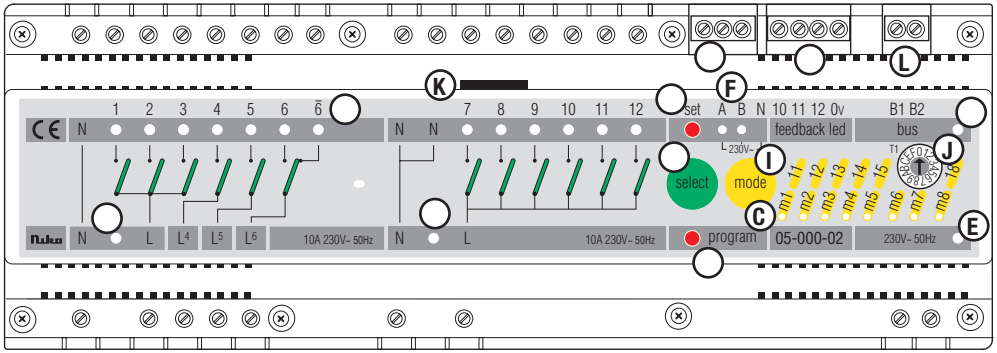
4.1. THE SWITCH MODULE 05-000-02

Description

The switch module is a modular central control unit that can be placed in a distribution box on a DIN-rail. It has a width of 14 modules, and is equipped with a Nikobus connection to which sensors (bus push buttons, interfaces) and other modules can be connected. A parallel connection between several modules can be made via the bus. It uses non-erasable EEPROM memory, which is exchangeable without opening the housing or disconnecting the module. Pre-wired, separated circuits with relay output contacts (12 outputs). A choice can be made from 13 modes and 16 adjustable times per bus push button function, and 3 operating times. There are two 230V inputs with logic functions, a diagnostic function and an indication for bus short-circuits, bus polarization errors, bus power supply problems and memory communication errors. Light scene mode for storing output configuration into the memory. It is possible to operate the outputs manually in case of a bus fault or when commissioning.



LED-indications: **(A)** 13 for 12 outputs (including 1 changeover contact)
(B) 2 for the power supply of the outputs
(C) 8 for modes
(D) 1 for Nikobus
(E) 1 for active power supply of the switching unit
(F) 2 for external 230V inputs

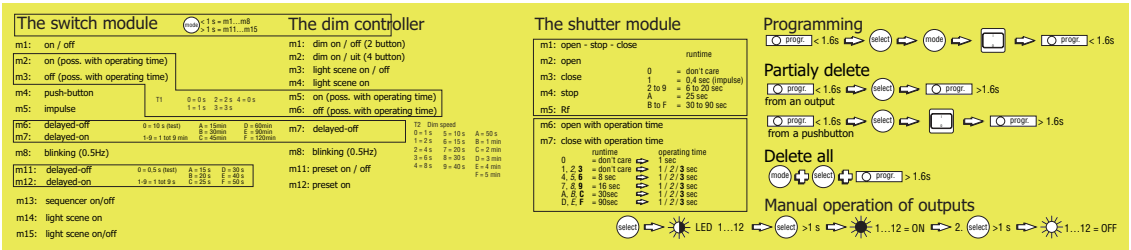
(G) Programming button: to be set by screwdriver
(H) Output selection key: to select outputs 1 to 12
(I) Mode selection key: to select modes 1 to 13

(J) Yime switch: to set time
(K) Non-volatile EEPROM-memory
(L) Bus connection
(M) Status LED connection
(N) External 230V inputs
(O) SET-selection key: to select of the 2 external inputs
Acoustic signal: short signal: program mode
long signal : sensor recognition
double short signal : erase

Manual operation of outputs

During normal operation, it is possible to select the outputs manually by briefly pressing the select button. By pressing for a longer time (>1 s), the output can be switched on or off. This can be useful when, for example:

- The bus has not yet been installed.
- Operating the outputs following a bus fault (short-circuit or interruption).
- Testing or locating output circuits.
- Setting outputs in preparation for storing under a light scene button.



Diagnostic reporting

Continuous diagnostic reporting takes place on the mode LED's during normal operation (not during programming):

m1 Lights up on receipt of a correct Nikobus telegram (blinks if the data is incorrect).

m2 Blinks in case of a short-circuit or bus polarization errors (e.g., mix-up of the bus polarity between two modules).

m3 Blinks in case of errors in the bus power supply (bus power supply circuit error).

m4 Blinks in case of memory communication errors (e.g., EEPROM error) or when an incorrect type of module has been used (e.g., installation of dimcontroller memory in a switch module), or if the memory has not yet been initialised 4.2(follow the "Delete all" procedure at the first use).

Diagnostic reporting

m1 Nikobus telegram OK, blinking = telegram error

m2 Short circuit, polarization error

m3 Bus power supply error

m4 Memory error

Diagnostic functions of the compact switch module 05-002-02

During normal operation (not during programming), there is a continuous diagnosis reporting on the 7-segment display:

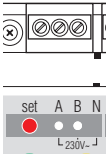
- a horizontal dash lights in case a correct Nikobus telegram is received
- a capital A blinks in case of short circuit or polarization errors (e.g. change in bus polarity between 2 modules)
- a small b blinks in case of bus power supply errors (circuit defect)
- a capital C blinks in case of a memory communication error (e.g. EEPROM defect) or in case a wrong module type is used (e.g. shutter control module memory located in a dim controller).

External 230V inputs with logic functions

Note: the compact switch module is not provided with 230V inputs.

The 230V inputs A and B can be used in two ways. First of all, they can be used as switch inputs. When the input turns high or low, a function of the switch module will be carried out. The second way in which the 230V inputs can be used is as a logical input. Here, the high or low level of a 230V input is considered to be a precondition to either carry out other bus telegrams or not (filter function).

For a detailed description of the options please refer to Chapter 7: "Use of the 230V inputs". The description given there is valid for the switch module, the shutter module and the dimcontroller.



The different modes or functions

The modes m1 to m8 are called up by briefly (<1.6 s) pressing the mode button during programming. The mode LED's will light up continuously. Modes m11 to m15 are called up by pressing the mode button for a longer period (>1.6 s) during programming. The mode LED's will start blinking. Afterwards, a function between m11 and m15 can be selected by briefly pressing the mode button. You can return to the first 8 modes by pressing the mode button again, this time for a longer period.

Modes	Function	Description	Necessary control keys
Press the 'mode'-key <1,6s, during programming in order to retrieve modes M1 to M8. The 'mode'-LEDs light continuously			
M1:	on/off	top: on, bottom: off	2
M2:	on (if necessary with operating time)	always on (centralized functions)	1
M3:	off (if necessary with operating time)	always off (cetralized functions)	1
M4:	push button	on for as long as the rocker is pressed (e.g. bell push button, Dim control) max. 8s	1
M5:	toggle	pulse ON / pulse OFF (e.g. toggle switch or teleruptor)	1
M6:	delayed off (longer times, up to 2h.)	press: after certain time: off (e.g. staircase timer)	1
M7:	delayed on (longer times, up to 2h.)	press: after certain time: on (e.g. operating delay)	1
M8:	blinking	press: on/off/on/..., turn off with M3	1
Press the 'mode'-key >1,6s. During programming in order to recall modes M11 to M15. The 'mode'-LEDs blink.			
M11:	delayed off (shorter times, till 50s.)	as M6, but shorter times	1
M12:	delayed on (shorter times, till 50s.)	as M7, but shorter times	1
M13:	sequencer on/off	switching of several outputs subsequently via a time cycle>	2
		The final switching order is determined during programming	
M14:	light scene on	press short: recalling a certain light scene	1
		press long: stores the modified light scene in the memory (> 3s.)	
M15:	light scene on/off	press top rocker briefly: recall a certain light scene	2
		press top rocker long: save modified light scene in the memory (> 3s.)	
		bottom key: —> off	

M16, 17, 18 have no function yet

M1: on / off

With this function, a bus push button is programmed in such a way that the selected switch module consumer(s) will receive an on command when the upper section of the push button is pressed, and an off-command will be sent to the consumer(s) when the lower section of the push button is pressed. The functionality of this mode for the user can be compared to that of a traditional switch. During the programming of this mode, it is only necessary to press the bus push button once. It thereby makes no difference whether the upper or the lower section of the push button is pressed for confirmation.

M2: on (possibly with operation time)

This mode always carries out an on-function for the selected consumers. It is possible to set an operation time for the bus push button. For more details, see the section: "Working with operation times". It is therefore recommended to always first look at the position of the setting wheel T1 when programming this function.

Modes M2 and M3 (operating mode):
0 = 0s.
1 = 1s.
2 = 2s.
3 = 3s.
4,...,F = 0s.

M3: off (possibly with operation time)

This mode always carries out an off-function for the selected consumers. It is possible to set an operation time for the bus push button. For more details, see the section: "Working with operation times". It is therefore recommended to always first look at the position of the setting wheel T1 when programming this function.

M4: push button function

When the bus push button is pressed, the selected output will close. When the bus push button is released, the selected output will open. This can be compared to a bell push button, and can be used as such. In the past, however, this function was often used for controlling ordinary modular dimmers. In fact, short pulses must be given in order to switch the dimmer on or off. Pressing the push button for a longer time period will then result in the regulation of the light intensity. If a push button is pressed for a longer time frame, the Nikobus will be busy for a maximum of 8 seconds; after this it will automatically be released for other bus units. It is therefore impossible to give pulses of more than 8 seconds in the M4 mode.

M5: impulse function (teleruptor)

With this function, a selected consumer can be switched on or off by using only one section of a bus push button. This function is comparable to a push button operating a teleruptor. It is recommended to only use this function for one output at a time. As a matter of fact, if two or more outputs with the same bus push button would be fitted with this function, it would be possible for the outputs get out of step if one of the outputs has also been placed in the opposite position by another bus push button. They would be brought out of balance.

M6: delayed for longer time frames up to 2 hours

The output switches on immediately when the push button is pressed. By setting the setting wheel T1 during programming, the output is switched into the off-position after the set time. This function is particularly suitable for use as a staircase lighting system. When the power supply comes on again after a power supply cut, the outputs that were possibly active before the power cut will remain in the off-position.

Modes M6, M7 and M13:

0 = 10s.		
1 = 1min.	6 = 6min.	B = 30min.
2 = 2min.	7 = 7min.	C = 45min.
3 = 3min.	8 = 8min.	D = 60min.
4 = 4min.	9 = 9min.	E = 90min.
5 = 5min.	A = 15min.	F = 120min.

M7: delayed switch-on for longer time frames up to 2 hours

When the push button is pressed, the selected output will only go into the on-position after the time period that has been set by means of the setting wheel T1. When the power supply comes on again after a power supply cut, the outputs that were possibly active before the power cut will remain in the off-position.

M8: blinking function

This mode activates a blinking function for the selected outputs. The frequency of the blinking is 1 second on and 1 second off. This frequency cannot be modified. The blinking function must be switched off by means of another bus push button that has been programmed with M3 (off-function).

M11: delayed for shorter time frames up to 50s

This function is fully comparable to M6. The only difference is that the time periods can be set with the setting wheel T1. With this function, shorter time frames (up to a maximum of 50s) can be set. When the power supply comes on again after a power supply cut, outputs that were possibly active before the power cut will remain in the off-position.

Modes M11 and M12 (short times):

0 = 0,5s.		
1 = 1s.	6 = 6s.	B=20s.
2 = 2s.	7 = 7s.	C=25s.
3 = 3s.	8 = 8s.	D=30s.
4 = 4s.	9 = 9s.	E=40s.
5 = 5s.	A = 15s.	F=50s.

M12: delayed switch-on for shorter time frames up to 50s

This function is fully comparable to M7. The only difference is that the time periods that can be set with the setting wheel T1. With this function, shorter time frames (up to a maximum of 50s) can be set. When the power supply comes on again after a power supply cut, outputs that were possibly active before the power cut will remain in the off-position.

M13: sequencer on / off

By means of the sequencer mode, several switch module outputs can be switched on and off consecutively. The time the output is "on" is set per output, and may differ from the other outputs. If the upper section of the bus push button is pressed, a first output will be switched on for a time period that has been set by means of T1. After this time has elapsed, the first consumer switches off, while the second consumer switches on for the time period that has been set for it. This process continues for all selected consumers. After the last selected output has been switched off, the sequencer function will stop.
If the lower section of the push button is pressed during the operation of the sequencer, the sequencer function will be stopped. The switching sequence of the outputs is determined by the sequence in which the outputs were selected during programming.
By means of other push buttons, an off-function can be programmed for every selected output in the sequencer. If this button is pressed while the respective output is on, this output will be placed in the off-position and the sequencer will continue its function by activating the next output. It is possible to program several sequencers, although only one sequencer can be active at a time. When the power supply comes on again after a power supply cut, the sequencer will not automatically become active again. The selected outputs will remain in the off-position.

M14: light scene on

Briefly pressing a bus push button that has been programmed with M14 will result in the switch-on of a light scene with switched outputs. Pressing the push button for the first time after programming will result in the switch-on of every selected output. By means of other bus push buttons, or through the manual method for switching outputs on or off, it is possible to put certain outputs in the off-position and others in the on-position. As soon as a certain light scene has been created in this way, it can be stored under the light scene button (the bus push button under which M14 has been programmed) by pressing the light scene button for a longer time period (>3 s). In this way, the user himself can create and store his light scenes. A light scene can only be switched on with M14. Another bus push button can be programmed to switch the light scene off.

M15: light scene on / off

This function is fully comparable to M14. The difference, however, is that the light scene is called up by pressing the upper section of the push button, and can be switched off by pressing the lower section of the push button. During programming, it is of no importance whether the upper or the lower section of the push button is pressed for confirmation. Briefly pressing the upper section of the push button will call up the light scene. Pressing on the upper section of the push button for a longer period (> 3 s) will store a new light scene for this push button. Briefly pressing the lower section will result in the light scene being switched off, whereby all selected outputs will be placed in the off-position.

The switch module

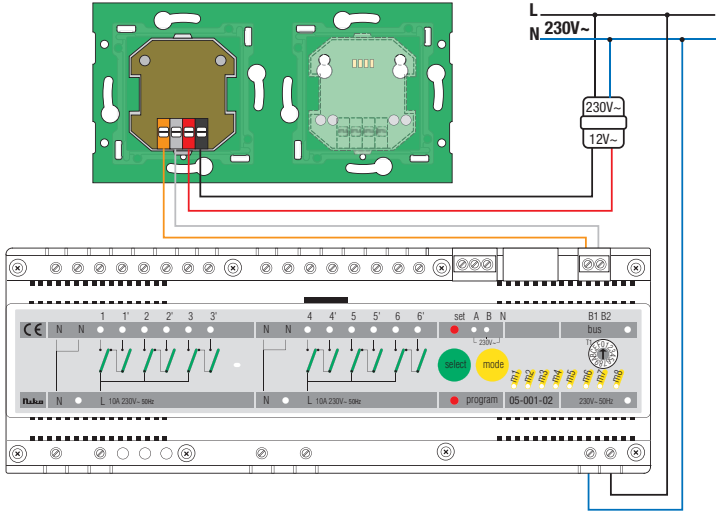
Mode	External input	Function	Rotary switch T1
m1		ON/OFF = ON = OFF	irrelevant
m2		ON	
m3		OFF	
m4	NOT POSSIBLE		
m5		PULSE	irrelevant
m6		TIME-DELAYED EVANESCENT ON delay start	delay 0 = 10" 1 = 1' 2 = 2' 3 = 3' 4 = 4' 5 = 5' 6 = 6' 7 = 7' delay 8 = 8' 9 = 9' A = 15' B = 30' C = 45' D = 1h E = 1,5h F = 2h
m7		TIME-DELAYED ASCENDING ON delay start	
m8		INTERMITTENT (rhythm 1,5")	irrelevant
m11		TIME-DELAYED EVANESCENT ON delay start	delay 0 = 0,5" 1 = 1" 2 = 2' 3 = 3" 4 = 4" 5 = 5" 6 = 6" 7 = 7" delay 8 = 8" 9 = 9" A = 15" B = 20" C = 25" D = 30" E = 40" F = 50"
m12		TIME-DELAYED ASCENDING ON delay start	
m13		MULTI-WAY SWITCH START STOP sequence	delay 0 = 10" 1 = 1' 2 = 2' 3 = 3' 4 = 4' 5 = 5' 6 = 6' 7 = 7' 8 = 8' 9 = 9' A = 15' B = 30' C = 45' D = 1h E = 1,5h F = 2h
m14		ATMOSPHERE ON summon atmosphere	irrelevant
m15		ATMOSPHERE ON/OFF summon atmosphere atmosphere OFF	irrelevant

Working with operation times for the switch module

An operation time can be entered for switch module modes M2 (on) and M3 (off). To do this, the setting wheel T1 is placed in the correct position during programming. This function is particularly useful when operating master functions (master-on or master-off). For this type of function, the operation must be carried out consciously, as unintentionally pressing the master-off button should not result in putting everyone in the dark, unless, in fact, this was the intention. Furthermore, this function can also be used if different lighting groups in a room should be switched on or off consecutively. Briefly pressing will then result in the switching on of the first group. By pressing longer, a second group will be switched on, and if the push button is pressed even longer, another lighting group will come on. The same method can be used for switching groups off. By pressing the push button for a long period, all functions will be carried out, even those that have been programmed using short presses.

Connection

The switch module has 2 pre-wired, separated circuits with single-pole relay output contacts (1 x 3 and 1 x 6 contacts). In addition, there are 3 individual output circuits, 1 of which is provided with a two-way contact (outputs 6 and 6'). This makes a total of 12 outputs. If more outputs are required, a parallel connection between several modules can be made on the bus, whereby the polarity of the bus must be taken into account. Output B1 of one module must therefore be linked to output B1 of the other module. The same applies for the bus connection B2. One of the modules will provide the power supply for the bus. The LED lights (1 LED per installation). The other modules have their power supply switched off. This takes place automatically. Both the neutral conductor and the switched phase are available on the output terminals. After a power cut, the outputs that had been active will again be placed in the on-position. In order to avoid a current peak, this takes place with a short delay. For every switch module, it is possible to arrange for a feedback message on the LED of the bus push button on 3 outputs (10, 11 and 12). The power supply for these LED's is provided by an external transformer with 8 or 12 V~. The feedback does not take place via the bus, and requires 2 additional conductors on the bus cable (2 conductors for the first LED + 1 conductor for each additional LED).



The switch module also has two 230V inputs available, which can be used either as switch input or as logic input.

Attention!

The first six outputs may be protected separately. With multi-phase mains, however, the same phase must be used within this group of 6 outputs. It is possible to connect the second group of 6 outputs (7 to 12) to another phase.

Load table for the outputs of the switch module

a. Load table for outputs 1 - 5 and 7 – 12

1. Fluorescent lamps with a conventional ferromagnetic ballast, not compensated or with C-series compensation: 230V~, 1 500W (23 x 65W), 11 x (2 x 65W) —> 60 000 switches
2. Fluorescent lamps with a conventional ferromagnetic ballast and with C-parallel compensation: 230V~, 260W (4 x 65W at 7µF) —> 15 000 switches
3. Capacitive load: 230V~, capacitor 24µF (ION = 130Apeak) —> 18 000 switches 230V~, capacitor 80µF (ION = 195A peak) —> 3 000 switches
4. Fluorescent lamps with an ECG: 230V~, 10 x (2 x 58W) or 18 x (2 x 36W) —> 22 000 switches (with Siemens-RF ballast: 22µF, 10 Ohm, 0,52A)
5. Light bulbs (test: 5s on, 55s off):
   230V~, 1 000W (5 x 200W), ION = 71Apeak —> 60 000 switches
   230V~, 2 000W (10 x 200W), ION = 135Apeak —> 10 000 switches
   230V~, 550W (2 x 200/1 x 150W), ION = 22Apeak —> 180 000 switches

230V-halogeenlampen (resultaten zie ook 5.)
   230V~, 300W, ION = 17A peak —> 600,000 switches
   230V~, 500W, ION = 28A peak —> 400,000 switches

Halogen lamps 12V with ferromagnetic transfo
   230V~, 600VA, ION = 55A peak —> 50 000 switches

AC-motors
   230V~, 17A eff on, 3.7A eff off, cos. phi = 0.6 —> 250,000 switches
   230V~, 21A eff on, 6.6A eff off, cos. phi = 0.6 —> 150,000 switches

b. Output 6 and 6'

Relay 6 is different from the other relays of the switch module. We are dealing here with a relay with a two-way contact 6 and 6'. Niko strongly recommends NOT using these contacts for strongly inductive loads such as parallel-compensated fluorescent lamps.

A number of limitations exist regarding the switching of VLSV. Please contact the Niko Customer Service.

The switch module memory 05-000-19

The switch module is fitted with a memory (EEPROM). This can be removed from the switch module without opening or disconnecting the module. The switch module memory is divided in equal blocks, also called records. A record defines the connection between 1 output and 1 sensor (bus push button, interface or detector), taking into account the mode and possible parameters. The switch module has 254 records available. The memory of the compact switch module is not exchangeable.

