**NERO INTELLIGENT CONTROL SYSTEM**

The Nero system is a group of units that provide centralized control of roller shutters, sun blinds, awnings, garage doors, light, electric motors or any other active load. Central control signals are transmitted through 220V power line.

**System set:**
1. **US-Nero 8013** — executive unit for roller shutters control.
2. **USR-Nero 8014** — executive unit with built-in radio receiver for roller shutters control.
3. **D-Nero 8021** — executive unit for light control (dimmer).
4. **CP-Nero 8010** — central panel for executive units control.
5. **NP-Nero 8012** — wall transmitter.
6. **MP-Nero 8016** — mini remote control.
7. **F-Nero 8015** — phase changer.
8. **Nero 8022 UP** — controllable relay for any active load (up to 2kW) control.

**Definitions:**
- **Group** — a set of devices grouped on the basis of a certain criterion (room, floor, facade, etc.). The system has a special mode that controls only the given group. The same devices can simultaneously belong to several different groups.
- **Own Group** — a group operated by means of an executive unit that has a possibility of group control without the central panel.
- **Comfort Mode** — a preprogrammed roller shutter position set by pressing the corresponding button on the front panel of an executive unit. The function can be applied to lower partially the roller shutter when the sun becomes very bright.

**Basic system advantages:**

**Convenient individual and central control**
- no extra switches required;
- various criteria for combining roller shutters into groups (different floors, building facades, rooms, etc.) as well as each control unit capability to belong to several groups;
- own-group control from any executive unit belonging to the same group;
- roller shutters/roller shutters group/ entire building remote control;
- timer and darkness sensor connection;
- reprogramming possible any time after no-extra-wiring installation.

**Simple installation:**
- minimum wiring for installation as no connection between executive units and the central panel is required;
- installation is as easy as a common switch installation;
- two variants of attachment (span-in panel mount or screw fastening) as well as laid-on installation with the help of a special frame;
- installation of several units in one multi-position frame;
- easy replacement of the installed unit when needed;
- simplified installation in case of ready-made building decor.
Fig. 34. Installing NERO devices

Order of installation
- Remove packing.
- Study the connection circuits.
- Take the installation housing apart and perform installation.
- Place the installation housing into a fixture mounting box. Squeeze the thrust screws.
- Attach the decorative frame and insert the device.
  Use a laid-on installation frame for open wiring.

While installing, follow directions and safety measures given in the introduction.
After the device has been installed, it is allowed to start its programming.

Note: programming is to be carried out with the device cover closed!
**NERO 8013 AND NERO 8014 EXECUTIVE UNITS**

**Use**

The Nero 8013 and the Nero 8014 executive units are designed to control an individual roller shutter as part of a system as well as to receive and perform commands transmitted by the Nero 8010 central panel through 220V power line.

**Features:**
- Each unit is connected to the corresponding electric motor and to 220V power line;
- Central panel commands are transmitted to executive units through 220V power line;
- Each Nero 8013 or Nero 8014 executive unit can belong to 36 different groups organized on the basis of various criteria;
- An executive unit is capable of controlling one group ("OWN GROUP") without the central panel;
- The Nero 8014 executive unit has a built-in radio control receiver for roller shutter remote control by means of the Nero 8012 and the Nero 8016 transmitters;
- Possibility to control a group of roller shutters locally, i.e. independently from the central panel (for example, in a room) or to place a switch in a convenient location without extra wiring;
- Time spent on programming a roller shutter varies from 0 to 60 seconds;
- Setting "Comfort" mode for a roller shutter.

**Technical specifications:**
- Operating supply voltage: 220(±10%)V/50Hz
- Switching current: max 3A
- Switching voltage: 220±10V
- Number of controllable electric motors: 1
- Operating time (programmable): 0 to 60 sec. (with 0,25 interval)
- Reception frequency (for Nero 8014): 432,42 MHz
- Number of programmable 8012 controls (for Nero 8014): 4
- Number of programmable Nero 8016 mini remote controls buttons: 16
- Dimensions: 81mmx81mmx50mm
- Ambient temperature: -20 to +50 °C
- Ambient conditions: indoors (low humidity)
- Protection level: IP 40
- International Standard Conformity: CE
- Electrical shock protection rate according to 27570 all-Union State Standard: II (no protective grounding required)

**Factory presets**
- Operating time: 60 sec.
- Raising time in "Comfort" mode: 3 sec.
When the unit has been connected to the power line, the LED flashes indicating that the device functions properly and can be applied by request.