Technical specifications

Ambient temperature: 0°C to 50°C

Power supply switch module: 230V~/5W ±10%/50Hz

2 connectors: per connector max. 4 x 1,5mm^2 or 2 x 2,5mm^2

Mains connection: 230V~/10A

5 x 2 terminals: max. 4 x 1,5mm^2 or 2 x 2,5mm^2 per terminal

Outputs: 230V/10A, 1 x 6 N.O. + 1 x 3 N.O. + 2 x N.O. + 1 x two-way = 12 outputs

2 x 8 connectors: max. 4 x 1,5mm^2 or 2 x 2,5mm^2 per connector

Bus connection: 9V DC (VLSV, very low safety voltage)

2 terminals: max. 2 x 1,5mm^2 per terminal

Output for lighting bus push buttons: by means of a separate power supply (bell transformer, 8 to 12V AC), the LED bus push buttons can be lit or feedback can be provided on the status of outputs 10, 11 and 12. For this reason, 4 terminals have been provided on the switch module

4 terminals: max. 2 x 1,5mm^2 per terminal

External 2 x 230V~ inputs:

3 terminals, max. 2 x 1,5mm^2 or 1 x 2,5mm^2, 230V~, 5mA, per terminal

2 inputs with common N

Non-erasable EEPROM memory (2Kbyte)

Dimensions (H x W x D): DIN housing with a width of 14 modules: 88 mm x 251 mm x 60 mm

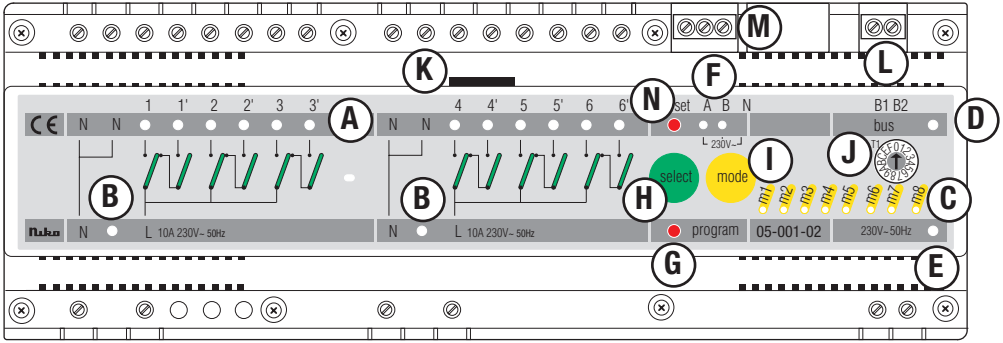
Colour: grey RAL 7035

nv **Niko** sa Industriepark West 40, BE-9100 Sint-Niklaas, Belgium — tel. +32 3 760 14 70 — fax +32 3 777 71 20 — e-mail: support@Niko.be — www.niko.be

4.2. THE SHUTTER MODULE 05-001-02

Description

The shutter module is a modular central control unit for shutters and sunshutters that can be mount on a DIN-rail in a distribution box. It has a width of 14 modules and is fitted with a Nikobus-connection to which sensors (bus push buttons, interfaces) and other modules can be linked. A parallel connection between several modules can be made via the bus. Two pre-wired, separated circuits with 3 double relay outputs, each with electrical interlocking (6 motor controls). There is a choice of 7 functions and 16 time frames that can be set for the run time of the motor per bus push button function and 3 operating times. There are two 230V inputs with logic functions, and diagnostic reporting for bus short-circuits, bus polarization errors, bus power supply problems and memory communication errors. Fixed switching delay of 0.5 s. in case of sudden change of rotation. It is also possible to operate the outputs manually.



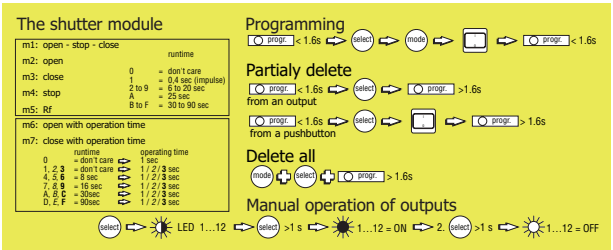
LED-indicaties:
- **(A)** 6 x 2 for outputs
- **(B)** 2 for power supply outputs
- **(C)** 8 for modes
- **(D)** 1 for Nikobus
- **(E)** 1 for active supply of the shutter unit
- **(F)** 2 for external 230V~ inputs

(G) Programming key: set with screwdriver
(H) Output selection key: to select 1 of the 6 outputs
(I) Mode selection key : to select 1 of the 7 modes
(J) Time switch : to set time
(K) Non-volatile EEPROM-memory
(L) Bus connection
(M) External 230V-inputs with logical functions
(N) SET selection key: to select external inputs A and/or B
Sound Signal: short signals: program mode
long signals: sensor recognition
double short signal: erase

Manual operation of the outputs

During normal operation, it is possible to manually select the outputs by briefly pressing the select-button. The corresponding output LED will then start blinking. By pressing the select-button for a longer time (>1 s), the selected output can be activated. On releasing the select-button, the selected output will open. When switching on a relay, a beep tone will be heard. If no operation of the select-button takes place during 3 s while a LED is blinking, the module will return to its normal position. This manual operation can be useful when, for example:

- The bus has not yet been installed.
- Operating the outputs following a bus fault (short-circuit or interruption).
- Testing or locating output circuits.



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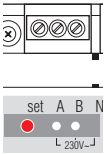


External 230V~ inputs with logic functions

The 230V inputs A and B can be used in two ways. First of all, they can be used as switch input. A function of the shutter module will carried out when the input turns high or low. The second way in which the 230V inputs can be used is as a condition. Here, the high or low state of a 230V input is considered as a precondition for either carrying out or not carrying out other bus telegrams.

For a detailed description of the options, refer to Chapter 7: “Use of the 230V~ inputs”. The description given there is valid for the switch module, the shutter module and the dimcontroller.

The different modes or functions

7 modes can be programmed for the shutter module:

M1: open/stop/close: two-button operation

This function programs the upper and lower sections of a bus push button at the same time. If the upper section of the push button is pressed, the shutter will open. Pressing the lower section of the push button will close the shutter. In doing this, it is possible to set the run time by means of the setting wheel T1. When the shutter is moving (either going up or going down) and either the upper section or the lower section of the bus push button is pressed, the stop function will be carried out (this is always the case when the run time is switched off). During programming, it makes no difference whether the upper section or the lower section of the bus push button is pressed for confirmation.

Setting run times for M1 up to and including M5 via T1

0 = switched off
1 = 0,4s (impulse control)
2 = 6s
3 = 8s
4 = 10s
5 = 12s
6 = 14s
7 = 16s
8 = 18s
9 = 20s
A = 25s
B = 30s
C = 40s
D = 50s
E = 60s
F = 90s

M2: open: one-button operation

It is only possible to open a shutter with this function. The run time is set by means of the setting wheel T1.

M3: close: one-button operation

It is only possible to close a shutter with this function. The run time is set by means of the setting wheel T1.

M4: stop: one-button operation

A bus push button that has been programmed with this function will always stop the shutter when it is moving.

M5: RF mode open / stop / close: four-button operation

Mode M5 is used in combination with the RF push buttons. This is a four-button operation. Pressing the RF bus push button for shutters on the upper left section will result in opening the shutter. Pressing the lower left section will close the shutter. Pressing on the right (either the upper or the lower section) will make a moving shutter stop. The run time is set with the setting wheel T1.

M6: open with operation time: one-button operation

When opening all shutters simultaneously, it is important that this function is carried out consciously. An operation time for the push button can be determined by means of function M6. As the shutter module only has one setting wheel available, the number of run times for this function is limited.

M7: close with operation time: one-button operation

When closing all shutters simultaneously, it is important that this function is carried out consciously. An operation time for the push button can be determined by means of function M7. As the shutter module only has one setting wheel available, the number of run times for this function is limited.

Run times and operation times for M6 and M7 (To be set via T1)

rotary switch (T1)	runtime (T2)	operation time (T3)
0	-	1s
1	-	1s
2	-	2s
3	-	3s
4	8s	1s
5	8s	2s
6	8s	3s
7	16s	1s
8	16s	2s
9	16s	3s
A	30s	1s
B	30s	2s
C	30s	3s
D	90s	1s
E	90s	2s
F	90s	3s

Working with operation times for the shutter module

If the button for putting all the shutters up or down is pressed by accident, this should not result in the function actually being carried out. The functions M6 and M7 can be used to prevent such unintentional actions. With these functions, an operation time for the push button can be determined prior to the function being carried out. Compare also with mode M6 and M7.

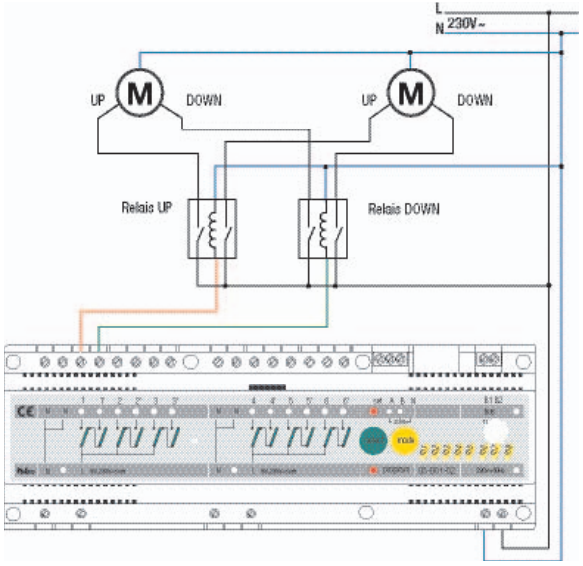
When pressing the push button for a longer time, all the functions will be carried out, even those that have been programmed under short pressing. As a result of this, it is, for example, possible to switch a lighting group on or off by briefly pressing a button, while pressing the same button for a longer time results in the closing or opening of a shutter.

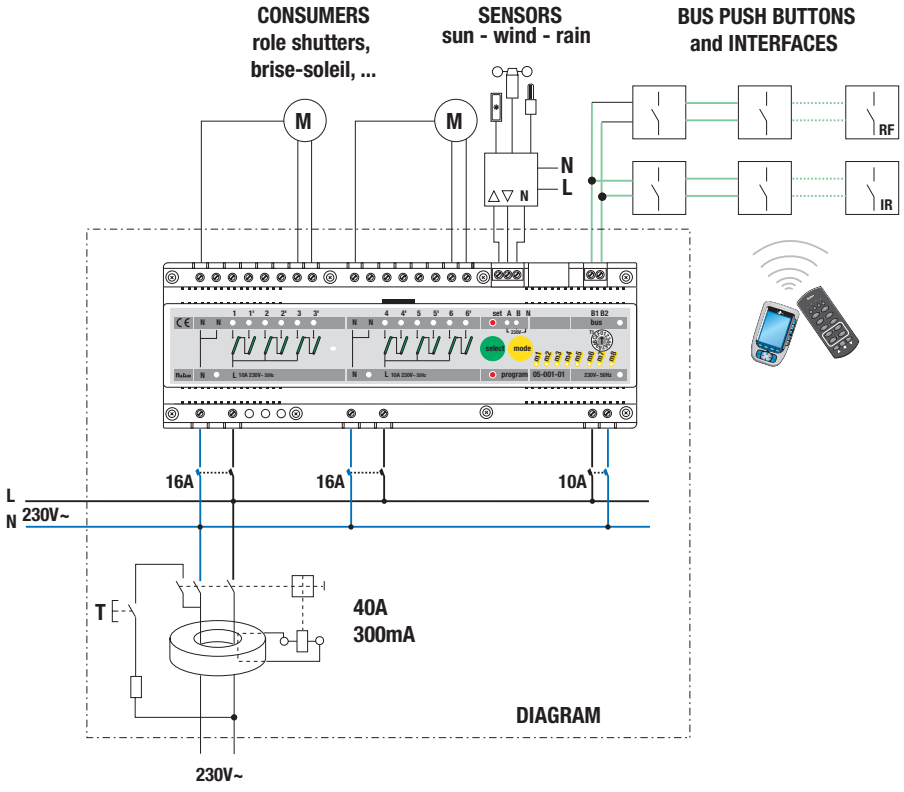
Connection

The shutter module has been divided into two groups of three motor outputs. Per group, protection can be provided using 16A circuit breakers. A 230V mains supply is required for the operation of the module. Protection of this circuit requires a 10A (max.) circuit breaker. If a number of shutters have to be controlled, several shutter modules can be connected to the Nikobus in parallel. The polarity must then be respected. In practice, this means that all terminals B1 must be linked together, and the same applies for all terminals B2. In addition, via an external 230V power supply, the contacts of, for example, wind, sun and rain detectors can be connected to the module by means of the 230V~ A and B inputs.

The shutter module				
Mode	**External input**	**Function**	**Rotary switch**	
m1	NOT POSSIBLE			
m2		OPEN	0 = runtime switched off 1 = 0,4" 2 = 6" 3 = 8" 4 = 10" 5 = 12" 6 = 14" 7 = 16"	8 = 18" 9 = 20" A = 25" B = 30" C = 40" D = 50" E = 60" F = 90"
m3		CLOSE		
m4		STOP		
m5		OPEN CLOSE		
m6		NOT POSSIBLE		
m7		NOT POSSIBLE		

Shutter motors must **never** be connected in **parallel**, as there must always be an electrical separation of the circuits. Disconnection relays are used for this purpose.





To control DC motors, this diagram is used.

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The memory of the shutter module 05-000-19

The shutter module has an EEPROM memory. This can be removed from the shutter module without opening or disconnecting the module. The shutter module memory is divided in equal blocks, also called records. A record defines the connection between one output and one sensor (bus push button, interface or detector), taking into account the mode and possible parameters. The shutter module has 254 records available. For a calculation of the records required or used in large installations, please call the Niko Help-desk.

Technical specifications 05-001-02

Ambient temperature: 0°C to 50°C
Power supply for the shutter module: 230V~/5W ±10%/50Hz
2 terminals: per terminal max. 4 x 1,5mm^2 or 2 x 2,5mm^2
Mains connection: 230V/10A
2 x 2 terminals: max. 4 x 1,5mm^2 or 2 x 2,5mm^2 per terminal
Outputs: 230V/10A, 6 outputs
2 x 8 terminals: per terminal max. 4 x 1,5mm^2 or 2 x 2,5mm^2
Bus connection: 9V DC (VLSV, very low safety voltage)
2 terminals: max. 2 x 1,5mm^2 per terminal
External 2 x 230V inputs:
3 terminals: max. 2 x 1,5mm^2 or 1 x 2,5mm^2, 230V~, 5mA per terminal, 2 inputs with common N
Non-erasable EEPROM memory (2Kbyte)
Dimensions (H x W x D): DIN housing 14 modules wide: 88 x 251 x 60mm
Colour: grey RAL 7035

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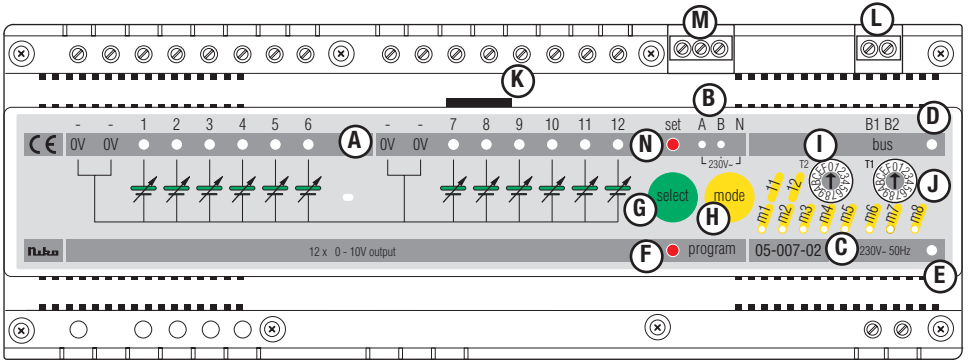
4.3. THE DIM CONTROLLER 05-007-02

Description

The dimcontroller is a modular control unit that can be mounted in a distribution box on a DIN-rail. It has a width of 14 modules, and is supplied with a Nikobus connection to which sensors (bus push buttons, interfaces) and other modules can be connected. A parallel connection between several modules can be made via the bus. There is a choice of 10 different functions. Using the dim-controller, light scenes can be created by means of the Nikobus. These light scenes are written into a memory, which results in the user being able to directly call up a certain light scene by pressing one single button without having to dim every individual lamp manually. The different lighting scenes are set by the user himself, and can easily be modified. Setting the light scene takes place using the Nikobus push buttons.



LED-indications:
- **(A)** 12 for outputs
- **(B)** 2 for logic inputs
- **(C)** 8 for modes
- **(D)** 8 for modes
- **(E)** 1 for power supply of the dim controller

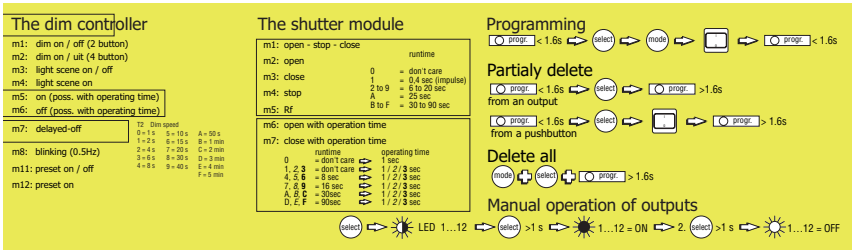
(F) Programming key: set by using a screwdriver
(G) Output selection key : to choose 1 of the12 outputs
(H) Mode selection key: to choose 1 of the 10 modes
(I) (J) Time switches T1 & T2 : to set the time
(K) Non volatile EEPROM memory
(L) Bus connection
(M) External 230V inputs
(N) SET selection key: to choose 1 of the 2 external inputs
Acoustic signal: short signals : program mode
long signal : contact address recognition
double short signal: erase

The dimcontroller has 12 voltage-controlled 0-10V outputs. These outputs control one or more power dimmers. At 0V, the connected lamp will be fully turned off. There is an analog control voltage over the entire 0-10V range. At 10V, the lamp will be burning at 100%.

The general principles are identical to the principles of the switch module. The controller also has 2 logic inputs (230V~) and diagnostic reporting.

Manual operation of outputs

During normal operation, it is possible to select the outputs manually by briefly pressing the select button. By pressing longer (>1s), the output can be switched on or off. This can be useful when, for example:
-The bus has not yet been installed.
-Operating the outputs following a bus fault (short-circuit or interruption).
-Testing or locating output circuits.



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Diagnostic reporting

During normal operation (not during programming), continuous diagnostic reporting takes place on the mode LEDs:

m1 Lights up on receipt of a correct Nikobus telegram (blinks when the data is incorrect).

m2 Blinks in case of short-circuit or bus polarization errors (e.g., mix-up of the bus polarity between 2 modules).

m3 Blinks in case of errors in the bus power supply (bus power supply circuit error).

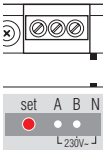
m4 Blinks in case of a memory communication error (e.g., EEPROM error) or when an incorrect type of module is being used (e.g., installation of shutter module memory in a dimcontroller) or if the memory has not yet been initialised (follow the “delete all” procedure at first use).

Diagnosis reporting for the compact dim controller 05-008-02

During normal operation (not during programming) there is continuous diagnosis reporting on the 7-segment display:

- a horizontal dash lights in case a correct Nikobus telegram is received
- a capital A blinks in case of short circuit or polarization errors (e.g. change in bus polarity between 2 modules)
- a small b blinks in case of bus power supply errors (circuit defect)
- a capital C blinks in case of a memory communication error (e.g. EEPROM defect) or in case a wrong module type is used (e.g. shutter control module memory located in a dim controller).

External 230V inputs with logic functions



The 230V inputs A and B can be used in two ways. First of all, they can be used as switch input. When the input turns high or low, a function of the dimcontroller will be carried out. The second way in which the 230V inputs can be used is as a condition. Hereby, the state of a 230V input being high or low is considered as a pre-condition for either carrying out or not carrying out other bus telegrams.

For a detailed description of the options refer to Chapter 7: “Use of the 230V inputs”. The description given there is valid for the switch module, the shutter module and the dim-controller.

The different modes or functions

10 modes or functions can be programmed for the dimcontroller. By adjusting the setting wheels T1 and T2, it is possible to choose to increase and/or decrease dim speeds in different modes. A choice is then made from three curves using setting wheel T1. T2 determines the increase or decrease time.

Adjustment Rotary switch T1	dim-on	dim-off	dim-curve
0	dim speed T2	dim speed 0 = 1s.	
1	dim speed 0 = 1s.	selected dim speed T2	
2-F	dim speed T2	selected dim speed T2	

The minimum increase or decrease time is 1 second. The maximum increase or decrease dim time that can be set is 5 minutes. These settings can be set per consumer and per bus push button. It is possible to set an increase time of 2 minutes for a specific consumer, while the same consumer can be assigned a different increase or decrease time if operated from a different push button.
Times only valid for the default values, see table p.4.26.

M1: dim on/off: two-button operation
With this two-button mode, it is possible to switch a consumer on or off, as well as increasing and decreasing dimming. Briefly pressing the upper section of the bus push button switches the consumer on. The latter will now take up its memorized position, which is the position that the consumer had (for example 60 %) prior to being switched off last. Pressing the lower section of the bus push button switches the consumer off. Pressing on either the upper or the lower section of the bus push button for a longer period results in increased or decreased dimming of the consumer to D-max. or D-min. respectively. For D-max. and D-min., see: “Setting the dim parameters”.

The start-up and slow-down curve can be determined by means of T1. The start-up or slow-down time is set with T2 (See table “Setting T2 and Influence of the dim parameters on the dim speed”).
During programming, the bus push button must be pressed for confirmation. In doing this, it is unimportant whether the upper or the lower section of the bus push button is pressed.

M2: dim on/off: four-button operation
It is possible to switch a consumer on and off and to increase and decrease dimming using this four-button mode. Briefly pressing the upper left section or the upper right section of the bus push button will switch the consumer on. The latter will now take up its memorized position, which is the position that the consumer had (for example 60 %) prior to being switched off last. Briefly pressing the lower left section or the lower right section of the bus push button will switch the consumer off. Pressing the upper left section or the upper right section of the bus push button for a longer time will result in increasing or decreasing dimming of the consumer to D-max. or to D-min. For D-max. and D-min. see: “Setting the dim parameters”.

The start-up and slow-down curve can be determined using T1, while the start-up and slow-down time is set with T2 (See table “Setting T2 and Influence of the dim parameters on the dim speed”). During programming, the bus push button must be pressed for confirmation. In doing this, it is unimportant whether whether the upper or the lower section, or the right or left hand side of the bus push button is pressed.

M3: light scene on/off: four-button operation
With this four-button mode it is possible to switch a light scene on or off, and to increase or decrease the level of the entire light scene. Briefly pressing the upper left section of the bus push button will result in switching the light scene on. The latter will now take on its memorized position. By pressing the upper left section of the bus push button for a longer time, a new light scene can be stored in the memory. Briefly pressing the lower left section of the bus push button will result in switching the light scene off. When the light scene is in the on-position, the entire light scene can be dimmed upwards up to D-max by pressing on the upper right section of the bus push button for a longer period

in time. Pressing the lower right section of the bus push button for a longer period in time will result in dimming the entire light scene downwards up to D-min. for D-max. and D-min., see: Setting of the dim parameters.
By means of T1, the start-up and slow-down curve can be determined. With T2, the start-up and slow-down time is set (See table Setting T2 and Influence of the dim parameters on the dim speed).
During programming, the bus push button must be pressed for confirmation. In doing this, it is unimportant whether the upper or the lower section, or the right or left hand side of the bus push button is pressed.

M4: light scene on: one-button operation

With this one-button operation, a light scene can be switched on. Briefly pressing the bus push button will result in switching the light scene on. By pressing the bus push button for a longer time, it is possible to store a new light scene in the memory. Setting the wheel T1 is not important. If desired, the start-up time can be adjusted with the setting wheel T2 (See table Setting T2 and Influence of the dim parameters on the dim speed).
This function is only applicable to the position (upper section, lower section left or right) of the bus push button that has actually been pressed.

M5: on: one-button operation

This mode is used for switching one or several consumers on. The output will thereby take on its memorized position. This is the position in which the consumer was (e.g., 60 %) prior to being switched off last.
If desired, the start-up time can be set with the setting wheel T2 (See table Setting T2 and Influence of the dim parameters on the dim speed) In this case, T1 is used to enter an operation time (See: Working with operation times for the dim-controller).

Modes M5 and M6 (operating mode):

0	= 0s.
1	= 1s.
2	= 2s.
3	= 3s.
4,...,F	= 0s.

M6: off: one-button operation

This mode is used for switching one or several consumers off. If desired, the slow-down time can be set with setting wheel T2 (see table: Setting T2 and Influence of the dim parameters on the dim speed) In this case, T1 is used to enter an operation time (See: Working with operation times for the dim-controller).

M7: delayed off: one-button operation

In this mode, the light point turns on without delay (start-up time 1 s) after pressing the bus push button. The consumer switches to its memory position. This is the position in which it was (for example 60 %) prior to being switched off last. After the set time period (adjustable with setting wheel T1), the slow-down time starts running. The latter can be set with the setting wheel T2 (See table: Setting T2 and Influence of the dim parameters to the dim speed).

Mode M7: delayed off

0 = 10s.		
1 = 1min.	6 = 6min.	B = 30min.
2 = 2min.	7 = 7min.	C = 45min.
3 = 3min.	8 = 8min.	D = 60min.
4 = 4min.	9 = 9min.	E = 90min.
5 = 5min.	A = 15min.	F = 120min.

M8: blinking: one-button operation

With this function the selected consumers can be made to blink. The blinking frequency is fixed at 1.5 s. The start-up and slow-down speed is always 0 s. The setting wheels T1 and T2 are of no importance here.

M11: preset on/off: four-button operation

By means of a preset, one or several consumers can be forced into a specific position. The last position of the consumer is thereby of no importance. In this function, the last position memory is not taken into account. Function M11 is a four-button operation. The preset can be called up by pressing the upper left section of the bus push button. Pressing the lower left section will result in dimming down to 0% the consumer. If the function is active, pressing the upper right section of the bus push button for a longer time will result in dimming the preset upwards, up to D-max. Pressing the lower right section of the bus push button for a longer time results in dimming the preset down, up to D-min. for D-max. and D-min., see: Setting the dim parameters.

By means of the setting wheel T1, the value of the preset is adjusted. As an example, position “8” will result in an output voltage of 5V. The connected consumer will therefore be dimmed to position 50 %.

In this function, the start-up and slow-down time are equal. This time can be set by setting wheel T2 (see table: Setting T2 and Influence of the dim parameters on the dim speed).

During programming, the bus push button must be pressed for confirmation. In doing this, it is unimportant whether the upper or the lower section, or the right or left hand side of the bus push button is pressed.

Setting T1 for M11 and M12

Setting T1	Output voltage
0 =	1,0V
1 =	1,5V
2 =	2,0V
3 =	2,5V
4 =	3,0V
5 =	3,5V
6 =	4,0V
7 =	4,5V
8 =	5,0V
9 =	5,5V
A =	6,0V
B =	6,5V
C =	7,0V
D =	8,0V
E =	9,0V
F =	10,0V

M12: preset on: one-button operation

By means of a preset, one or several consumers can be forced into a specific position. The last position of the consumer is thereby of no importance. In this function, the last position in the memory is not taken into account.
Function M12 is a one-button operation. The preset is called up by pressing the bus push button.

The value of the preset is adjusted using the setting wheel T1. As an example, position “8” will result in an output voltage of 5V. The connected consumer will therefore be dimmed to position 50 %.

The start-up and slow-down times are equal In this function. This time can be set by setting wheel T2 (see table: “Setting T2 and Influence of the dim parameters on the dim speed”).

Working with operation times for the dim controller

An operation time can be entered in the dimcontroller modes M5 (on) and M6 (off). To do this, the setting wheel T1 is placed in the correct position during programming. This function is particularly useful when operating master functions (master-on or master-off). For this type of functions, the operation must then be carried out consciously, as pressing the master-off button unintentionally should not result in putting everyone in the dark, unless this was indeed the intention.

Modes M5 and M6 (operating mode):

0	=	0s.
1	=	1s.
2	=	2s.
3	=	3s.
4,...,F	=	0s.

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In addition, this function can also be used when different lighting groups should be switched on or off consecutively. Briefly pressing will then result in the switch-on of the first group. By pressing longer, a second group will be switched on and, if the push button is pressed even longer, another lighting group will come on. The same method can be used for switching the groups off.

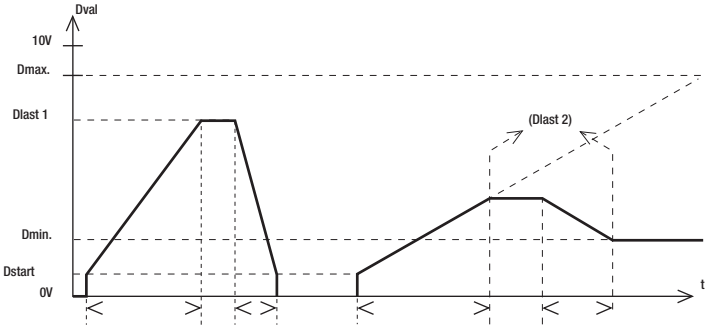
When pressing the push button for a long period, all functions will be carried out, even those that have been programmed under brief pressing.

Setting the dim parameters

Not every dimmer that is controlled by the Nikobus dimcontroller is the same. For Silicon dimmers, for example, a visual change of the connected lamp can no longer be perceived if the control voltage varies between 9V and 10V. For Lightec dimmers, this is already the case from 8V. In addition, these values also depend on the type of lamp connected. Several parameters have been defined in order to absorb these “blind” areas, as, for example, it does not make sense to keep increasing the dimming when a visual change is no longer noticeable.

With the Nikobus dimcontroller, it is possible to set three dim parameters, and to adapt those to level is stored in the memory, and is called D-last. actual situations and needs. These parameters are: D-start, D-min. and D-max. There is also the parameter D-last. This does not need to be set, as D-last is the memory value that is stored after the user has taken some kind of action. Assume that someone dims a lamp to a certain level. This

a. Description of the different dim parameters



D-start

Not all dimmers start with exactly a 0V control voltage. The voltage that is required to see a initial glow in the lamp is usually slightly higher. In order to avoid a delay in the reaction, the D-start parameter can be adapted. D-start can be adapted in 16 steps over the area between 0V and 2V. The standard setting (default value) is 1.6V, optimised for Niko dimmers. As soon as the push button is pressed, the control signal jumps from 0V to D-start.

Dval D-min.

D-min. is the minimum control voltage. If the decreased dimming function is carried out manually, it will be impossible to go below this voltage. In principle, D-min. is always higher than D-start. The D-min. function is to prevent the lamp stopping glowing after it has been dimmed down. In fact, if this were the case, switching the respective lamp on or off would no longer result in a visible reaction. D-last (the memory position) would then be so low, that light is no longer visible. For this reason, it is sensible to set D-min. so that the lamp is still glowing slightly, in order that a visual difference is still seen at the lamp when an “on” or an “off” function is carried out. D-min. can be set in 16 steps within the regulation range between 1V (var. dim speed) (soft dim speed) (man(manual dim speed) (manual dim speed) and 4V. The default value is 1.6V.

D-max.

In principle, D-max. is the voltage at which no further visual change can be perceived when the dimming is increased manually. If this value has been selected, it will only be possible to increase dimming up to this value if this function is carried out manually. If required for certain reasons and situations, D-max. can possibly be reduced to a lower volume. For example, the user may want the maximum dim position for a specific lamp to be only 70 %, instead of 100 %. D-max. can be adjusted in 16 steps within the regulation range between 10V to 6V. The default value is set to 10V.

D-last

D-last is the last light value to have been set, i.e., the level prior to switching off the light. This value can only vary between D-min. and D-max. D-last does not have to be set, but is the result of an action of the user.

b. Influence of the dim parameters on the dim speed

We have seen already that the dim speed (dimming on and dimming off) can be adjusted with the setting wheel on the dimcontroller. The values indicated in table T2 are only applicable with the default values of D-start (1.6V) and D-max. (10V). If these values are closer to each other, the time will become shorter. The opposite applies if the values are further apart from each other.

c. Adjusting and adapting the dim parameters

Three dim parameters can be modified on the dimcontroller. This can obviously take place per output, and it is possible for each output to have a different setting.

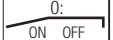
In order to change the dim parameters, the SET button on the dimcontroller should be pressed down for longer than 3.2 s. A beep tone will be heard (once). The desired output can be selected by means of the select button. The output LED will start blinking. The D-max. value of this output will then be transmitted, and the LED of M7 will be on. The desired dim parameter is selected with the mode button; M7 is thereby D-max., M4 = D-min. and M1 = D-start.

A value is set for the selected parameter (see accompanying table) using setting wheel T1. Briefly pressing the program button will transmit the new parameter value. To confirm the new setting, the program button must be pressed for longer than 1.6 s. The routine can be exited by pressing the set button once again. The latest dim value (D-last) will thereby be reduced to the newly set D-max. value.

The dim parameters can be deleted by holding down the set, select and mode buttons together for longer than 3.2 s. Two beep sounds will be heard. The delete function re-loads the default values.

The same principle goes for the **compact dim controller** 05-008-02, with exception of the following rules:

- startup by simultaneously pressing the select and mode key > 3,2s
- exit by simultaneously pressing the select and mode key
- erasing the dim parameter settings can only be done by overwriting them or via the PC software.
- Programming/reading in the Dmin/Dmax/Dstart: indication 1, 4, 7.

The dim controller				
Mode	**External input**	**Function**	**Rotary switch T2**	**Rotary switch T1**
m1		ON/OFF dim-ON to last value	dim-ON speed or dim-OFF speed or dim-ON/OFF speed	
m2				
m3		ATMOSPHERE ON / OFF summon atmosphere (dim-ON) dim-OFF		
m4		ATMOSPHERE ON summon atmosphere (dim-ON)	dim-ON speed	X
m5		ON dim-ON to last value	dim-ON speed	X
m6		UIT dim-OFF to last value	dim-OFF speed	X
m7		TIME-DELAYED EVANESCENT lx delay ON t dim-ON with dim speed 0 to last value	dim-OFF speed	delay 0 = 10" 1 = 1' 2 = 2' 3 = 3' 4 = 4' 5 = 5' 6 = 6' 7 = 7' delay 8 = 8' 9 = 9' A = 15' B = 30' C = 45' D = 1h E = 1,5h F = 2h
m8		INTERMITTENT rhythm 1.5 sec with dim speed 0	X	X
m11		PRESET ON/OFF summon preset (dim-ON) dim-OFF	dim-OFF speed = dim-ON speed	preset 0 = 1,0V 1 = 1,5V 2 = 2,0V 3 = 2,5V 4 = 3,0V 5 = 3,5V 6 = 4,0V 7 = 4,5V preset 8 = 5,0V 9 = 5,5V A = 6,0V B = 6,5V C = 7,0V D = 8,0V E = 9,0V F = 10,0V
m12		PRESET ON summon preset (dim-ON)	dim-ON speed	

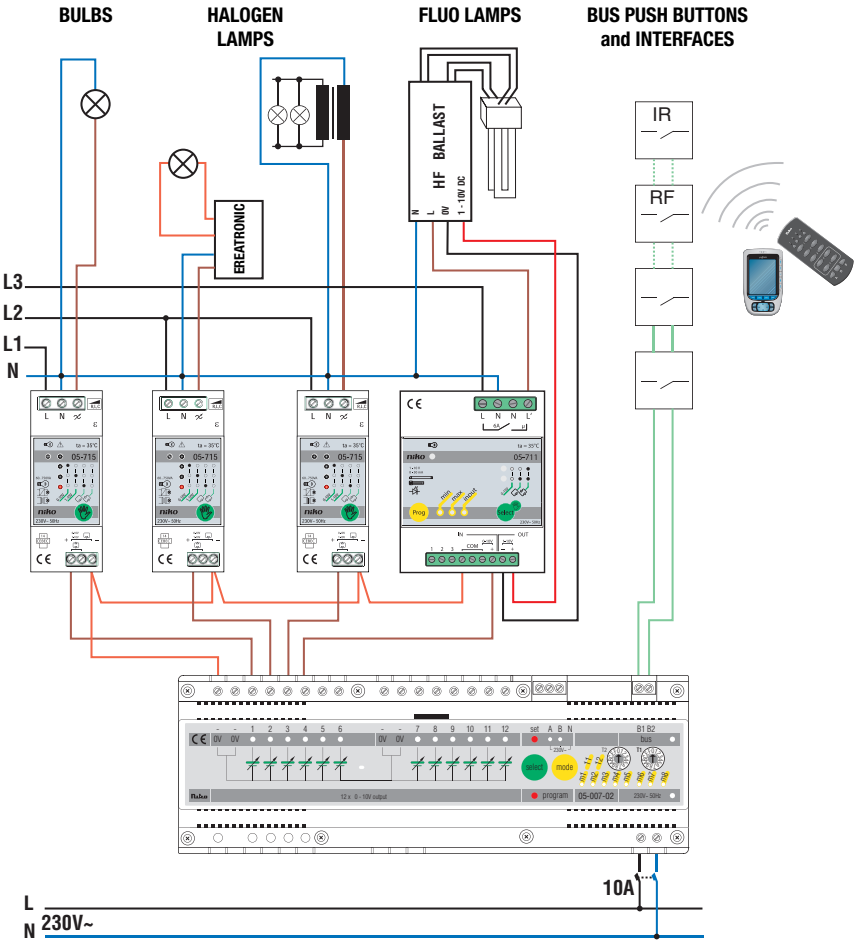
Connection

The supply voltage for the dimcontroller is 230V~. This is fused with a curcuit breaker of max. 10A. There are 12 outputs per dimcontroller, with a voltage control of 0V to 10V. If more outputs are required, a parallel connection can be made between several modules via the bus (also switch or shutter modules). The bus polarity must thereby be taken into account. The output B1 of one module must therefore be connected to output B1 of another module. The same applies for the bus connection B2. One of the modules will provide the power supply for the bus, while the other modules will have their power supply switched off. This takes place automatically.
For the connected dimmers, the control input must be galvanically separated, like the Niko universal dimmer (05-707). Within the controller, the 0V is common (no galvanic separation). The outputs are protected against short-circuit. Any 0-10V compatible dimmer with a galvanically separated control input can be connected to the Nikobus dimcontroller (1/10V current controlled dimmers only via 65-330).

In addition, the dimcontroller has two 230V inputs available, similar to the switch and shutter module. These can be used as switch input or as conditions.

The dimcontroller memory 05-007-19

The dimcontroller is fitted with a memory, which is stored in the EEPROM. It can be removed from the dimcontroller without opening or disconnecting the module. The dimcontroller memory has been split into two banks, which are in turn divided into equal blocks, also called records. A record defines the connection between one output and one sensor (bus push button, interface or detector), taking into account the mode and any possible parameters. The dimcontroller has 217 records available for outputs 1 up to and including 6, and 217 records for outputs 7 up to and including 12. For the calculation of the number of records required or used, please contact the Niko Helpdesk. The memory of the compact dim controller 05-008-02 is non-exchangeable.



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Technical specifications

Ambient temperature: 0°C to 50°C

Dimcontroller power supply: 230V/5W ±10%/50Hz

2 terminals: max. 4 x 1,5mm^2 or 2 x 2,5mm^2 per terminal

Outputs: 12 x 0-10V, 2mA outputs (not suitable for direct control of 1-10V “current sink”-systems, such as electronic pre-switching devices - VLSV):

2 x 8 terminals: max. 4 x 1,5mm^2 or 2 x 2,5mm^2 per terminal

Bus connection: 9V DC (VLSV, very low safety voltage)

2 terminals: max. 2 x 1,5mm^2 per terminal

External 2 x 230V inputs:

3 terminals: max. 2 x 1,5mm^2 or 1 x 2,5mm^2, 230V, 5mA per terminal, 2 nputs with common N.

Non-erasable EEPROM memory (4 Kbyte)

Dimensions (H x W x D): DIN housing 14 modules wide: 88 x 251 x 60 mm

Colour: grey RAL 7035

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4.4. THE WALL PRINTS

Description

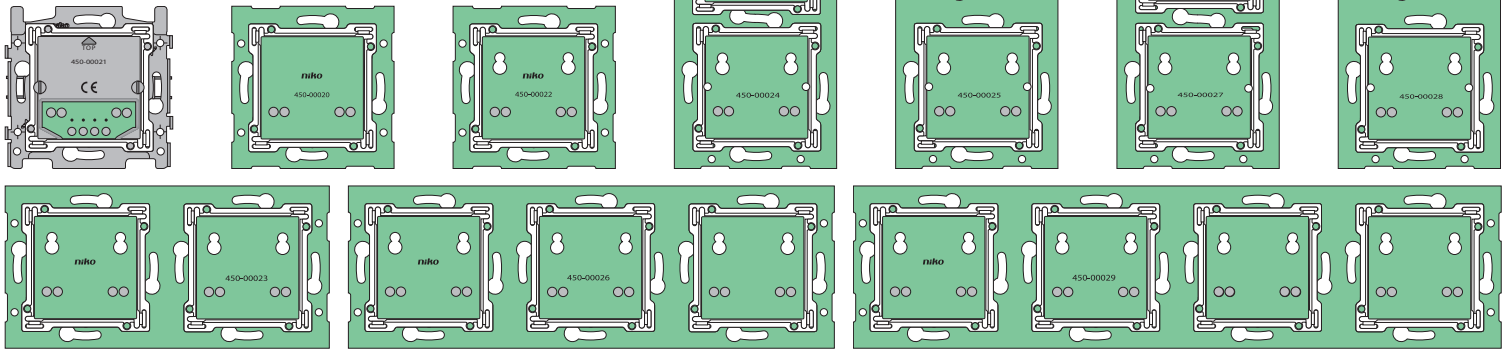
The wall print contains all the mechanical and electrical equipment required to connect bus push buttons to the bus. Horizontal and vertical wall prints for mounting bus push buttons (with corresponding cover panels). The selection of the wall print is therefore dependent on the desired number of push buttons and their horizontal or vertical alignment.

Only one single mounting box is required, irrespective of whether single or multiple wall prints are used. It is optional to work either to the bottom, to the top, to the left or to the right of the flush-mounting box. It is possible to replace the wall print with a larger version, so that the number of push buttons can be easily extended without cutting and breaking into the wall.

Each bus push button is secured to the wall print by means of a central screw.

Wall print overview

Please consult the Niko catalogue or the Niko website (www.niko.be) for an overview of the different wall prints.
Apart from the single wall prints, it is also possible to obtain wall prints for horizontal or vertical mounting, with centre distances of 60 or 71 mm.



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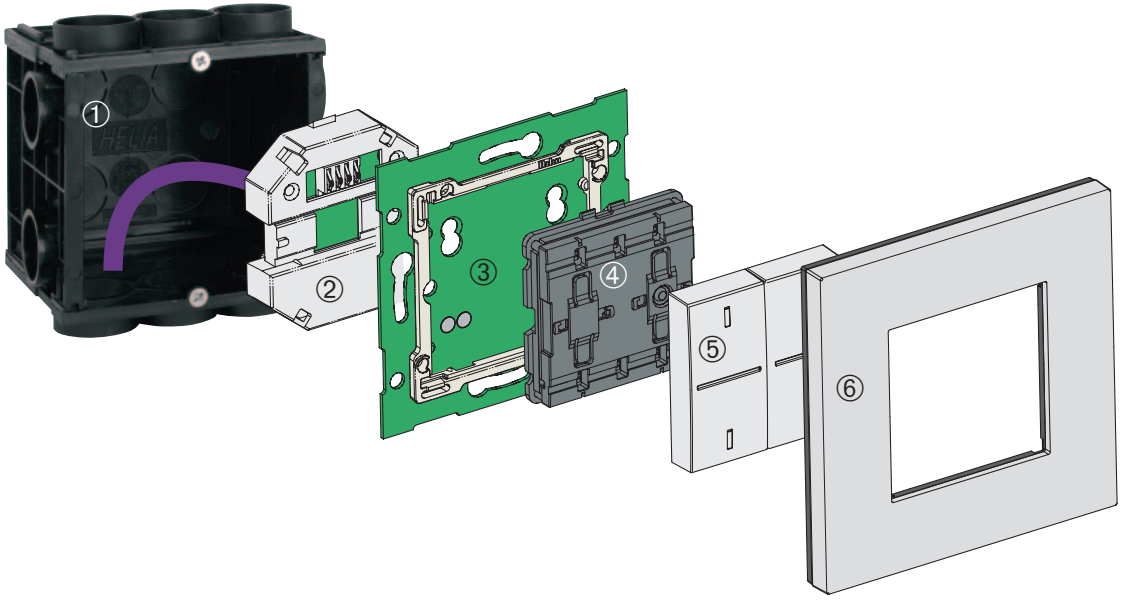
Mounting

Every wall print is provided with slots. The screws of the single mounting box are placed through them in order to fix the wall print to the mounting box. For large wall prints, it is possible to screw the other side of the print against the wall by making use of the screw openings provided. The wall print is obviously positioned in such a way that the connecting terminal is inside the mounting box.

If it is necessary to fit the wall prints to the mounting boxes without using screws, it is possible to make use of a set claws for boxes without screw connection. This set can be ordered separately.

For use on very uneven wall surfaces, or in combination with other metal bridges, as is the case for wall sockets, thermostats, etc., a single wall print with a metal bridge is also available. The connection between several single wall prints with metal bridges is made using a flexible connecting cable with connecting terminals.

① mounting box for screw fitting
② connectionunit
③ wall print
④ bus push-button
⑤ button/central plate
⑥ button with text field



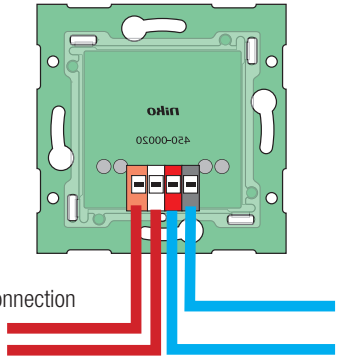
Tip: It is best to use flush-mounting boxes with screws. In this way, the wall prints are fixed to the wall.