![Typical Nero 8013/8014 connection circuit](image)

**Fig.35. Typical Nero 8013/8014 connection circuit**

![Nero 8013/8014 front panel buttons](image)

**Fig.36. Nero 8013/8014 front panel buttons**
### Functions of the front panel buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Function performed</th>
<th>Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>STOP</td>
<td>1. Stops the moving roller shutter.</td>
<td>Press the button quickly. The LED will become dim.</td>
</tr>
<tr>
<td></td>
<td>2. Sets the Comfort mode.</td>
<td>Press and hold the button more than 1 sec. The LED will start blinking.</td>
</tr>
<tr>
<td></td>
<td>3. Enters the Comfort programming mode.</td>
<td>Press and hold the button more than 4 sec. The LED will start blinking.</td>
</tr>
<tr>
<td></td>
<td>4. Ends up any programming mode.</td>
<td>Press the button quickly. The LED will become dim.</td>
</tr>
<tr>
<td>GRUOP</td>
<td>1. Enters the OWN GROUP control mode for 16 sec.</td>
<td>Press the button quickly. If an OWN GROUP has been preset, the LED flashes for 16 sec. If not, the LED lights up and becomes dim right after the button has been pressed.</td>
</tr>
<tr>
<td></td>
<td>2. Stores the unit into a certain group and sets it as an OWN GROUP for this unit in the groups programming mode.</td>
<td>Press the button quickly. The LED will flash for 4 sec.</td>
</tr>
<tr>
<td></td>
<td>3. Sets a continuous signal mode when the roller shutter operating time is selected.</td>
<td>Press the button quickly. The LED will become dim, which indicates the end of programming.</td>
</tr>
<tr>
<td></td>
<td>4. Switches from wall transmitters programming mode to remote controls programming mode.</td>
<td>In the programming mode press the button quickly. The green LED indicates that the wall transmitters programming mode is activated. The orange LED indicates that the remote controls programming mode is activated.</td>
</tr>
<tr>
<td>UP</td>
<td>1. Raises the roller shutter.</td>
<td>Press the button quickly. The LED will be blinking while the roller shutter is moving.</td>
</tr>
<tr>
<td></td>
<td>2. Stores the unit into a certain group in the group programming mode.</td>
<td>Press the button quickly. The LED will flash for 2 sec.</td>
</tr>
<tr>
<td></td>
<td>3. Sets the desired roller shutter operating time.</td>
<td>Press and hold the button as long as it is necessary to set the desired time. The LED will be flashing while the button is being held.</td>
</tr>
<tr>
<td>DOWN</td>
<td>1. Lowers the roller shutter.</td>
<td>Press the button quickly. The LED will start blinking.</td>
</tr>
<tr>
<td></td>
<td>2. Cleans the unit memory in the group programming mode.</td>
<td>Press the button quickly. The LED will flash for 2 sec.</td>
</tr>
<tr>
<td>PROGRAMMING</td>
<td>1. Enters the group programming mode.</td>
<td>Press and hold the button more than 4 sec. The LED will start blinking at a low frequency.</td>
</tr>
<tr>
<td></td>
<td>2. Enters the roller shutter operating time programming mode.</td>
<td>In the programming mode press the button quickly. The LED will start blinking at a high frequency.</td>
</tr>
<tr>
<td></td>
<td>3. Enters the wall transmitters programming mode of the Nero 8014 unit.</td>
<td>Press the button quickly. The LED will flash green.</td>
</tr>
</tbody>
</table>
Cleaning the executive unit memory

1. Enter the programming mode by pressing and holding the Programming button more than 4 sec. Release the button when the LED starts blinking.

2. Clean the unit memory by pressing and holding the Down button. The LED will flash for 2 sec.

3. Complete programming by pressing the Stop button.

Setting the roller shutter operating time

1. Enter the programming mode by pressing and holding the Programming button more than 4 sec. Release the button when the LED starts blinking.

2. Enter the roller shutter operating time programming mode by pressing the Programming button one more time. The LED will start blinking at a higher frequency.

3. Lower the roller shutter by pressing and holding the Down button until the roller shutter has reached the end strokes.

4. Set the roller shutter operating time by pressing and holding the Up button until the roller shutter has reached its upper position. Continue holding the button for extra 2-3 sec. after the roller shutter has stopped. The reason for it lies in the fact that the roller shutter may become heavier in winter time due to icing on its surface. Consequently, the roller shutter operating time will increase.

5. Complete programming by pressing the Stop button.

Selecting the Continuous signal mode

1. Carry out steps 1 and 2 pointed out under "Setting the roller shutter operating time".

2. Select the continuous signal mode by pressing the Gruppe button.

3. Complete programming by pressing the Stop button.

Note: Pressing the Programming button while setting the roller shutter operating time clears the user’s presets and returns the operating time to 60 sec. (factory presets). If the roller shutter operating time has not been set while the Programming mode was activated, the current presets will remain.
Programming the Comfort mode

1. Enter the Comfort programming mode by pressing and holding the Stop button more than 4 sec. Release the button when the LED starts blinking.

2. Close the roller shutter by pressing and holding the Stop button until the roller shutter has reached the end strokes.

3. Set the Comfort mode by pressing and holding the Up button until the roller shutter has reached the desired position.

4. Complete programming by pressing the Stop button.

Pressing the Programming button in the Comfort programming mode clears the user's presets and returns the time to the factory presets (3 sec.).