Connection

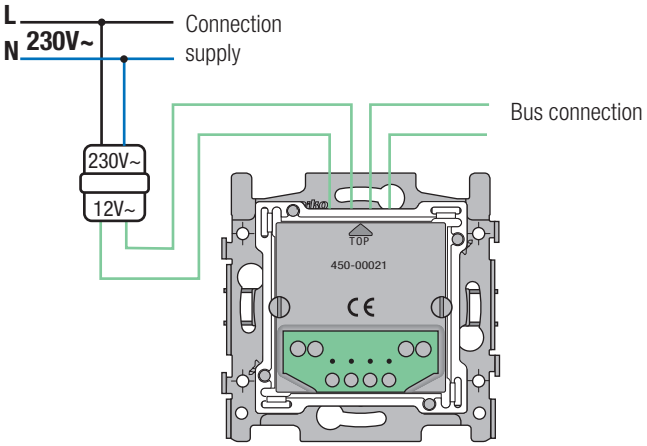
As standard, the wall print is delivered with a four-pole connecting terminal, two connections for the Nikobus and two connections for an LED or an IR-receiver. The 05-012-50 double wall print has a double connecting block. Apart from the bus connection, it is, for example, possible to connect two LEDs or a combination of an LED and an IR-receiver.

For the new wall-mounted printed circuit boards, the following goes:
The simple wall-mounted printed circuit boards 450-00020 and 450-00021 with bridge are provided with a fixed connection terminal. For all other printed circuit boards, connection unit 450-00060 is required. This connection unit can be placed on the wall-mounted printed circuit board on any position (fig.1).

Backside simple wall print 450-00020



IR-bus push buttons



Wall print (p.e.: 450-00021)

Technical specifications

Material: epoxy
Material thickness: 1mm
4-pole connector:
2 connection for the bus (BB) + 2 connections for a LED or power supply or an IR bus push-button (LL).
For 05-012-50 (separate LED control):
8-pole connector: 4 connections for the bus (B1, B1', B2, B2') + 4 connections for LEDs or for the power supply of an IR bus push button.

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4.5. THE BUS PUSH BUTTONS

The bus push buttons have the familiar look of the Niko switches. In the Nikobus home automation system, their function is not that of a switch, but of an information transmitter.

A Nikobus push button is mounted in a single standard mounting box with screw mounting. For mounting under multiple cover panels, no additional mounting boxes are required. The Nikobus push buttons can be extended without cutting and breaking into the wall (refer also to the chapter on Wall prints).
The Nikobus push button does not require any setting or adjusting. The functions of the bus push buttons are not defined by the bus push button itself, but by the settings the installer makes on the modules during programming. During the adjustment of the system, the functions of the bus push buttons are determined by the simple operation of the buttons of the modules. When a bus push button is activated, a telegram containing the address of the bus push button is transmitted to the module via the bus. This telegram transmission takes place using current modulation. Every bus push button already contains a unique address, and addressing the bus push button is therefore unnecessary. For special applications, it is possible to obtain bus push buttons with identical addresses.

If the bus push button is pressed for longer than 8 s, the telegram will automatically be interrupted, and the bus will become free again.

Types of bus push buttons

Several types of bus push buttons are available. A full standard bus push button consists of a base part (the bus push button) and a rocker (the finishing). The rockers must be ordered separately. The rockers are available in all current Niko switch programmes (PR20, PR20 Soft, da Vinci, Cirio, Axend and **Niko** *Pure*, **Niko** *Intense* and **Niko** *Original*).

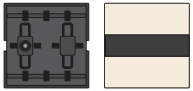
a. The standard bus push buttons

- Single bus push button: this bus push button has two operation positions and is finished with a full rocker.

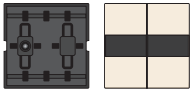
- Bus push button with LED: this bus push button has two operation positions and a red LED. It is finished with a full rocker, fitted with a small window for the LED. In order to control the LED, a separate power supply of 12V~ is required.

- Double bus push button: This bus push button has four operation areas available. It can be finished with two half-rockers or with two half-buttons plus a text field.

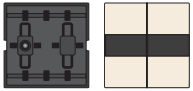
- Bus push button with IR-receiver: this bus push button has two operation areas available and is finished with a full button fitted with a pin for the IR-receiver. A separate power supply of 12V~ is required for the operation of the IR-receiver.



- Double bus push button with IR-receiver: this bus push button has four operation areas available and is finished with two half-rockers plus a text field that is fitted with a pin for the IR-receiver. A separate power supply of 12V~ is required for the operation of the IR-receiver.



- Bus push button with identical addresses and IR-receiver: bus push buttons with identical addresses can be used when several push buttons in an installation must always carry out identical functions. In this case, only one bus push button must be programmed. The other bus push buttons with identical addresses will carry out the same function, because they will place the same address as the programmed push button on the bus. In an installation, a maximum of five groups can be created that use bus push buttons with identical addresses, as there are five separate order references provided. For the new bus push buttons with identical addresses, there is only one reference number, i.e. 05-091-01.



- By using bus push buttons with identical addresses for IR-control, it is possible to save memory records in the modules.

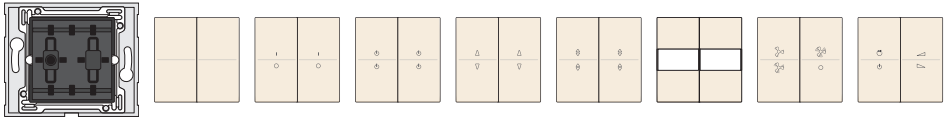
b. Bus push buttons with feedback

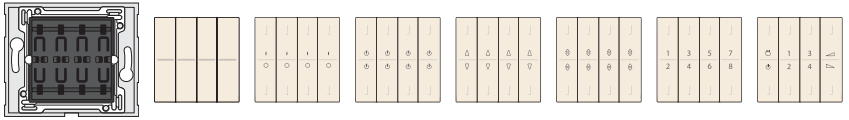
This bus push buttons enables to carry out 2 controls. Feedback via the feedback module 05-207.

c. RF-push buttons

- Any push button from the RF-range can also be used within the Nikobus home automation system. One Niko-RF-receiver is sufficient to translate the signals from all RF-wall transmitters or the RF-hand transmitters to modified Nikobus telegrams, as long as the reception distance is respected.
- Single RF-bus push button: this RF-bus push button has two operation areas available. It is finished with a full rocker, either with or without labelling.

- Double RF-bus push button: this RF-bus push button has four operation areas available. It is finished with two half-rockers, either with or without labelling, or with a 3/4 and a 1/4 rocker.





Mounting

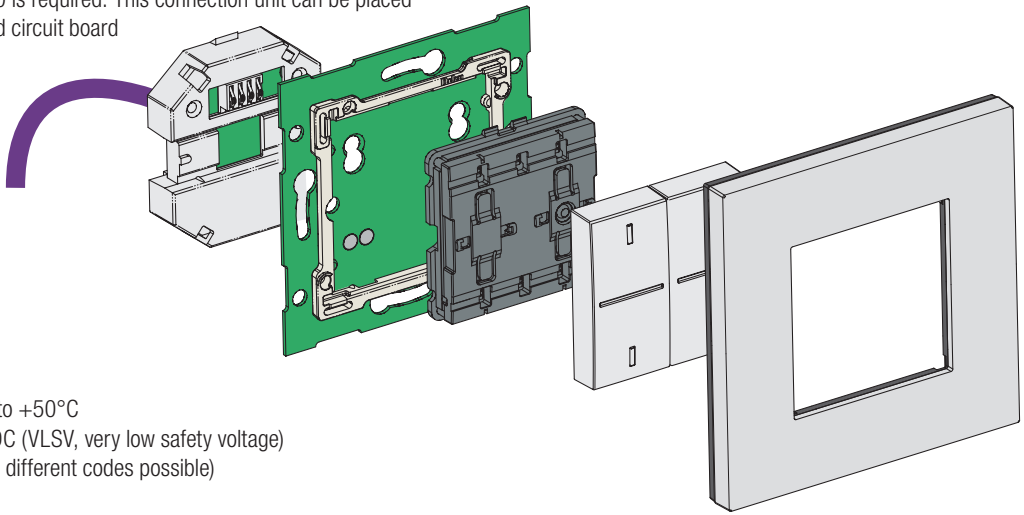
A Nikobus push button can be fixed onto a single standard mounting box, irrespective of whether a single or multiple wall print is used. The bus push button is mounted onto the wall print with a central screw.

For the new bus push buttons, the following goes:
The Nikobus push button can be mounted on a simple standard flush mounting box, regardless of type of wall-mounted printed circuit board (simple or multiple). The bus push button is fixed on the wall-mounted printed circuit board by a simple click system.

Connection

Contact springs at the back of the bus push button ensure the electrical connection between the wall print and the push buttons. The wall print is connected to the Nikobus by a terminal at the back. As a result, the bus push buttons can be dismounted without having to loosen the bus wiring.

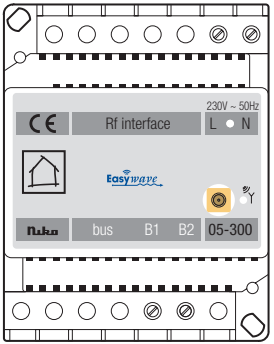
For the new bus push buttons, the following goes:
The simple wall-mounted printed circuit boards 450-00020 and 450-00021 with bridge are provided with a fixed connection terminal. For all other printed circuit boards, connection unit 450-00060 is required. This connection unit can be placed
on the wall-mounted printed circuit board
on any position (fig.1).



Technical specifications

Ambient temperature: 0°C to +50°C
Closed-circuit voltage: 9V DC (VLSV, very low safety voltage)
Address: 22 bit (± 4 million different codes possible)
Max. operation time: 8s
Connection to the Nikobus: two-wire connection

5.1. THE MODULAR RF INTERFACE



Description

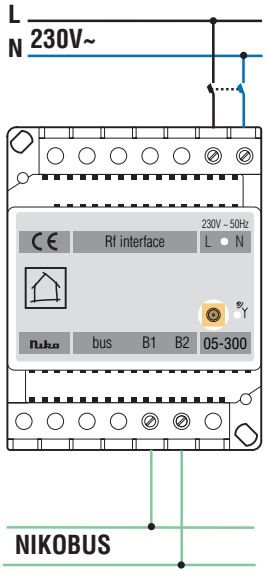
The modular RF-interface is a powerful component when building up a Nikobus home automation system, as it enables wireless operations. When using the RF system, no wiring must be laid to the RF push buttons (wall transmitter). Remote control with hand transmitters is also provided with the RF system.

It is necessary to install an RF-receiver if you intend to carry out operations using the **RF-pushbuttons** on the Nikobus home automation system. Transmission takes place by means of radio waves at the frequency of 868.3MHz, the new European standard. Only products that broadcast only 1% per hour are allowed to use this frequency, which reduces the chance of interference to a minimum.

The system is therefore particularly suitable for specific applications, such as the renovation of classified interiors, extensions of existing electrical installations where breaking into the walls is ruled out, offices with moveable partitions, or in order to avoid complicated wiring.

Connection

The RF-receiver is designed to be mounted in a distribution box. Only 1 RF interface per installation. The latter should preferably not be made from metal, as metal interferes with radio waves. If circumstances require that the modular RF-receiver be placed in a metal box, an optional antenna can be connected, which is then placed outside the distribution box. The antenna is fitted with a 3 m connection cable with connector, and can be connected to all modular Niko-RF-receivers (868.3MHz).



The modular RF-receiver must be connected to a 230V power supply. In addition, two connection terminals are provided for the connection to the Nikobus. In doing this, polarity must be observed, i.e. Terminal B1 is connected to B1 of the modules or of the dimcontroller and B2 is connected to B2 of these modules.

Technical specifications

Power supply: 230V~
Output: Nikobus connection B1/B2

5.2. THE NIKOBUS REMOTE CONTROL OPERATIONS

The RF hand-held transmitter 05-312

The Niko hand-held transmitter can control max. 52 circuits seperately (depending on the setting of the receivers). The hand-held transmitter can be used for 1-button, 2-button and 4-button functions. There is a visual control (LED indication) of the channel selection and control.

- dimensions: W61 x H151 x D21mm
- power supply: via battery (supplied)

The RF hand-held transmitter 05-310

The radio frequency controlled hand transmitter operates at a frequency of 868.3 MHz. There are four channels, with four functions each, and each channel can control one or more Niko RF-receivers. It is fitted with a green LED for checking the battery level. The broadcasting range within a building is at least 30 m, with up to 100 m in the open. The CE symbol has been awarded to the device in accordance with Belgian and European legislation. Normalisation: these products conform to the EC-regulations and comply with the basic requirements of the R&TTE directive: 1999/5/EC. The products may be used in BE / NL/ FR / DE / AT / ES / PT / CH / DK / LU / GR.

Power supply: 2 batteries 1.5V, type AAA - LR03 (not included in the delivery)

Dimensions: 176 x 78 x 146 mm

The RF-mini-transmitter 05-311

The mini-transmitter contains 1 push button, to which a function can be assigned. The transmitter can be used together with the complete range of receivers, and the LED provides a visual check of the operation. Used in the social service sector (e.g. alarm function) or in residential applications.

Standard delivery, including battery.

Broadcasting range: approx. 30 m indoors, 100 m in the open

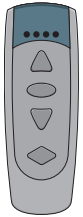
Dimensions: H 56 mm x W 36 mm x D 16 mm

Weight: approx. 21 gram, including battery

Remote control with 5 channels and 3 control keys 05-313

The Niko hand-held transmitter can control max. 15 circuits independently (depending on the receiver settings). The hand-held transmitter can be used for 1-button, 2-button and 4-button functions. Provided with a visual control (LED indication) of the channel selection and control.

- dimensions: W39 x H112 x D18mm
- dimensions with wall-support: W55 x H119 x D20mm
- power supply: via battery (supplied)



The RF-mini-transmitter 05-314

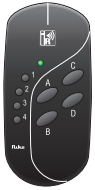
The mini-transmitter has 4 independent push buttons, and can be used together with the full range of receivers. A different function can be assigned to each push button, and a LED provides visual checking of the operation.
Standard delivery including battery and bracket.
Broadcasting range: approx. 30 m indoors, 100 m in the open
Dimensions: H 70 mm x W 40 mm x D 16 mm
Weight: approx. 24 gram, including battery

Mini-transmitter interface 05-315

RF interface for push buttons or switches. The interface converts the push button or switch contacts into an RF telegram. Connection of up to 4 push buttons. The RF telegram is being sent as long as you press the button (max. 10s). Connection of up to 2 switches. When the contact is closed, an RF telegram is sent. When the contact is opened, another telegram is sent. Any programming can be assigned when closing or opening the contact.

- power supply: via a 3V battery, type CR2032 (supplied).
- dimensions: L 30mm x W 28mm x H 9mm

The IR-hand transmitter 4 channels 05-088



The IR-hand transmitter has 4 channels available (4 numeric buttons), and a maximum of 4 functions can be programmed per channel under the letter buttons. The IR-hand transmitter is fitted with a red control LED, and can control one or more Nikobus IR-bus push buttons. Prior to operation, select a channel on the numeric buttons, after which one of the letter buttons can be pressed in order to carry out a function. The operating time between 2 functions should be longer than 100 ms, and each operating button can be programmed separately according to the Nikobus system. It is possible to check whether the battery is empty (flat) by means of a control LED. The latter must light up when one of the channels or one of the operating push buttons is pressed. If this is not the case, the battery is empty. The remote control can be integrated into an existing Nikobus home automation system without any problem.
Power supply: 2 batteries 1.5V, type AAA - LR03 (not included in delivery)

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The Pronto IR universal hand transmitter 05-090-12

The remote control is a universal infrared hand transmitter with an LCD touch screen. This transmitter is fitted with both an IR-transmitter and an IR-receiver. In fact, a learn function makes it possible to “learn” the IR codes of different devices. The learned codes can easily be linked to a button, drawing or graphic picture on the LCD screen. A Nikobus application has been pre-programmed in order to make it possible to operate home automation applications immediately. With this application, it is possible to configure at least 10 rooms or halls. In each room or hall, up to 30 circuits or dimmers and 8 light scenes or presets can be set in a simple manner. You can add light scenes or modify the programming of light scenes by pressing the respective button longer than 3 seconds. The standard Nikobus application, which is part of the delivery, can be easily and quickly adapted and/or modified without the use of additional devices by means of a number of virtual function buttons on the hand transmitter. Using a software package, it is possible to

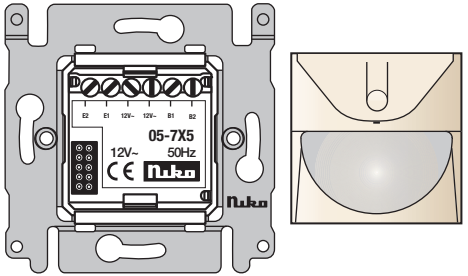
load applications, drawings, and so on via the PC. In addition, it is also possible to program new applications, write macros, combine the standard home automation application with the audio-video remote control, etc., with this software, and the applications can also be loaded in the transmitter or stored as back-up copy on the hard disk of the PC. This software package is available free of charge. The hand transmitter is, however, delivered ready for immediate use: the software is only required to make up special configurations. The hand transmitter can be fitted with a rechargeable battery and a “docking station”.

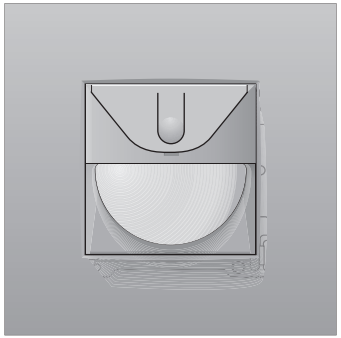
Power supply: 4 batteries 1.5V, type AAA - LR03

5.3. THE NIKOBUS MOTION DETECTOR 05-7X5

Description

The flush-mounted motion detector consists of a flush-mounted actor (05-7X5) and a sensor (XX784) that can be clicked onto the socket. The flush-mounted motion detector is a passive infrared motion switch for indoor use with a 180° detection angle. When a person enters the detection area, the motion detector sends an on-telegram on the bus. When the detection area is clear again, or if no motion can be detected, the Nikobus PIR will send an off-telegram on the bus after a pre-determined delay time has elapsed. Pressing the button at the top of the housing for a longer time period will cause the Nikobus to send the address. For data transmission security, a control is built into the socket of the motion detector that ensures that a telegram can only be sent if the bus is free. In case of a conflict on the bus, the telegram will be re-transmitted automatically.





Connection

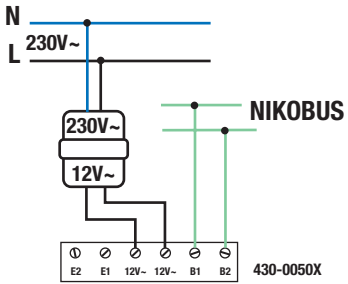
The motion detector requires a power supply of 12V~. A modular safety transformer can be used for this. In addition, the socket of the motion detector is fitted with 2 connection contacts for the Nikobus. B1 and B2 (the polarity) must be respected here, and be connected to the corresponding terminals of the modules. Max. 50 actor/sensor and/or IR-buttons per installation.

Sending an address during programming

Briefly press the manual control. You hear a long tone in confirmation.

Technical specifications

Detection angle: horizontal 180° vertical 85°
Detection area: frontal and sideways approx. 8 m
Switch-off delay time: adjustable from ± 2 s. to ± 30 min
Light sensitivity: 2 to 1.000Lux
Power supply up to 4 actors: 12V~
Power supply from 4 actors onwards: 15…18V DC max. 1A



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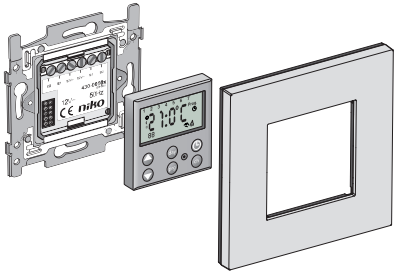
5.4. THE ELECTRONIC CLOCK THERMOSTAT XXX-00500



Description

This thermostat is designed for use in combination with the Nikobus home automation system. The thermostat is used to control a heating or air conditioning installation.

Sensor (A) = the visible electronic component, available in all Niko flush mounting designs and colors, hich, either automatically or after manual operation, sends a switch command to the connected actor.

Actor (B) = the built-in component, which, upon receipt of a command from the connected sensor, ransmits a Nikobus telegram.

Connection

The thermostat requires a power supply of 12V~. A modular safety transformer can be used for this purpose. Moreover, the socle of the motion detector is provided with 2 connection contacts for the Nikobus. The polarity has to be taken into account: B1 and B2 have to be connected to the corresponding terminals of the modules. Max. 50 actor/sensor and/or IR push buttons per installation.

Sending an address during programming

If you wish to program the sensor, place the sensor on the actor. You can modify the temperature manually, or a command is sent on the Nikobus. If the thermostat is used to control a heating installation, use mode M1 of the switch module. Enter the switching module's programming mode. Manually increase the temperature via symbool until symbool is displayed. The command has now been sent and programmed on the bus.

If the thermostat is used to control an airconditioning installation, use M3 of the switch module. Enter the switching module's programming mode. Manually decrease the temperature via symbool until a switch command is given. Then place the switch module in M2 and increase the temperature until a switch command is again given.

Technical specifications

- Day/week programming
- Setting precision: ±0.5°C
- 30min. power reserve in case of power cut, the memory is saved
- Max. setting of 24 switch movements
- 3 types of temperature levels: day, night, and antifreeze level
- 6 speed selections: in function of the dimensions of the location (peak-to-mean-line value)
- 2 external inputs for switch or push button: power supply at the actor input = power supply (12V~). Enables control of the sensor from different locations.

Installation instructions

- mounting height: ±1.5m
- free air circulation
- do not place in direct sunlight
- do not directly expose to a heating element

5.5. THE ELECTRONIC SWITCHING CLOCK XXX-78200

Description

The sensor/actor product range offers a number of comfort functions in combination with several switching functions.
Sensor (A) = the visible, electronic component, available in all Niko flush mounting designs and colors, which, either automatically or after manual operation, sends a switch command to the connected actor. Actor (B) = the built-in component, which, upon receipt of a command from the connected sensor, transmits a Nikobus telegram and switches the connected load.

Connection

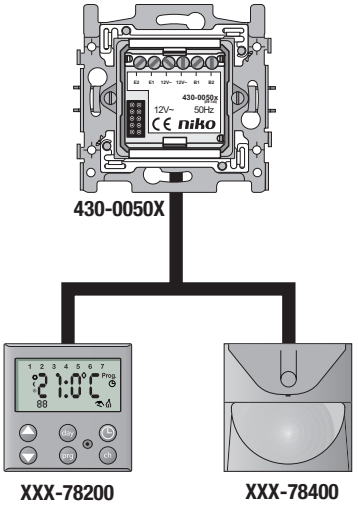
The switching clock requires a power supply of 12V~. A modular safety transformer can be used for this purpose. Moreover, the socle of the motion detector is provided with 2 connection contacts for the Nikobus. The polarity has to be taken into account: B1 and B2 have to be connected to the corresponding terminals of the modules. Max. 50 actor/sensor and/or IR push buttons per installation.

Sending an address during programming

Press the arrow key to close / open the contact. You hear a low tone in confirmation.

Technical specifications

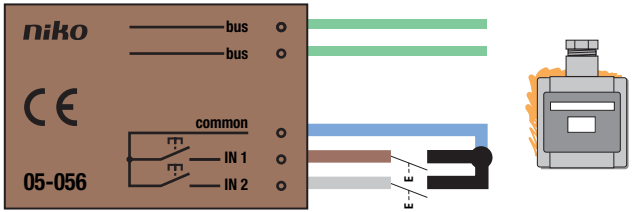
- Day-/week programming
- 30min. power reserve in case of power cut, the memory is saved
- Manual operation possible
- Max. setting of 24 switch movements
- Min. switching time: 1min.
- Flush mounting height: 0,8m to 1,5m



430-0050X

XXX-78200 XXX-78400

5.6. THE INTEGRATED INTERFACE FOR PUSH BUTTONS 05-056



Description

The integrated interface for push buttons converts external N.O. contacts into a Nikobus telegram. As long as the contact is closed, the telegram will be transmitted onto the bus (max. 8 s). If the bus is busy when the push button interface wants to transmit the telegram, the telegram will be lost. The connected push button must then be pressed again.

This interface may only be used with contacts that are only closed for a short period, such as push buttons. In case of a hold contact, the bus will remain busy for a maximum of 8 s. As a result, no other operations will be able to be carried out in the home automation system during this time.

Two push buttons can be connected per push button interface. The interface also has a connection to the Nikobus. The push button interface is very suitable for use in combination with, for example, Hydro55+ push buttons.

Connection

Two inputs have been provided for external push buttons, as well as one output for the connection to the Nikobus. The power supply for the interface and the N.O. contacts is supplied by the Nikobus. A separate power supply is not required.

The polarity must not be taken into account for the bus connection. Place the interface behind the contact (see fig.).

Technical specifications

Ambient temperature: 0°C to 50°C
Dimensions: 27 x 40 x 5mm

5.7. THE INTEGRATED INTERFACE FOR SWITCHES 05-057

Description

The integrated interface for switches converts bistable contacts into two Nikobus telegrams. When the contact closes, the first telegram is transmitted onto the bus (300 ms). When the contact opens, the second telegram is transmitted onto the bus (300 ms). There must be a pause of at least 200 ms between the opening and the closing. The two transmitted telegrams are different from one another. When the contact is closed, any program can be carried out on the Nikobus modules. When the contact is open, another, possibly completely different, program can be carried out.

The interface for switches is only suitable for functions with a low operating frequency (e.g. door contacts, window contacts, traditional switches, etc.).

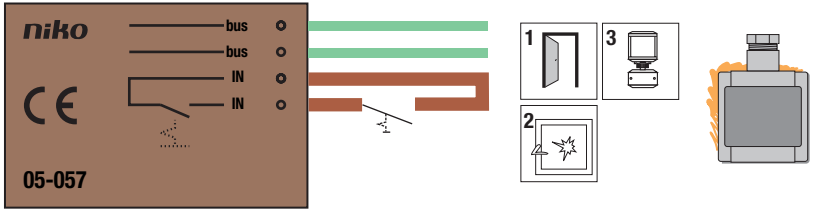
The integrated interface for switches is very suitable for the connection of traditional switches of the Hydro 55+ type (splash-proof).

Connection

One input is provided for the switch and one output for the connection to the Nikobus. The power supply of the interface is provided by the Nikobus; no separate power supply is therefore required. It is not necessary to take polarity into account in the connection of the bus. Place the interface behind the contact (see fig.).

Technical specifications

Ambient temperature: 0°C to 50°C
Rest period: min. 200 ms. between opening and closing
Dimensions: 27 x 40 x 5mm



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5.8. THE MODULAR TWO-CHANNEL CLOCK 05-183

Description

The modular two-channel clock enables to switch electrical consumers according to a week program with day blocks. The digital switching clock is connected to the bus via the binary input module.
If a contact closes, a first telegram is sent to the bus. If this contact opens, a second telegram is sent to the bus. The two telegrams that are sent are different. When closing the contact, any programming can be carried out on the Nikobus modules. When opening the contact, another programming can be carried out.

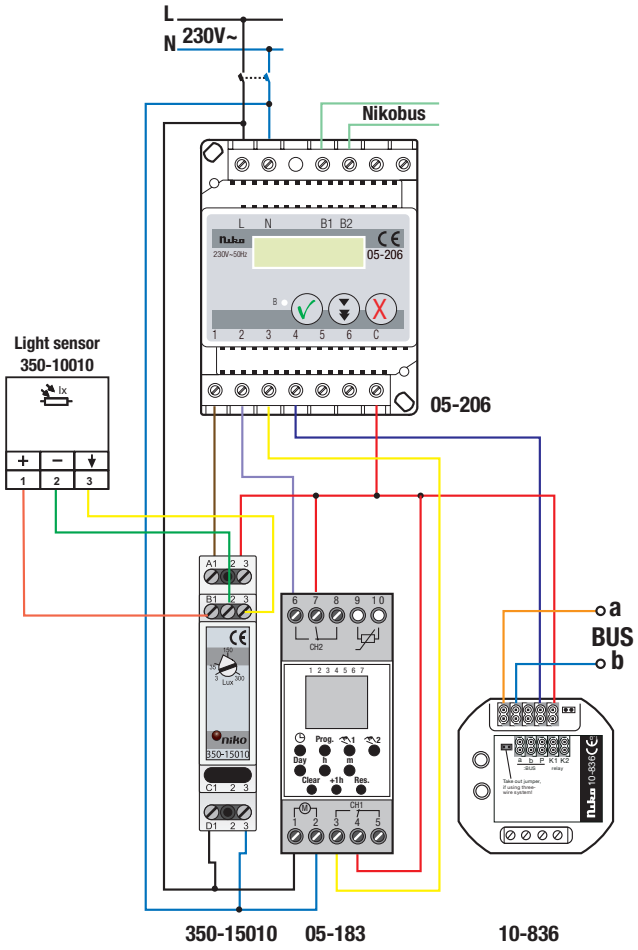
Connection

The modular digital two-channel clock can be connected to the Nikobus system by o.a. the binary interface. see diagram.

You don't have to take into account the polarity when connecting the bus. Place the interface behind the contact (see fig.).

Technical specifications

Ambient temperature: 0°C to 50°C
Dimensions: 27 x 40 x 5mm



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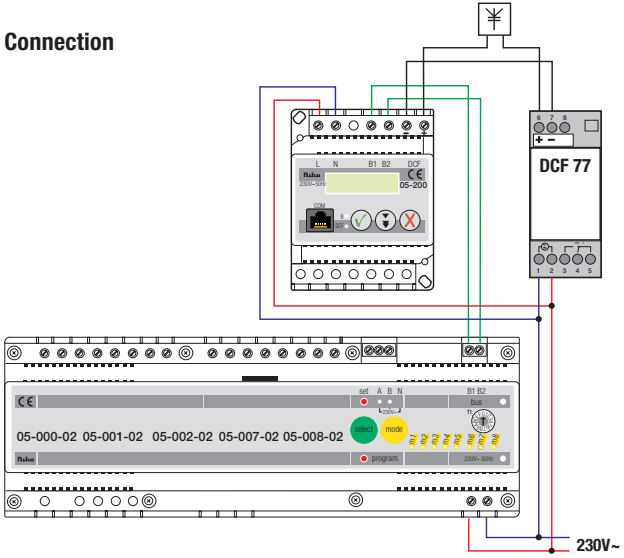
5.9. THE ATOMIC CLOCK RECEIVER 05-185

Description

The receiver consists of two components: on the one hand, the receiver with built-in antenna that can be placed anywhere on a wall, and, on the other, a modular power supply. The receiver is linked to the modular four-channel clock by means of the power supply (dual-wire connection). The receiver ensures a perfect tuning of time and date with the atomic clock of Braunschweig. As a result, summer time and winter time are automatically adapted and the clock always runs correctly.

Connection



Technical specifications

Width modular power supply: DIN-housing 2 modules
Power supply voltage: 230V~

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5.10. THE MODULAR LIGHT SENSOR 350-10000

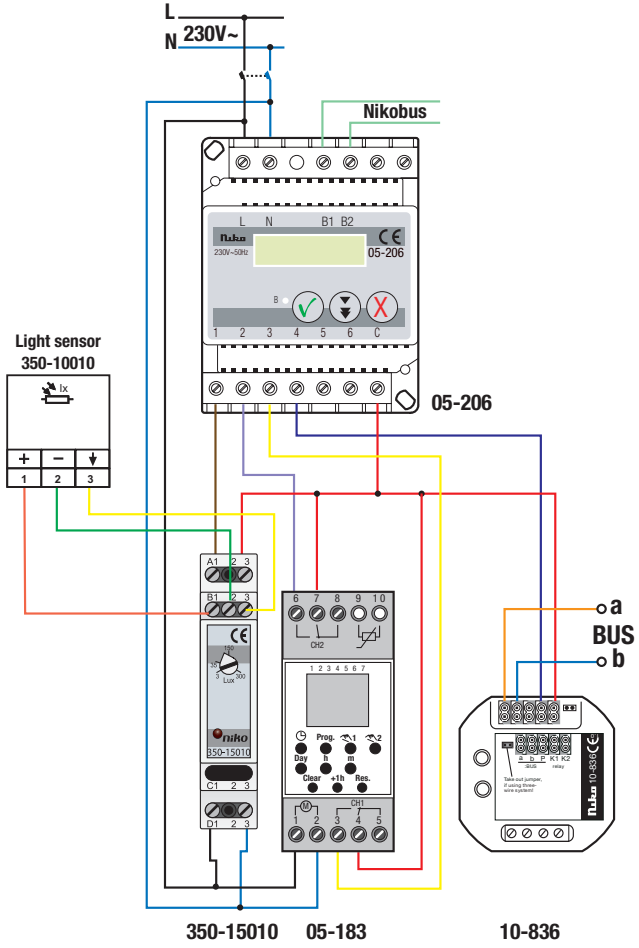
Description

The day/night switch 350-10000 with positive hysteresis switches on the light in the evening if the preset lux value is reached (for at least 60s). The light is switched off if the level of daylight rises above the preset lux value by 10% (for at least 60s). After a power breakdown and when taking the switch into use, it immediately switches on the light for 1min. (switch off security). The day/night switch 350-10000 is suitable for DIN-rail mounting (1U). Areas of application: gardens, parking lots, outdoor sites, pavements.

Connection

Technical specifications

Power supply	230V~ ±10%
Contact	N.O., µ 10A
Load: Incandescent lamps	2300W
Fluorescent lamps, non-compensated	1200VA
Halogen lamps	500W
Max. compensation capacity	140µF
Max. start peak	80A/20ms
Current consumption	1W
Light sensitivity (lux)	3-300lx
Setting range for the lux value	3 - 270lx
Signal of the light sensor	0 - 10V
Power supply light sensor 350-10010	56V DC
Tolerance of the LUX range	±10%
Protection degree	IP20
Insulation class	klasse I
Temperature range	5 tot +50°C
CE conform	EN60669-2-1



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5.11. THE BINARY NIKOBUS INPUT MODULE 05-206

Description

The Nikobus binary input module (05-206) fully compatible with the existing Nikobus products. The binary input module has 6 inputs for external, potential free contacts. These enable the external contacts to be connected to the bus. Every input has 3 different programming possibilities: auto mode, fixed on and fixed off. The binary input module is provided with an LCD display that displays the status of the different inputs. Programming can be carried out by means of the 3 function keys on the display.

Sending the Nikobus address of the binary input module

The binary input module sends its Nikobus address to the Nikobus (or to PC). The address is sent as one of the 6 inputs is activated.

Technical specifications

Power supply: ..... 230V~ ±10% 50Hz
Bus connection:
- function: ..... connecting external contacts to the bus
- wiring: 2x0,8mm
- bus voltage: ..... 9V DC, SELV

Display: ..... LCD display, 2 lines with 16 characters, no background lighting
Mechanical construction:
- dimensions: 4U (70x90x62mm)
- mounting: ..... DIN-rail
- weight: ..... ± 250g

Ambient temperature (ta): ..... -5°C to +60°C
Power cut: ..... the memory is preserved
Bus activity: ..... data transfer security = The binary input module waits until the bus is free to send a bus telegram.
Norms and standards:
- complies with European standard EN50090-2-2
- EMC-emission EN55022

5.12. THE TELEPHONE INTERFACE WITH 1 CHANNEL 450-00064

Description

The telephone interface 450-00064 is used to switch an electrical device and can send 2 alarm messages via the telephone network. Each of the two alarm inputs can choose 3 telephone numbers and leave a speech message if an alarm input is activated by a connected contact. Both alarm inputs can be activated and deactivated separately. Switching is carried out via DTMF signals (DTMF= Dual-Tone Multi-Frequency). This can easily be set via a call to the telephone interface. You can choose the feedback language yourself. The interface can be built into a DIN rail cabinet (4U). The switch functions can be carried out via a call, an external push button or via a flush mounted push button (see fig. 1). The telephone interface is protected by a 4-digit code. The settings and switch statusses of the outputs are saved during a power failure and are retrieved once the power is restored. If you wish the interface to remain active during a power failure, you can permanently connect it to a backup power supply of 12VDC.

Technical specifications

Consumption 230V 13,8V
relay off 11mA 30mA
relay on 13mA 70mA
Mains voltage: ..... 230 V/50 to 60 Hz
Switch output: ..... potentialfree contact, max. 16 A, 230 V~ (load)
Ring frequency: ..... 20Hz to 60Hz
Telephone connection: ..... analog connection according to CTR 21

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5.13. THE PC-LINK-MODULE 05-200

1. Operation and product description

With the PC-Link, it is possible to program a complete Nikobus installation with the help of a Windows PC and the Nikobus software application. This can be done both on the building site and from a distance by means of a modem connection. In addition, the PC-Link offers extensive clock functions and a presence simulation.

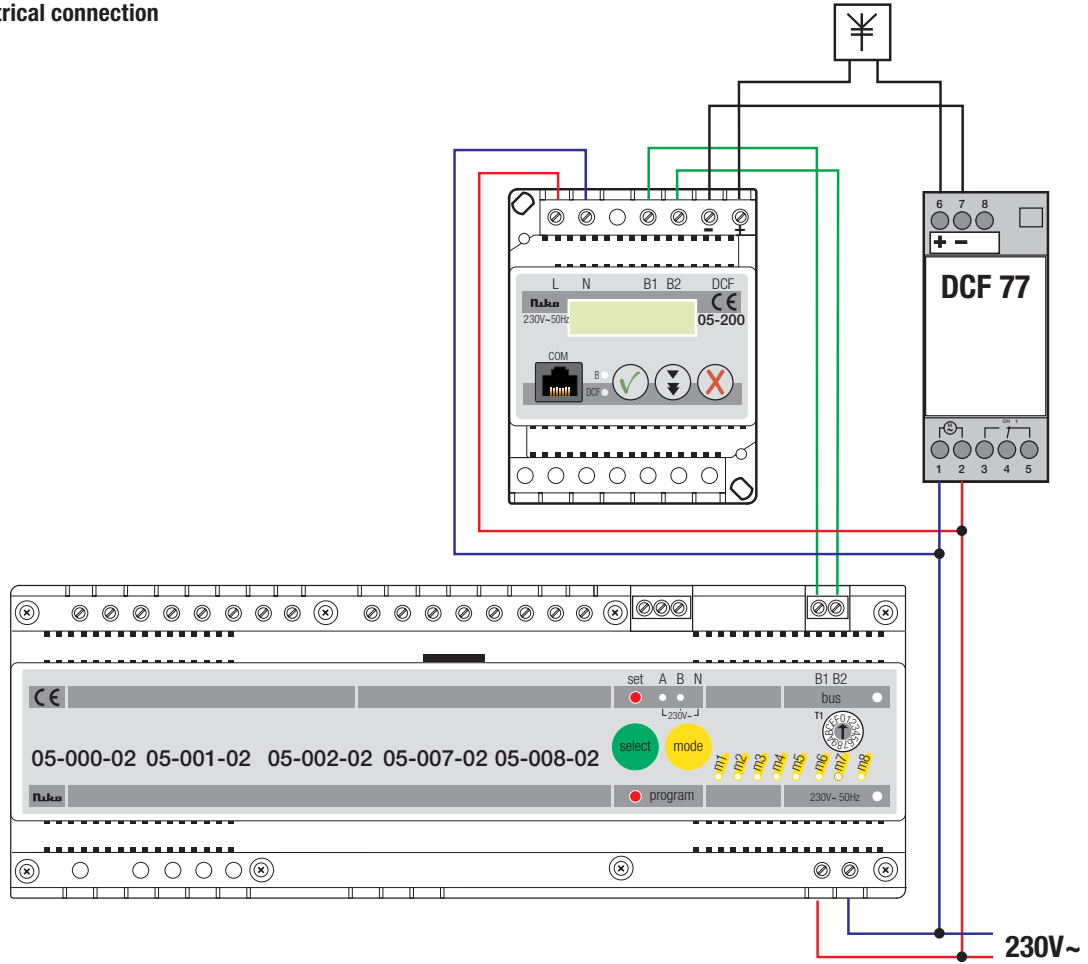
2. Technical details and dimensions

Power supply voltage: .....230V~ ±10%/50Hz
Bus connection:
- Function: .....connection bus wiring of Nikobus sensors/actors
- Wiring: .....2 x 0,8mm2
- Bus voltage: .....9V DC, ZLVS

• DCF-77 connection: .....connection of a DCF-77 antenna with power supply, perfect synchronization with atomic clock of Braunschweig (Niko Ref. 05-185)
• RJ12-connection: .....connection for PC or modem (Baud rate: 9600/no parity/no handshaking/number of bits: 8/stop bit: 1)
• Display: .....LC-display, 2 lines with 16 digits, no background illumination
• Mechanical construction:
- Dimensions: .....4TE (70 x 90 x 62mm)
- Mounting: .....DIN-rail
- Weight: .....± 250g

• Ambient temperatureTa .....0°C to +55°C
• Current interruption: .....the clock continues to operate for another 24 hours, and the memory is preserved.
• Bus activity: .....data transmission protection = the PC-Link waits until the bus is free and only transmits its bus telegram then
• Standards and regulations:
- Complies with the European standard EN50090-2-2
- EMC-emissie EN55015

3. Installation – electrical connection



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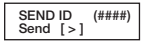
4. Transmitting the Nikobus address from the PC-Link

The PC Link transmits its Nikobus address to the Nikobus (also to the PC) in order to identify itself to the PC software. The address is shown on the display.

1. Briefly press ⏬ and select the menu item.
2. Briefly press ✓ to transmit the address.

3. Briefly press ✓, the address will be transmitted, and you will return to the main screen.



For more information concerning the transmission of the Nikobus address, please refer to the software manual on the CD-ROM.

5.14. THE PC-LOGIC MODULE 05-201

1. Operation and product description

Together with a Windows PC and the Nikobus software application, the PC-Logic module makes it possible to program a complete Nikobus installation. In addition, the PC-Logic offers the possibility of determining conditions by means of forming logic switches (OR, AND, …) whereby a choice can be made between various bus push buttons and 6 local inputs. Through these inputs, it is possible to connect external contacts (e.g., motion detectors) to the bus.

2. Technical details and dimensions

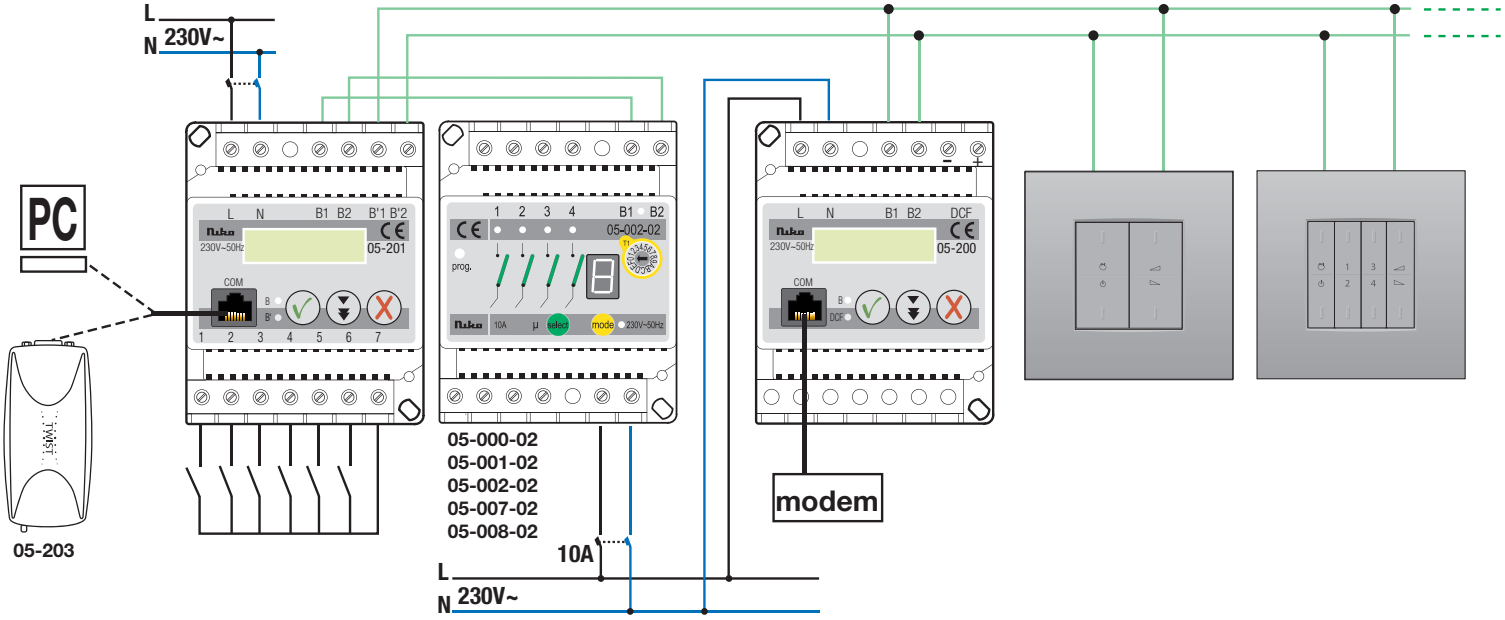
Power supply voltage: .....230V~ ±10%/50Hz
Bus connection:
- Function: .....connection of the bus wiring of Nikobus sensors/actors
- Wiring: .....2 x 0,8mm
- Bus voltage: .....9V DC, ZLVS

J12-connection: .....connection for PC or modem
(Baudrate: 9600/no parity/no handshaking/number of bits: 8/stop bit: 1)
Display: .....LC-display, 2 lines with 16 digits, no background illumination
Mechanical construction:
- Dimensions: .....4TE (70 x 90 x 62mm)
- Mounting: .....DIN-rail
- Weight: .....± 250g

Ambient temperature Ta: .....0°C tot +55°
Power supply interruption: .....the memory is preserved
Bus activity: .....data transmission protection = the PC-Link waits until the bus is free before transmitting its bus telegram
Standards and regulations:
- Complies with the European Standard EN50090-2-2
- EMC emission EN55015

3. Installation – electrical connection

The PC Logic divides the bus. Connect all inputs (bus push buttons etc.) to B'1 B'2 and all output modules to B1 B2 (see diagram).



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Transmitting the Nikobus address from the PC-Logic

The PC-Logic transmits its Nikobus address to the Nikobus (also to the PC) in order to identify itself to the PC software. The address is shown on the display.

1. Briefly press ⏬ and select the menu item.
2. Briefly press ✓ to transmit the address.
3. Briefly press ✓, the address is transmitted, and you return to the main screen.

For more information concerning the transmission of the Nikobus address, please refer to the software manual on the CD-ROM.

5.15. THE SMS INTERFACE 05-203-01

Description

By connecting the sms modem to the Nikobus, it is possible to send and receive sms messages. You only have to provide a SIM card (subscription or pre-pay). This product only functions in combination with a PC Logic (05-201).

Technical specifications

- Integrated dualband cellphone control
- Power supply: 5V DC ±20% (adapter supplied)
- Ambient temperature (ta): -20 to +55°C
  - Dimensions: L 114 x W 52 x H 27mm
    L 118 x W 52 x H 56mm (with dualband antenna)
    L 175 x W 52 x H 56mm (with antenna and cable)
  - mounting: holder
  - weight: 92g
- Connection cable for PC-logic (RJ12) <===> modem (serial gate)

5.16. THE AUDIO LINK 05-205

Description

The Audio-Link enable to connect the audio distribution system A44 or A88 to all Nikobus push buttons. This way, the music can be controlled in a room by means of Nikobus push buttons.

Technical specifications

Power supply: ..... 230V~ ±10% 50Hz
Bus connection:
- function: ..... connection to the bus
- cabling: ..... 2 x 0,8mm²
- bus voltage: ..... 9V DC, ZLVS

RJ12 connection: ..... connection for the A44/A88
(Baudrate: 9600/no parity/no handshaking/Aantal bits: 8/stopbit: 1)

Pinning RJ12 (6/4)-outlet
1: RxD Audio-Link
2: GND
3: TxD Audio-Link
4: GND

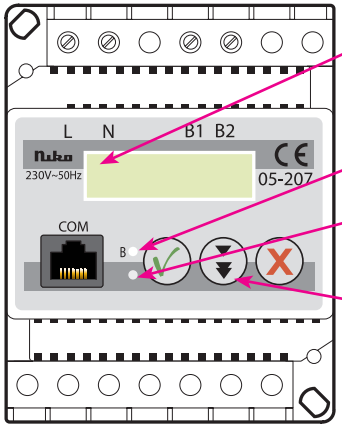
Display: ..... LC display, 2 lines with 16 characters, no background lighting
Mechanical specifications:
- dimensions: ..... 4U (70 x 90 x 62mm)
- mounting: ..... DIN rail
- weight: ..... ± 250g

Ambient temperature (ta): ..... 0 to 55°C
Power cut: ..... the memory is saved
Bus activity: ..... data transmission security = the Audio-Link waits until the bus is free and then sends its bus telegram
Norms and directives:
- complies to the European norm EN50090-2-2
- EMC emission EN55015

5.17. THE FEEDBACK MODULE 05-207

Description

The **feedback module** acts as the **interface** between the **bus** of the Nikobus home automation system and **touch screen** 05-096 and/or the Nikobus bus **push buttons with LEDs**. This module provides a clear overview of the status of your system on the touch screen or via the bus push buttons.



P: module is being programmed
M: master module
S: slave module

LED B: indicates whether communication is in progress on the Nikobus

LED COM: indicates whether serial communication is in progress

button to send out a unique address

Technical data

Power supply:..... 230V~ ±10%/50Hz
Mechanical design: - dimensions:..... 4TE (70 x 90 x 62mm)
- Installation: DIN-rail
- weight: ± 250g
Bus connection: - function:..... interface bus cable of Nikobus sensors/actuators
- cabling:..... 2 x 0,8mm
- bus voltage:..... 9V DC, SELV
RJ12 connector: - connector for touch screen or PC
- Pinning RJ12 (6/4)-outlet 1: RxD Audio-Link
2: GND
3: RxD Audio-Link
4: GND

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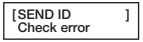
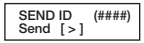
Power cut: ..... memory contents are preserved
Bus activity: ..... data transfer protection = the feedback module waits until the bus is free before it sends the bus telegram.
Ta ambient temperature: ..... 0 to 55°C
Standards and conventions: - complies with European standard EN50090-2-2
- EMC emission EN55015

Transmitting the Nikobus address from the feedback module

The PC-Link transmits its Nikobus address to the Nikobus (also to the PC) to identify itself to the PC software. The address is shown on the display.

1. Briefly press ⓥ and select the menu item.
2. Briefly press ✓ in order to send the address.
3. Briefly press ✓, the address is sent, return to the main screen.





For more information concerning transmission of this Nikobus address, please refer to the software manual on the CD-Rom.

5.18. THE TOUCH SCREEN 05-096

Description

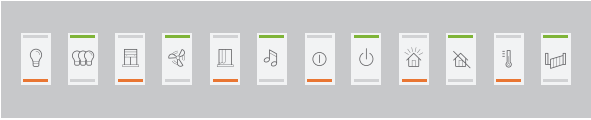
The **Nikobus touch screen** lets you effortlessly operate your **home automation system**. The screen can easily be mounted against a wall. Only 1 flush mounting box has to be used. The touch screen is supplied with a connector for connection to the feedback module (05-207). The screen has the following **specifications**:

- diagonal: 154x93mm (approx. 7inch)
- resolution: 800x480 pixels
- aspect ratio: 16:9 (standard widescreen ratio)

The touch screen is equipped with backlighting: if the screen is not touched for a few minutes, the backlighting goes off. The backlighting comes back on when the screen is touched again.

icons

- The following icons can be used as buttons to operate the system. In this case, each icon corresponds to 1 or 2 button operation with feedback.



- The icons can only be used **exclusively for feedback**, i.e. not as buttons.
- The text below the icons can be defined by the user in the Nikobus software.

You must define in the **Nikobus software** whether an icon is to be used as button or for feedback. This configuration cannot be changed by the user via the touch screen.

tab pages

- max. 6 tab pages, max. 10 buttons per tab page
- The text on the tab pages is defined in the Nikobus software.

Technical data

Dimensions: H140 x W226 x D20 mm
Weight: approx. 850g
Power supply: 12VDC – 15VDC, 1.5A (min. 20W)
Operating temperature: -5 to 45°C
IP class: IP21

6.1. USE OF THE UNIVERSAL DIMMER 05-715

Description

This 750VA universal dimmer is designed for DIN-rail mounting and is 2U wide. This universal dimmer is suitable for dimming resistive, inductive and capacitive loads. The total connected load can max. amount to 750VA. The dimmer functions both as a phase control dimmer and as a reversed phase control dimmer. The choice between both dimming principles is automatically made. The dimmer can be used with or without memory and is provided with an automatic detection and indication of overload.The following 4 operating modes are possible: 0-10V analog control; 1-10V analog control; 1 push button operation and 2 push button operation.

Connection

In combination with the Nikobus dim controller, 3 connections have to be made for the universal dimmer. The universal dimmer requires a 230V power supply connection. Moreover, the consumer that has tob e controlled is also connected to the dimmer. The connection with the output of the dim controller is made at the bottom.

Note: the connected consumer has to use the provided connection terminals on the dimmer. It cannot branch off the neutral conductor directly at the neutral conductor that arrives on the dimmer.

Operation

Mode 1: 0-10V analog

When this mode is selected, the dimmer will accept a voltage control signal from 0 to 10V according to IEC standard 61131-2. From 0 to 10V, the light can be adjusted from 1% to max. light intensity. The 0-10V voltage control signals are used for professional applications such as Silicon Controls systems, the Nikobus dim controller or PLC. If the input voltage lies below the threshold voltage (±1V), the connected load will remain off. If the input voltage equals the threshold voltage, the connected load lights at min. Light intensity. If the input voltage is 10V, the connected load lights at max. light intensity. After a power failure, the dimmer switches back on to its previous value. See fig. 5.

LED indications on the universal dimmer

Load LED

This LED lights if the load is connected and indicates in which mode the dimmer is set. reverse phase control or phase control (the choice is made automatically).
In case of normal operation, the load LED can have the following meaning:

LEDs	*Meaning*
	Current mode: reverse phase control
● The LED lights continuously.	
	Current mode: phase control
✹ The LED blinks.	

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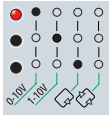
Error indication LED

In case of **normal operation**, this LED does not light. The LED only lights if problems with dimming the load occur:

LEDs	*Meaning*
⚠ ● The LED lights continuously.	The dimmer operates with reverse phase control and cannot dim the load due to an error (overload, overtension,...)
⚠ ✹ The LED blinks.	The dimmer operates with phase control and cannot dim the load due to an error (overload, overtension,...)

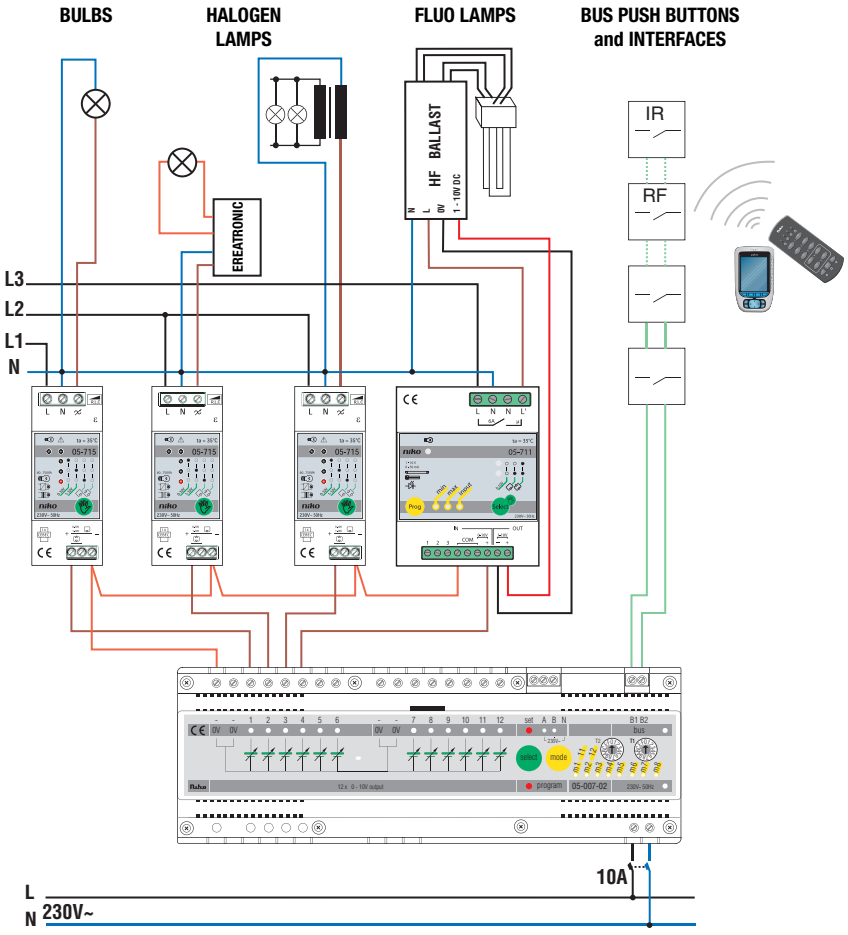
Input LEDs

You can choose between different operating modes, i.e. analog control 0-10V, analog control 1-10V, 1-button mode or 2-button mode (see 4. Programming). The input LEDs indicate which operating mode has been selected. In case of normal operation, the input LEDs can have the following meaning:

LEDs	*Meaning*
	Current operating mode: 0 -10V

Upper LED lights continuously

Connection



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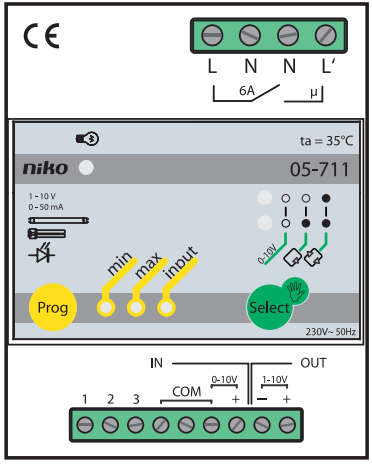
6.2. DIMMING FLUORESCENT LAMPS 05-711

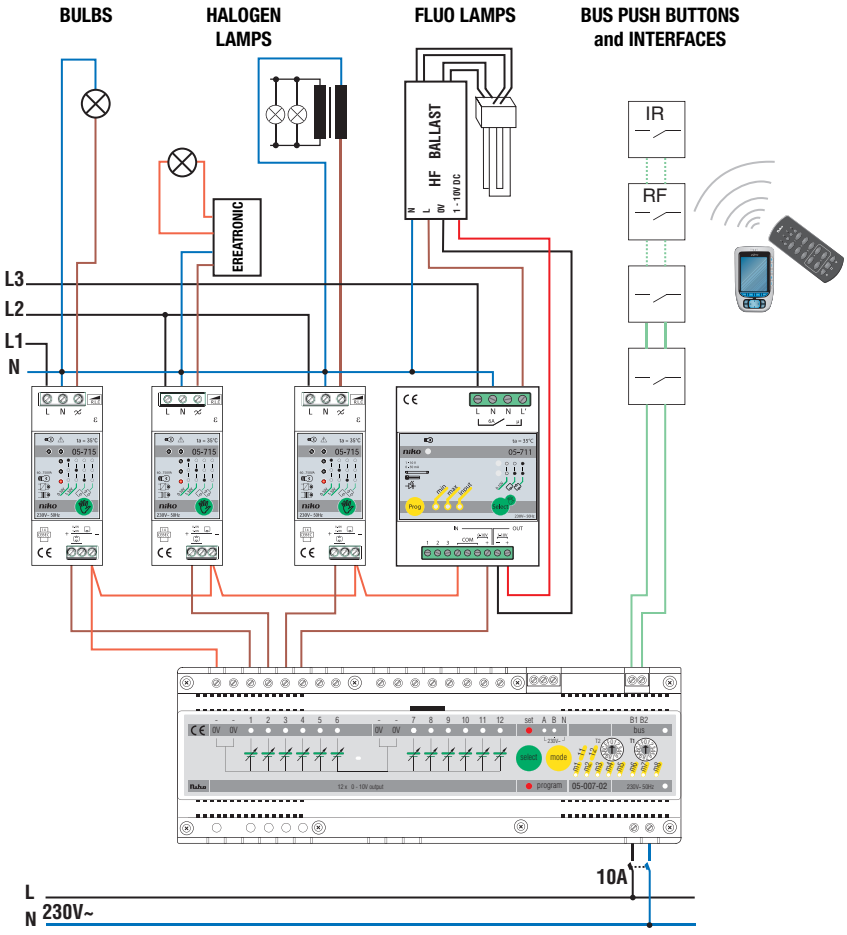
Description

The 1-10V analog control 05-711 is designed for DIN rail mounting and is 4U wide (71,5mm). The 1-10V analog control is suitable for switching and controlling dimmable electronic control gear for fluorescent lighting, compact fluorescent lighting or dimmable LED lighting. The appliance has an analog 1-10V output and a switching capacity of 6A which is used to switch the electronic control gear (ECG). The analog control can switch a fluorescent load with a compensation of up to 140µF and control up to 50mA. You can choose from 3 control modes: 0-10V analog control, 1-button control and 2-button control. The push button controls can be used with or without memory. The analog control is provided with a panic function. This allows the lighting to be maximally controlled by means of a panic button (push button/switch) as long as the function is activated, regardless of the load condition. Depending on the selected operation mode, a light atmosphere mode is available.

❶ fixed connection EVSA
❷ fixed connection supply 230V~
❸ Programming push-buttons
❹ Programming LED
❺ input-LED
❻ maximum controle-LED
❼ 'select'-button
❽ fixed connection service
❾ fixed connection 1-10V OFF



Aansluiting



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6.3. OTHER DIMMING OPTIONS WITH THE NIKOBUS

Apart from the above-mentioned methods that are most often used to control certain dimmable loads using the Nikobus dimcontroller, there are many other possibilities to carry out dimming controls using the Nikobus home automation system. These can be divided in analogue controls using the dimcontroller and switched controls that are carried out by means of the switch module.

1. Control with the Nikobus dimcontroller

We have already seen that the dimcontroller has 12 outputs available that supply a voltage control of 0-10V. These outputs can be used to control any 0-10V dimmer. The control signal of the dimmer must be galvanically separated from the mains voltage.

For large projects where it is necessary to dim a large amount of power, it is possible to combine the Nikobus dimcontroller with several 0-10V Silicon Controls dimmers.
65-412: 2760VA (12A)
65-416: 3680VA (18A)
65-340: 6 x 2300W

2. Control using the Nikobus switch module

Attention: It is also possible to control dimmers through the Nikobus switch module. Be aware, however, that many functions (light scenes, presets, operation times during use, etc.) that are required in home automation applications will only be possible if the Nikobus dimcontroller is used. We have to state that the possibilities mentioned below for using a switch module for dimming consumers are only allowed in exceptional cases, taking into account the current home automation desires and standards of a good home automation installation.

If desired, the extensive range of Niko modular dimmers can be used in a Nikobus installation. In most cases, these dimmers are operated with a push button that is connected to the dimmer through the 230V mains network. The function of this push button is now carried out by a contact of the Nikobus switch module.

a. Operation and programming

Repeated short pressing the push button will result in switching the dimmer and its connected load on or off. By pressing the push button longer, the dim cycle is scrolled through, whereby the connected consumer could be put into a particular dim position.

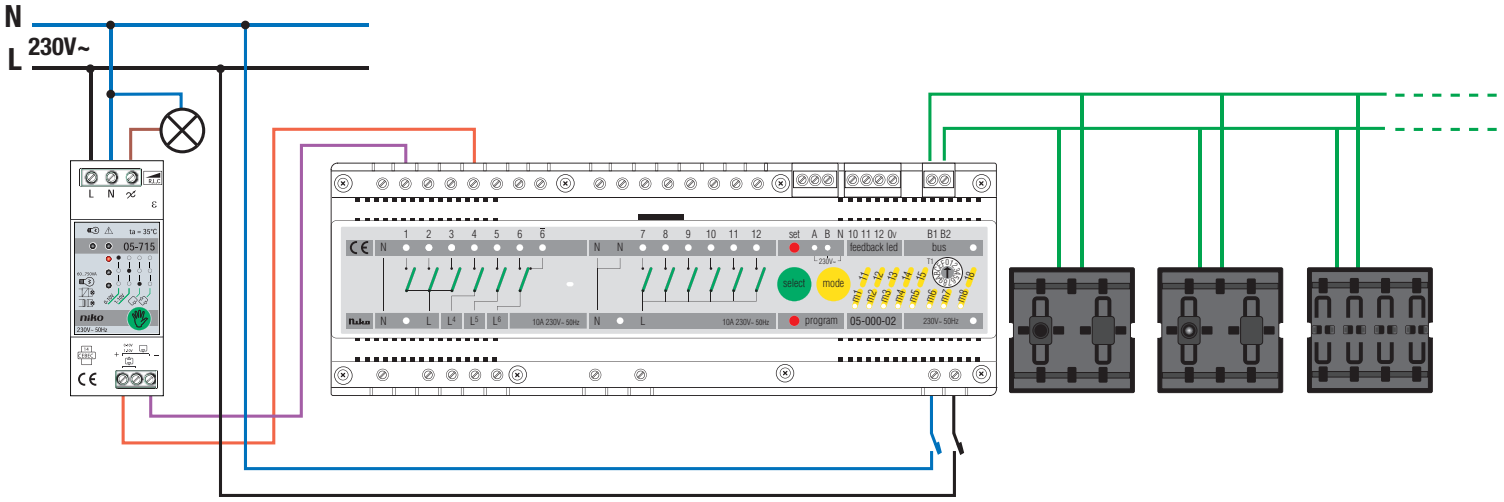
This is the push button function. The selected output will close as long as a push button is pressed down. When the bus push button is released, the output will open again. Pressing briefly thereby results in a pulse that switches the dimmer on or off. Pressing longer results in scrolling through the dim cycle. If the programmed bus push button is held down, the Nikobus will be released again after a maximum of 8s.

Depending on the dimmer that is used, it may or may not be possible to make use of a memory position. It is obviously not possible to generate presets or light scenes in this way.

b. The connection

The connection diagram to be used is selected as a function of the selected type of dimmer. In the diagram on the left, outputs 2 and 3 of the switch module control the bottom and the top dimmer respectively. These outputs are programmed with function M4 for the respective bus push buttons. Furthermore, we can see that the power supply of the two dimmers is connected to output 6' of the switch module. This is important if you want to include these dimmers in a "master-off" function, as it does not make sense to use mode M4 in such a function. When briefly pressing the "master-off" bus push button, you do not know which position the dimmers are in. If the dimmers are on, they will be switched off, but if they are off, they will be set to the on-position when the "master-off" function is used. For this reason, the power supply of the dimmers is connected through output 6' (normally closed contact) of the switch module. If a "master-off" is programmed, mode 6 will be used (delayed dimming) for this output (6) with a time frame of 10 s. This will result in cutting off the power supply voltage of the dimmer for 10 seconds. When the voltage returns, the dimmer will not switch the connected consumer back into the on position.

The diagram on the left gives an idea of how the switch module can be connected to the universal dimmer 05-715.



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7.1. USING THE 230V inputs AS INPUTS

! Note: the compact modules are not provided with 230V inputs.

Description

The switch module, the shutter module and the dimcontroller each have two 230V inputs available. These can be used as direct switch inputs, or they can be used as conditions to either carry out – or not carry out – the function of a bus telegram. In this section, we will discuss the 230V inputs A and B as direct switch input.

If, for example, a traditional motion detector is used by the front door and by the terrace of a house, we can connect the output of this motion detector to the 230V input A or B of the switch module, with which the terrace lighting or the drive lighting are controlled. These motion detectors are not directly connected to the consumer, as this somewhat spoils the flexibility and the possibilities for use that we wish to create with the home automation system. If detection takes place, the motion detector will, for example, place a 230V voltage on input A for a time of 10s. This input is programmed so that the respective consumer will, for example, stay on for 5 minutes, and turns off. In this way, bus push buttons, clocks, etc., can also control the same consumer. This would not be the case if we had connected the motion detector directly to the consumer.

Connection

The two 230V inputs have a common connection (neutral conductor) available. The connected sensors (switches, anemometers, motion detectors, light sensors, clocks, output contacts of the alarm system, etc.) must therefore make use of the same power supply. The 230V inputs are galvanically separated from the Nikobus by means of an opto-coupler.

Functional possibilities

When working with 230V inputs as switch inputs, you have to take into account the fact that certain functions will only be carried out when an input switches high. Let's take function M5 (impulse or teleruptor function) of the switch module as an example. Every time the 230V input switches to high, the output programmed with function M5 will switch over. When the 230V input switches low, however, nothing happens. To get around this, it is possible to select function M1, because an ON-function will then be generated when the 230V input turns high, as well as an OFF-function when the same 230V input becomes high.

LED A	LED B	
ON	OFF	Output reacts to change of A
OFF	ON	Output reacts to change of B
ON	ON	Output reacts to change of A and B

Attention: In order to know whether a function is available for the 230V inputs, and how it will operate for the switch module, the shutter module or the dimcontroller, the tables below must be consulted.

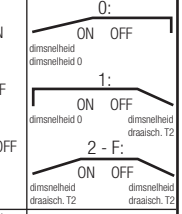
The switch module

Mode	External input	Function	Rotary switch T1
m1		ON/OFF = ON = OFF	irrelevant
m2		ON	
m3		OFF	
m4	NOT POSSIBLE		
m5		PULSE	irrelevant
m6		TIME-DELAYED EVANESCENT ON t delay start	delay 0 = 10" 1 = 1' 2 = 2' 3 = 3' 4 = 4' 5 = 5' 6 = 6' 7 = 7' delay 8 = 8' 9 = 9' A = 15' B = 30' C = 45' D = 1h E = 1,5h F = 2h
m7		TIME-DELAYED ASCENDING ON t delay start	
m8		INTERMITTENT (rhythm 1,5")	irrelevant
m11		TIME-DELAYED EVANESCENT ON t delay start	delay 0 = 0,5" 1 = 1" 2 = 2" 3 = 3" 4 = 4" 5 = 5" 6 = 6" 7 = 7'" delay 8 = 8" 9 = 9" A = 15" B = 20" C = 25" D = 30" E = 40" F = 50"
m12		TIME-DELAYED ASCENDING ON t delay start	
m13		MULTI-WAY SWITCH START STOP sequence	delay 0 = 10" 1 = 1' 2 = 2' 3 = 3' 4 = 4' A 5 = 5' 6 = 6' 7 = 7' 8 = 8' 9 = 9' = 15' B = 30' C = 45' D = 1h E = 1,5h F = 2h
m14		ATMOSPHERE ON summon atmosphere	irrelevant
m15		ATMOSPHERE ON/OFF summon atmosphere atmosphere OFF	irrelevant

The shutter module

Mode	External input	Function	Rotary switch	
m1	NOT POSSIBLE			
m2		OPEN	0 = runtime switched off 1 = 0,4" 2 = 6" 3 = 8" 4 = 10" 5 = 12" 6 = 14" 7 = 16"	8 = 18" 9 = 20" A = 25" B = 30" C = 40" D = 50" E = 60" F = 90"
m3		CLOSE		
m4		STOP		
m5		OPEN CLOSE		
m6		NOT POSSIBLE		
m7		NOT POSSIBLE		

The dim controller

Mode	External input	Function	Rotary switch T2	Rotary switch T1
m1		ON/OFF dim-ON to last value dim-OFF	dim-ON speed or dim-OFF speed or dim-ON/OFF speed	
m2				
m3		ATMOSPHERE ON / OFF summon atmosphere (dim-ON) dim-OFF		
m4		ATMOSPHERE ON summon atmosphere (dim-ON)	dim-ON speed	X
m5		ON dim-ON to last value	dim-ON speed	X
m6		UIT dim-OFF to last value	dim-OFF speed	X
m7		TIME-DELAYED EVANESCENT lx delay ON t dim-ON with dim speed 0 to last value	dim-OFF speed	delay 0 = 10" 1 = 1' 2 = 2' 3 = 3' 4 = 4' 5 = 5' 6 = 6' 7 = 7' delay 8 = 8' 9 = 9' A = 15' B = 30' C = 45' D = 1h E = 1,5h F = 2h
m8		INTERMITTENT rhythm 1.5 sec with dim speed 0	X	X
m11		PRESET ON/OFF summon preset (dim-ON) dim-OFF	dim-OFF speed = dim-ON speed	preset 0 = 1,0V 1 = 1,5V 2 = 2,0V 3 = 2,5V 4 = 3,0V 5 = 3,5V 6 = 4,0V 7 = 4,5V preset 8 = 5,0V 9 = 5,5V A = 6,0V B = 6,5V C = 7,0V D = 8,0V E = 9,0V F = 10,0V
m12		PRESET ON summon preset (dim-ON)	dim-ON speed	

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Programming 230V inputs as inputs

In order to program 230V inputs as inputs, the following steps must be taken:

a. Entering the programming mode

A small, round opening is located on the module (underneath the green Select button) with the text “program” written next to it. This is the programming button. To enter the programming mode, the programming button is briefly pressed with a fine screwdriver and then released again. The period during which the programming button is pressed must be less than 1.6 s. A repeating acoustic signal indicates that the module is now in programming mode.

b. Selecting an output

Next, one or several outputs must be selected, in order to indicate that something has to happen with this/these output/s. The green select button is used for this. Each time this button is pressed briefly, the next output on the module will be selected. It will be seen that the LED of the selected output is blinking. If output 12 has been selected, and we again briefly press the select button, we will return to output 1, and the LED of output 1 will blink. This method is used when only one output needs to be selected.

In order to select several outputs for the same programming (e.g., an OFF-function for several light points), proceed as follows. Assume that we wish to select outputs 2, 3 and 5. After entering the programming mode, the LED of output 1 will blink. Briefly pressing the green button will take us to output 2. The LED of output 2 is now blinking, and the LED of output 1 is OFF. Now press the select button for longer than 1 s. As a result, the LED of output 2 will light up continuously; and the blinking has stopped. If we now briefly press the select button again, the LED of output 3 will start blinking. We would like to also include this output in our selection, and therefore press the green button longer than 1 s once again. Pressing the button briefly again makes LED 4 blink. As we do not wish to include this output in our selection, we again press the button briefly, as a result of which the LED of output 5 will start blinking. We wish to include this in our selection, so the select button is pressed for a longer time. The result of all these actions is that the LED's of outputs 2, 3 and 5 are now lit up continuously. These three outputs have now been selected for inclusion in our programming.

c. Selecting a function or mode

When we entered the programming mode, the mode (function) M1 LED lit up. By briefly pressing the yellow mode button, we are able to select the next mode. At the end of the range, we then jumped back to the first mode. The switch module has 8 basic functions (M1 to M8) available, as well as 5 higher functions (M11 to M15). In the case of the blind module, a selection can be made between 7 functions (M1 to M7). The dimcontroller also has 8 basic functions (M1 to M8) available and 2 higher functions (M11 and M12). In order to select one of the higher functions for the switch module and for the dimcontroller, it is necessary to press the mode button for a longer period (longer than 1.6 s). As a result, the LED of mode M1 and M11 will start blinking. This blinking LED indicates that you are now dealing with the higher functions. By briefly pressing the yellow button again, the next higher function will be selected and the next LED will start blinking. It is possible to return to the lower functions by pressing the yellow button again for a longer time frame.

The position of the setting wheel T1 and/or T2 will be important for certain functions. In most cases, we are dealing with a time setting here. If the position of the setting wheel is also important in the selected mode, it must now be turned into the correct position by means of a fine screwdriver. You can only continue with the next step of the programming once this has been done.

d. Assigning the programming to a 230V input

Up to now, we have selected one or more outputs of the module, and a function that is to be carried out. We will now turn to the 230V input, which has to carry out this function for the selected outputs.

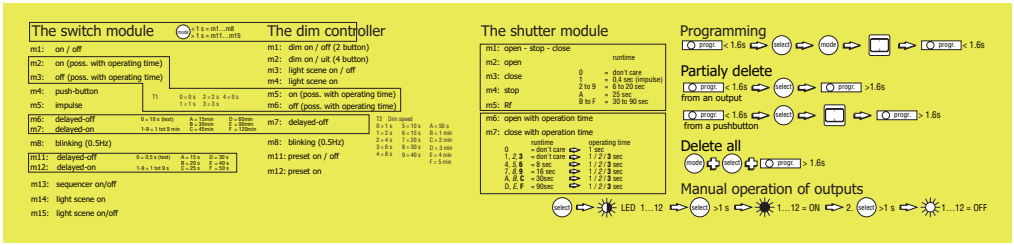
The Set button is located above the green Select button. Like the Program button, this is a small opening. This button is briefly pressed with a fine screwdriver. The LEDs of input A and B will take on a different condition each time the Set button is briefly pressed. Now briefly press the Set button a few times until the LED next to A (230V input A) is ON and the LED next to B is in the OFF state. If this situation is selected for programming, the programmed function will be carried out when changes take place to input A. If, on the other hand, you want the function to be carried out when changes take place in input B, the Set button should be briefly pressed once again. LED A will now turn off and LED B will turn on. A third possibility consists of carrying out the function when changes take place in A and in B. To achieve this, the Set button is pressed once again. Both LEDs (A and B) are ON.

This selection must now be assigned to the programming. To do so, the Set button is pressed for a longer period, until a long beeping sound indicates that the selection has been assigned.

e. Exiting the programming

Once the programming has been assigned, the programming mode can be exited by briefly pressing (no longer than 1.6 s) the programming button with a screwdriver.

Attention: It is also possible to assign several programs to the same 230V input. It must be taken into account, however, that a particular output can only be programmed once under the same 230V input. This is a matter of logic; it is not possible to program an on-function for output 2 and at the same time also program an off-function for the same output on the same 230V input. The function that was programmed last will thereby overwrite the previously programmed function.



Manually deleting the programming of a 230V input

The following steps are taken to delete the programming of a 230V input: Enter the programming mode by briefly pressing the Program button. Select the desired output with the Select button. Select the desired function with the Mode button. Keep pressing the Set button briefly until the LED of the respective input(s) light(s) up continuously. Press the Set button for a longer time to confirm. Press the Program button for a longer time (longer than 1.6 s) until a long beeping tone can be heard. This also causes you to exit the programming mode.

7.2. USING THE 230V inputs AS CONDITIONS

Description

The switch module, the blind module and the dimcontroller all have two 230V inputs available. These can be used either as direct switch inputs or as a conditions, which will either carry out the function of a bus telegram or not. In this section, we will discuss the 230V inputs A and B and their use to either pass through a Nikobus telegram or not.

It is possible to make a more extensive use of logic functions and conditions by implementing the PC-Logic module of the Nikobus home automation system.

We can easily imagine that it is sometimes necessary to link the carrying out of a certain bus push button function to a condition. Let's assume, for example, a bus push button that switches the outdoor lighting of the house to the on position. Assume that we only wish this function to be carried out when it is actually dark. During the day (when there is enough light), we will still be able to operate the respective bus push button, but the function will not be carried out. This is not only environmentally friendly, but also results in the saving of energy. During dark moments of the day and during the night, pressing the respective bus push button will result in switching on the outdoor lighting.

In fact, we will use the 230V inputs as conditions to either allow certain bus telegrams to pass through or not. We thereby have a choice of 6 possibilities.

LED A	LED B	Bus push button	Bus telegram is let through as:
OFF	OFF	ON	external entrances no influence
ON	OFF	ON	A is at 230V
Blinks	OFF	ON	A is at 0V
OFF	ON	ON	B is at 230V
OFF	Blinks	ON	B is at 0V
ON	ON	ON	A and B are at 230V
Blinks	Blinks	ON	A or B are at 0V

Connection

The two 230V inputs have a common connection (the neutral conductor). The connected sensors (switches, anemometers, motion detectors, light sensors, clocks, output contacts of the alarm system, etc.) must therefore make use of the same power supply. The 230V-inputs are galvanically separated from the Nikobus by means of an opto-coupler.

Programming the 230V inputs as conditions
In order to program the 230V inputs as condition, the following steps must be taken:

a. Enter the programming mode
A small, round opening can be found on the module (underneath the green Select button) with the text “program” written next to it. This is the programming button. In order to enter the programming mode, the programming button is briefly pressed with a fine screwdriver and then released again. The programming button must be pressed down for less than 1.6 s. A repeating acoustic signal indicates that the module is now in the programming mode.

b. Selecting an output
Next, one or several outputs must be selected, in order to indicate that something has to happen with this/these output/s. The green select button is used to do this. Each time this button is briefly pressed, the next output on the module will be selected. It can be seen that the LED of the selected output is blinking. If output 12 has been selected, and select button is briefly pressed again, we will return to output 1, and the LED of output 1 will blink. This method is used when only one output has to be selected.

In order to select several outputs for the same programming (e.g., an OFF-function for several light points), proceed as follows. Let us assume we wish to select outputs 2, 3 and 5. After entering the programming mode, the LED of output 1 is blinking. Briefly pressing the green button will take us to output 2. The LED of output 2 is now blinking, and the LED of output 1 is OFF. Now press the select button longer than 1 s. As a result, the LED of output 2 will light up continuously; and the blinking stops. If we now briefly press the select button again, the LED of output 3 will start blinking. We want to include this output in our selection, and we therefore press the green button again for longer than 1 s. Pressing the button again briefly makes LED 4 blink. As we do not wish to include this output in our selection, we again press the button briefly, as a result of which the LED of output 5 will start blinking. We also want to include this output in our selection, so we therefore press the select button for a longer time. The result of all these actions is that the LEDs of outputs 2, 3 and 5 are now lit up continuously. These three outputs have now been selected for inclusion in our programming.

c. Selecting a function or mode
When we entered the programming mode, the mode (function) M1 LED lit up. By briefly pressing the yellow mode button, we are able to select the next mode. At the end of the range, we then jumped back to the first mode. The switch module has 8 basic functions (M1 to M8) available, as well as 5 higher functions (M11 to M15). In the case of the shutter module, a selection can be made between 7 functions (M1 to M7)

The dimcontroller also has 8 basic functions (M1 to M8) available and 2 higher functions (M11 and M12). In order to select one of the higher functions for the switch module and for the dimcontroller, it is necessary to press the mode button for a longer period (longer than 1.6 s). By doing this, the LED of mode M1 and M11 will start blinking. This blinking LED indicates that you are now dealing with the higher functions. By again pressing the yellow button briefly, the next higher function will be selected and the next LED will start blinking. It is possible to return to the lower functions by pressing the yellow button again for a longer time.
The position of the setting wheel T1 and/or T2 will be important for certain functions. In most cases, we are dealing with a time setting here. If the position of the setting wheel is also important in the selected mode, it must now be turned into the correct position, using a fine screwdriver. You may continue with the next step of the programming once this has been done.

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d. Setting the condition

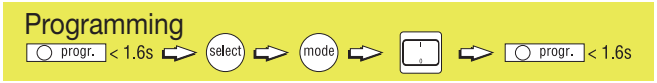
By continually briefly pressing the Set button, the LEDs of the 230V inputs A and B will take up different states each time. If, for example, we want the bus push button telegram to only be carried out if the A input is at 0V, we select LED A „blinking“ and for LED B “OFF”. The settings can be found in the setting table for the LEDs of the 230V inputs.

e. Assigning the programming to a bus push button

Up to now, we have selected one or several outputs of the module, and a function that is to be carried out. We have also indicated that this function may only be carried out for a pre-determined position of 230V input A and/or B. We will now turn to the push button that has to carry out this function for the selected outputs. The assignment takes place by simply pressing the bus push button connected to the Nikobus for a short time. A longer sound signal indicates that assignment has been successful. If a second push button should receive the same programming as the current programming, it is sufficient to also briefly press this push button. A longer sound signal will again be heard, indicating that the programming for this second push button has also been successfully assigned. For all two-button or four-button modes, it is sufficient to only press one section of the push button once. The other operating areas of the bus push button will then also be programmed automatically.

f. Exiting the programming

Once the programming has been assigned, the programming mode can be exited by briefly pressing (no longer than 1.6 s) the programming button with a screwdriver.



Manually deleting the programming of a 230V input

The following steps must be taken to delete the programming of a 230V input:
-Enter the programming mode by briefly pressing the Program button.
-Select the desired output with the Select button.
-Select the desired function with the Mode button.
- Keep pressing the Set button briefly until the LED of the respective input (A and/or B) is in the desired position. Also refer to the setting table for the LEDs of 230V inputs.
-Press the bus push button to confirm.
-Press the Program button for a longer time (longer than 1.6 s) until a long beeping tone can be heard. This also causes you to exit the programming mode.

8.1. ASSEMBLING THE DISTRIBUTION BOX

Description

Prior to assembling the distribution box, some other steps must first be taken.
On the floor plans, indicate the type of module and the output of this module that will be connected to each consumer. You could thereby use the letters S, SH and D when dealing with a switch module, a shutter module or a dimcontroller respectively. A number indicating the module number follows these letters, and then a second number indicating the output of this module to which the consumer is connected. Example: S1.3 therefore means: switch module number 1, output 3.
Attention: Connected consumers that require an operating push button with an LED must be connected to outputs 10, 11 or 12 of a switch module.

Similarly, all operating locations will be indicated on the floor plan. An operating location is a location where one or more bus push buttons have been placed under the same cover panel. A wall print will be installed at each operating location. The type of wall prints and the number of bus push buttons required is not yet of importance. Each operating location is indicated with the letters OL, followed by a unique number.
As you have already drawn up an offer, you will have an idea of the number of switch modules, shutter modules, dimcontrollers and dimmers that will be needed. You must now determine whether one or several distribution boxes should be used. Particularly in large projects, it is useful to be able to place several distribution boxes. The overall cable distance from the consumers to the distribution boxes can thereby be considerably reduced. It will also be easier to maintain a clear overview of the various distribution boxes. Even in a domestic apartment, it is often advantageous to place one distribution box on the ground floor and a secondary distribution box on the top floor. Always bear in mind that the wiring of each consumer must run towards the distribution box. This justifies the use of semi-industrial or even industrial distribution boxes. Distribution boxes with a width of 24 modules per row or even with 2 x 24 modules per row, should be given preference over the traditional distribution boxes with only 18 modules per row. Sufficient space for now and for later is of crucial importance.

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8.2. MOUNTING THE WALL PRINTS

Description

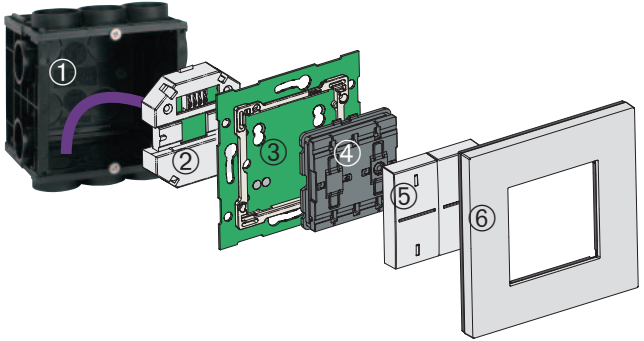
The wall prints are fixed to the flush-mounting box by means of small screws. If it is not possible to make use of flush-mounting boxes with screws, the rag-bolt set may be used in order to fix the wall cover panel print to the flush-mounting box. For long wall prints (triple or quadruple), the side that is the furthest away can be screwed against the wall. For this reason, several openings are provided in the wall text field print.

Only one flush-mounting box must be provided per wall print.

On the wall print, the bus wiring is connected to the terminals B. The wiring for the LED or for the power supply of an IR-push button will be connected to terminals L.

If, when using SVV-cable, interconnections must be made in the flush-mounting box, the use of box for ordinary clip terminals is not recommended, as the screws in those terminals have a tendency to flatten the thin SVV-wire, which can cause it to break more easily. A good alternative is the use of special terminals, such as are also used for telephone applications.

For the new wall-mounted printed circuit boards, the following goes:
The simple circuit boards 450-00020 and 450-00021 with bridge are provided with a fixed connection terminal. For all other circuit boards, the connection unit 450-00060 is required. This connection unit can be placed on the wall-mounted printed circuit board at any position (fig.1).



① mounting box for screw fitting
② connectionunit
③ wall print
④ bus push-button
⑤ button/central plate
⑥ button with text field

8.3. PROGRAMMING THE BUS push buttons AND THE INTERFACES

Programming the bus push buttons

We assume here that the installation of the distribution boxes, the wiring and the wall prints has already been carried out. The bus push buttons have not yet been placed. You will see that, in normal circumstances, the bus push buttons are only placed after they have been programmed.

a. Programming on the construction site

If you wish to carry out the programming on the construction site, you must ensure that you have a working area available near the distribution box (possibly with a small table and a chair). Use a programming block and connect it to the Nikobus. In addition, it is useful to provide two (cardboard) boxes. In the first box, (for example, on the left of our working area) place all the bus push buttons that still require programming. In the second box (for example, on the right hand side of our working area) place the programmed bus push buttons. For the programming itself, you will also need a fine screwdriver and writing material (a pen, pencil or biro). And, of course, the programming sheets made up previously should not be missing.

Enter the bus push buttons that must be programmed into the programming block, one after the other (does not go for the 2-fold, 4-fold and 8-fold bus push buttons of the ranges da Vinci and for the new bus push buttons of the ranges Niko Pure, Niko Intense, Niko Original). As a result, these bus push buttons will be connected to the Nikobus. Start the programming with the bus push button for operating location OL1.1. Every bus push button has a sticker on it, on which you can write the code of the operating location (for example OL 3.2.). Ensure that every bus push button is always entered into the programming block in the same way, as every bus push button has an upper and a lower section. This is important during programming and afterwards, when the bus push buttons are in operation.

Once a bus push button has been entered in the programming block, the programming for this push button must be carried out. Several modules are thereby possibly involved. After the inserted bus push button has been programmed, it will be slid out of the programming block and deposited in the second box (which has been empty up to now). This sequence is repeated for each of the push buttons to be programmed.

b. Programming in the installer's office

If you wish to work quietly, away from the noise of the construction site, this is certainly possible. It merely requires a board with a switch module, a shutter module and a dimcontroller installed onto it to be available in the office or workshop of the installer. The EEPROM's of the different modules on the construction site are marked with the module type and the module number. The EEPROM's of the installer's modules are removed and replaced each time by an EEPROM of the construction site. A programming block is also available here, in order to connect the bus push buttons that must be programmed to the bus.

The programming of the bus push buttons takes place as described above. After the programming, the original EEPROM's must be returned in the modules on the construction site.

c. Programming of bus push buttons that are already installed

For the programming of the bus push buttons, we recommend to use one of the two methods mentioned above. It could, however, happen that the bus push buttons have already been installed on the various wall prints. If this is the case, it is, of course, also possible to re-program these push buttons. As it is necessary to press the push button at least once during programming for confirmation, however, a lot of walking to and fro between the distribution box and each push button will have to be taken into account!

Attention: If an adaptation of the programming of existing push buttons to an installation has to take place, all other persons in the house must be warned not to operate any push buttons while the installer is carrying out the programming. In fact, if someone switches a particular light point while a module is in programming mode, the pressing of this particular push button will then be assigned in the program. In addition, ensure that the motion detectors are set to a fixed position (either ON or OFF). Simply passing by within the range of a motion detector at the moment at which a module is in the programming mode may produce undesired results.

Programming twilight switches

The programming of the twilight switches will mainly take place at the construction site. Take into account that, for most twilight switches, two positions can be programmed for one specific contact. It is possible to assign one program for when the contact closes, and another program for when this contact opens. It is thereby necessary to place the contact in the opposite position prior to programming. During the programming, the new status will be assigned by switching the contact, whereby the current program settings must be carried out.

8.4. POSITIONING THE BUS PUSH BUTTONS

Every bus push button in place

When the programming of all bus push buttons has been finished, they can be installed. To do this, you again need the floor plan, as the codes of the various operating locations can be found here. On the basis of the wall prints that have already been installed, it is possible to see how many push buttons should be installed at a particular place. The push buttons' codes have been written down on the labels that are attached to the push buttons.

Keep the correct position of the bus push button in mind when fixing the push buttons onto the wall prints, as every bus push button has an upper side and a lower side. This is indicated by means of a small triangle, and the indication TOP on the front of every bus push button. The text must be readable, and the top of the triangle points upwards.

Fixing the bus push button on to the wall print takes place by tightening the one screw that is embedded in the centre of the bus push button. The cover panels are also installed at the same time.

After mounting the bus push buttons and the cover panels, the operating buttons on the push buttons can be clicked. The operating buttons with a text field can now be completed with the necessary text or symbols.

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8.5. TESTING THE INSTALLATION

Testing the installation

After the installation has been completed, it must be tested. To do this, you can again make use the programming sheets. From the sheets, the function that each push button must carry out is clear. Go round the house and check whether all bus push buttons actually carry out the function they should perform. Carry out any modifications to the programming, and make a note of these modifications in the programming sheets.

Completion of the installation

At completion, it is important that the builder and the architect can see that every push button carries out the desired function (as specified in the offer). During the tour of the building, the actual function can be compared to the programming sheets. If the functions and the programming sheets agree, each page of the programming sheets will be signed by both by the installer and the builder. Together with the date, this will constitute proof of the proper functioning of the installation on the day of completion. The builder receives one copy, and the original remains in the hands of the installer, who will include it in the customer file.

Completion is not only a check of the installation. It is also the moment when crucial information concerning the operation and the functions of the installation can be explained to the customer. In fact, it is essential, among others, to explain to the customer how he (the customer) himself can adapt the settings of the light scene buttons according to his wishes, without having to go into programming mode.

The guarantee certificates that are delivered with the Nikobus modules are filled in at the latest 14 days after completion and posted to Niko.

9.1. BUS VOLTAGE START-UP PROCEDURE

Description

When power is applied to the Nikobus modules (switch module, shutter module and dimcontroller), a procedure is carried out in order to avoid several modules providing a power supply voltage for the bus at the same time. At all times, only one module provides the power supply voltage. Following a power cut, another module is able to provide the bus voltage.

When the 230V voltage to the modules is switched on, each module checks whether a bus voltage is present at random intervals. This takes a maximum of 1.24 seconds. If a module does not measure any bus voltage, the bus relay will be switched on, and the bus will be supplied with voltage. Within a random time of 2.5 and 5 s, another test is performed by briefly interrupting the bus relay. If no bus voltage is measured, the bus relay is switched on again. This test is repeated again every 16 minutes.

Those modules with the bus power supply switched off will measure the bus voltage at random intervals (0.3 to 1.6 s). If no bus voltage is detected twice, the bus relay will be switched “on”. A test will follow after 5 s, and then after every 16 minutes.

In case of a short circuit on the bus, the LED of mode M2 will blink. At the same moment, a random timer of between 12 to 45 s will be started, during which the bus voltage will be measured again. The complete measurement and start-up procedure will start again.

Advantages

The working method described above provides several practical advantages. For systems that rely on one single common power supply, the entire system will break down if there is a fault or an interruption to the power supply. This is not the case for the Nikobus system. If the bus power supply becomes faulty, it will be immediately and automatically taken over by another power supply from a different module. Furthermore, if the bus is partially switched off in a decentralised installation, the bus voltage for the remainder of the installation will be taken over by another module, making it possible for the part of the installation that has not been switched off to continue operating undisturbed.

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9.2. POWER INTERRUPTIONS

When the power comes on again after a power cut in the installation, the outputs of the switch module and the dimcontroller will be switched to the same position (on, off or dimmed for the dim-controller) as the position they were in before the power cut. Light points that were on at the time of the power cut will be switched on again when the voltage returns.

This is not the case for the shutter module. Here, all relays remain inactive after the voltage comes on again. This is for reasons of safety. For example: let's assume that the curtains of a certain window were closed at the time of the power cut. If these curtains were now opened manually during the power cut, and the window was opened, the curtains should then not be closed again when the power returns to the installation.

Selective avoidance of the restoration of the output position at power-up
There are sufficient reasons, e.g., safety reasons, or reasons of energy management (heavy consumers or too large a total load of switch-on current), to consider it to be undesirable for all consumers of the switch module and dimcontroller to return to their original position (before the power cut) as soon as the power returns.

It is therefore possible to make a selection of the consumers that must remain in the off-position when the voltage returns. To do this, connect one of the 230V inputs of the switch modules or the dimcontrollers in which the selected outputs are located to the 230V power supply. We will program the off-function for the selected outputs for this 230V input (A or B). When the 230V power supply voltage returns, the 230V inputs A and B always have priority for carrying out their programmed functions. These functions will always be carried out. When the voltage returns, the selected outputs will therefore be first set to the off-position, and the other outputs will then be switched to the position (on or off) they were in before the power cut.

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9.3. PROTECTION AGAINST LIGHTNING AND OVER-VOLTAGE

Description

There is a clear difference between lightning protection and over-voltage protection. In most cases, lightning protection is installed to conduct a lightning stroke directly, although (for domestic applications), it is sufficient to install an over-voltage protection. This provides no protection against direct lightning strikes, but does protect against indirect lightning strikes and over-voltages on the mains.

In house building, it must be considered that the overall effective protection is not sufficient if the incoming power cable (230/400V) is merely provided with an over-voltage protection. In principle, every incoming cable should be protected. For optimum safety, it is therefore also possible to install an over-voltage protection on the telephone line (analog or ISDN) and on the coaxial cable. In addition, if the Nikobus bus cable has been placed outside the protected area (for example in a garden shed or a garage) it must also be protected. It is always recommended to provide sufficient over-voltage protection. Not only the home automation system, but also all sensitive electronic components in the house will benefit from it.

The necessity for placing lightning protection in buildings is prescribed in the AREI (General Regulations on Electrical Installations), Art.136. In general, buildings are considered to be lightning-sensitive if a stroke of lightning could easily occur as a result of the location, type of building or use, or, if it could have serious consequences. In general, a lightning protection installation is required for public buildings (e.g., schools). In the current standards relating to the establishment of a lightning protection installation (DIN VDE 0185, IEC 1024 - 1), lightning protection equipotential bonding is also a binding requirement for the active conduction. This coupling takes place indirectly through the lightning rod.

Directions for the planning of lightning and over-voltage protection installations

If lightning conduction is required, the switching off of the active conductors must be installed according to DIN VDE 0185 Part 1, or the draft DIN VDE 0185 T100 with lightning conduction (primary protection).

a: Lightning rod (primary protection)

For installations with lightning protection, adequate measures must be taken. The following requirements apply to the lightning rod (primary protection):

- For the AC 230/400V~ mains
- Nominal conducting capacity at least 10kA (10/350)
- Level of protection < 4kV
- Lightning rod class B in conformity with EN60099-1
- For the bus cable
- Nominal conducting capacity at least 1kA (10/350)
- Level of protection < 4kV
- Lightning rod is specified in IEC SC 37A and DIN VDE 0845 Part 2 (draft)

The selection of the lightning protection and the over-voltage protection must be made during the planning.

b: Over-voltage protection (secondary protection) for the AC 230/400V mains

Over-voltage conductors for the AC 230/400V~mains will be installed in the distribution box. An over-voltage protection class C conforming to EN60099-1, and in compliance with the following requirements, must be installed:

- Nominal conducting capacity at least 5kA (8/20)
- Level of protection < 2kV
- If varistors are used, they must be provided with thermal protection and some physical separation.

Standard over-voltage conductors can be used as the conductors for an over-voltage protection if they comply with above conditions. These types do not require bus-specific material, and they are also available in a design that can be clipped onto the DIN-rail.

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9.4. VERY LOW SAFETY VOLTAGE

Description

Very low safety voltage (according to AREI, Ref. 32).

Protection against electrical shocks in case of direct contact is ensured by the use of VLSV (very low safety voltage). The maximum level of this voltage depends on the circumstances:

Condition of the human body	AC	DC with ripple	DC without ripple
Completely dry or damp skin	25	36	60
Wet skin	12	18	30
Skin submerged in water	6	12	20

The Nikobus is controlled with 9V direct current with ripple. This means that, according to the above table, safety is always guaranteed.

The conductors on the VLSV must always be materially separated from the other current lines. Should it be necessary for the VLSV conductors and the conductors for higher voltages to run together (for example, in the same conduit or in the same distribution box), they must be insulated for the highest voltage present. The active sections of current lines on VLSV may not be electrically connected to active sections or protection conductors that are part of current lines with different voltages. They may not be earthed.

The rules in connection with VLSV are not applicable for swimming pools and saunas: Please consult the AREI in this respect!

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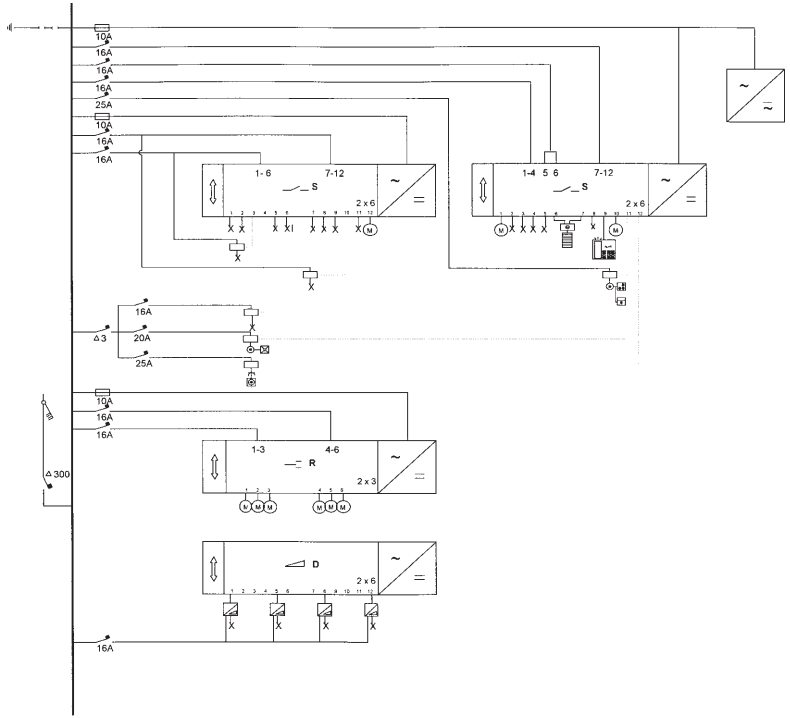
9.5. PROTECTION OF THE MODULES

Description

The power supply protection of all modules (switch module, shutter module and dimcontroller) requires a 10A circuit breaker. This connection is been fitted at the bottom right in all modules.

For every 6 outputs for the switch module and every 3 outputs for the shutter module, a 1 16A maximum circuit breaker is installed with an adapted short-circuit breaking capacity. The necessary differential switches must be mounted (see AREI) as leakage current protection.

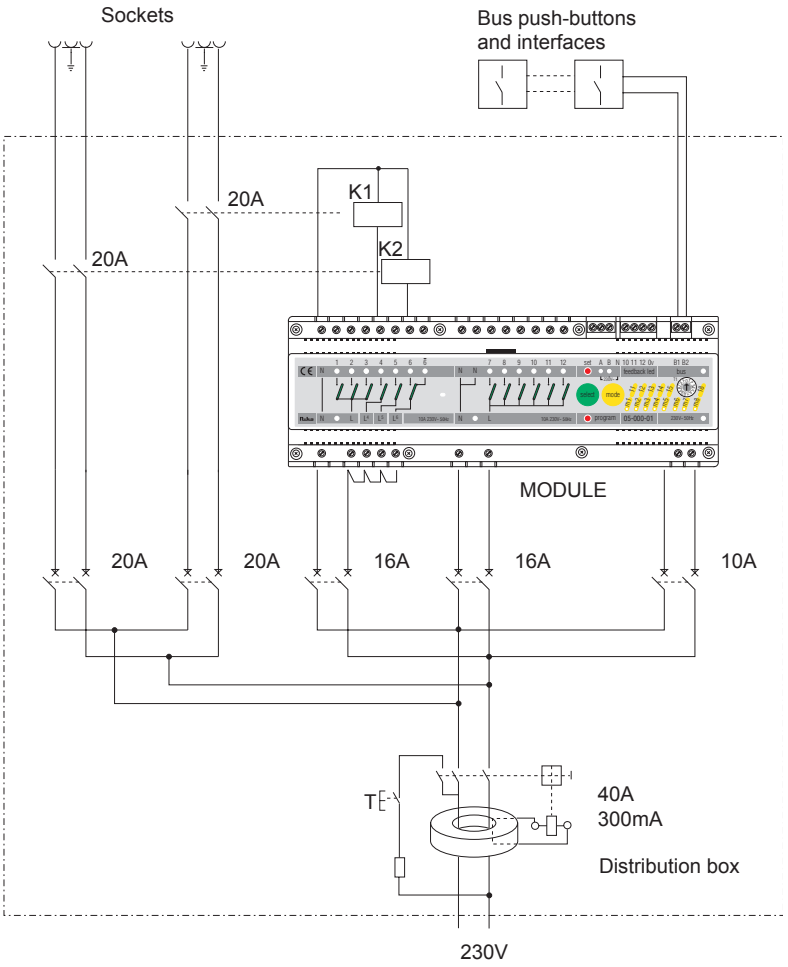


9.6. CONTROL OF THE SOCKETS AND HEAVY CONSUMERS

Description

Heavy consumers and sockets must not be connected directly to a switch module output, but must be controlled by means of a contactor. The coil of this contactor is, of course, controlled by the output of a switch module.

It is also necessary to fit a bipolar contactor for the control, e.g., the lighting in the bathroom (see AREI).



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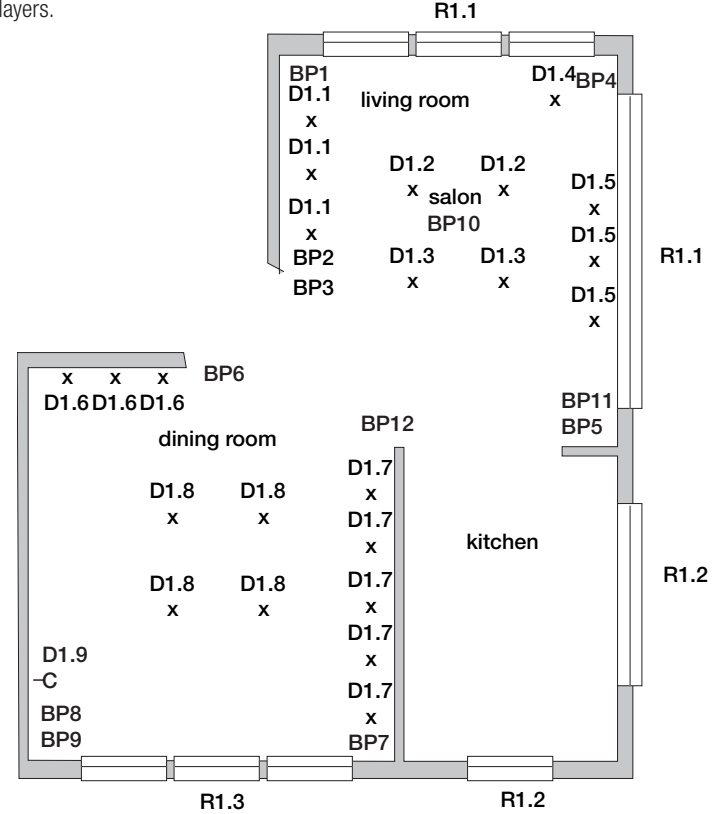
9.7. EXAMPLE OF POSITION DIAGRAM

Description

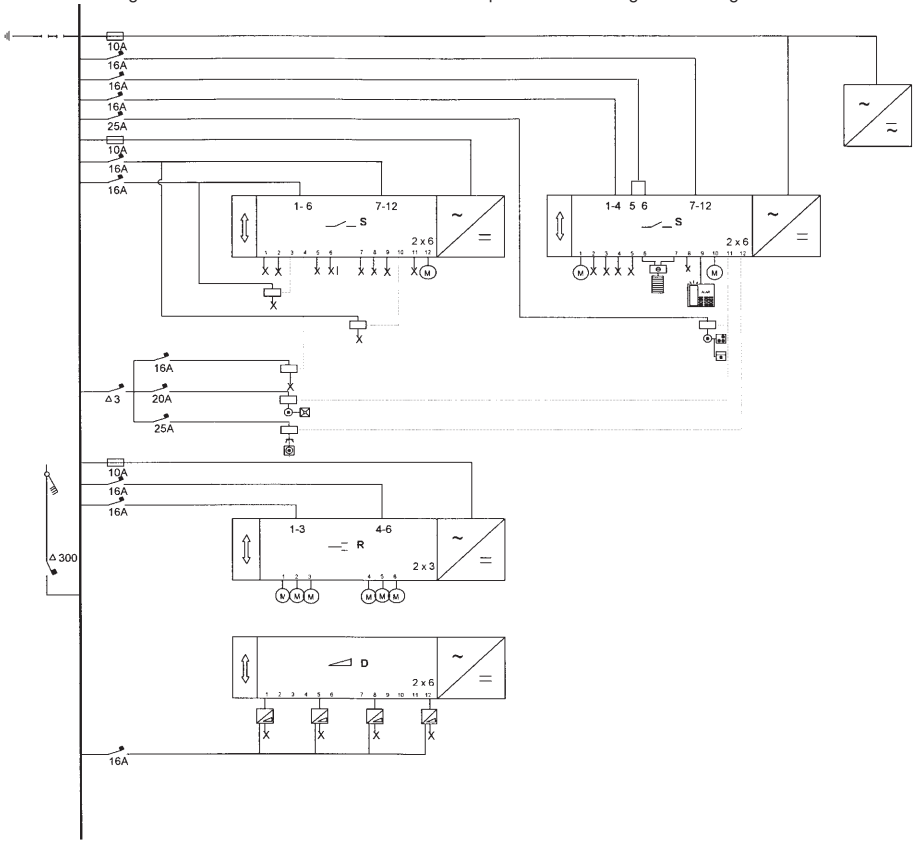
When working with the Nikobus home automation system, you must make use of a position diagram. The locations of the consumers and the operating locations are indicated in this diagram. In order to keep a clear overview, it has proven to be a good idea to work in layers. The light points, sockets, shutter motors, the audio entry system and the telephone system are then placed on separate layers.



9.8. EXAMPLE OF SINGLE-WIRE DIAGRAM

Description

The single-wire diagram must also not be missing from the home automation file. An example of such a single-wire diagram with Nikobus components is shown below.



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The Niko Customer Service

tel. +32 3 760 14 82
fax +32 3 777 71 20
e-mail: support@niko.be

The Niko helpdesk is a team of enthusiastic and experienced specialists. They are happy to help and to offer advice in many areas, such as drawing up offers, calculations and the selection of materials.

Niko not only delivers quality products, but also supports installers, inspectors and project managers with the selection and installation of its products.

Documentation required? Catalogues and folders can be obtained from the Communication Department.

tel. +32 3 760 14 82
fax +32 3 777 71 20
e-mail: support@niko.be

nv Niko sa
Industriepark West 40
B-9100 Sint-Niklaas
Belgium
tel. +32 3 760 14 70
fax +32 3 777 71 20
www.niko.be