Individual roller shutter control

1. Open the roller shutter by pressing the Up button. While the roller shutter is moving until it reaches the end strokes, the LED will be blinking.

2. Close the roller shutter by pressing the Down button. While the roller shutter is moving, the LED will be blinking.

3. Stop the roller shutter in the desired position by pressing the Stop button while the roller shutter is moving. The LED will become dim.

4. Set the roller shutter into the Comfort mode by pressing and holding the Stop button more than 1 sec. The LED will start blinking. The roller shutter will first reach the lower position and then the Comfort position.

Note: It is required to install Nero 8014 devices (with built-in radio receivers) at a distance of no closer than 1m from one another.
NERO 8013 UP EXECUTIVE UNIT

Use

The Nero 8013 UP built-in executive unit is designed for individual control of roller shutters, awnings, garage doors or any other active load with output up to 600W. The centralized device control is performed by means of the Nero 8010 central panel. Control commands are transmitted through 220V power line.

Features:

- operation by means of the programming button;
- connection of a timer or a switch (transmits Up, Down, and Stop commands in the desired order; stops the moving roller shutter when the opposite direction button is activated);
- connection of a button with no latching function (transmits commands in the following order: Up-Stop-Down-Stop);
- possibility to disconnect 220V from the individual point relay contacts (potential free contacts);
- possibility to control automation that has an inlet for switch or button connection;
- possibility to use switches of the desired design by any manufacturer in order to follow the common style of all the roller shutter and lighting unit switches in the building.

Technical specifications:

Operating supply voltage ........................................................................................................... 220 (+10%, -15%)V/50Hz
Switching current:
resistive load cos\(\phi\)=1 ........................................................................................................ max 5A
reactive load cos\(\phi\)=0.4 ..................................................................................................... max 2A
Switching voltage:
alternating ................................................................................................................................. max 240V
constant .............................................................................................................................. max 30V
Operating time (to be set) ........................................................................................... 1.5 sec; 60 sec; continuous signal
Dimensions .................................................................................................................. 51x51x27mm
Ambient temperature .................................................................................................. -20 to +45°C
Protection level according to 14254 all-Union State Standard ......................................................... IP 40
International Standard Conformity .................................................................................. CE
Electrical shock protection rate ....................................................................................... II
(no protective grounding required)
Functioning as part of the Nero system
Nero 8013 UP units can be controlled by groups or altogether with the help of the Nero 8010 central panel. For this matter, it is necessary to program the devices as needed (see “Groups programming mode” below). One group (the Nero 8010 central panel has 9 groups) can contain an unlimited number of Nero 8013 UP units. Besides, each Nero 8013 UP unit can belong to 36 different groups.

Functioning modes
Active mode: the Nero 8013 UP unit performs commands transmitted by the Nero 8010 central panel or a switch.
Groups programming mode: the Nero 8013 UP unit memorizes group codes generated by the Nero 8010 central panel.
Operating time programming mode: the desired contacts closure time is set.

Active mode
To operate a certain Nero 8013 UP unit by means of the Nero 8010 central panel, it is necessary to select the corresponding group using the Gruppe button on the central panel. When the Up button is activated, the roller shutter is opened. When the Down button is activated, the roller shutter is closed. To stop the moving roller shutter, press the Stop button. If the opposite direction button is activated while the roller shutter is moving up or down, the roller shutter will stop for 0,5 sec. and then will start moving in the opposite direction (i.e. if the roller shutter is moving up and the Down button has been pressed, the roller shutter will stop and then start moving down).

The blinking LED on the Nero 8013 UP front panel indicates that the motor has been set in operation.

To operate a Nero 8013 UP unit by means of a button, it is required to bridge contacts 1 and 2 (see Fig.39b).

Groups programming mode
1. Enter the programming mode of the Nero 8010 unit by pressing and holding its programming button more than 4 sec. You will hear a short tone.

2. Select the desired group by pressing the Gruppe button on the Nero 8010 unit as many times as needed (groups appear one after another in turns 1, 2, ... 9).

3. Open the selected group by pressing the Up button. You will hear a short beep. The lower case of the button will change to the upper case button .

4. Enter the programming mode of the Nero 8013 UP unit by pressing and holding its programming button more than 4 sec. Release the button when the LED starts blinking.

5. Store the group code into the Nero 8013 UP memory by pressing and holding the programming button for 1 sec. The LED will flash for 2 sec. and then will start blinking again. If the LED becomes dim for 2 sec., it indicates that the group code has not been stored. To store the group code into the memory of several Nero 8013 UP units, repeat steps 4 and 5 for each unit.

6. Leave the Nero 8010 programming mode by pressing the Stop button. A short beep confirms that the programming mode has been successfully left. The LED is off.

7. Leave the Nero 8013 UP programming mode by touching the programming button twice. Otherwise, the unit will leave the programming mode automatically if no further actions are taken within 16 sec. The dark LED confirms that programming has been completed.
The given commands can be programmed by request.

1. Enter the Nero 8013 UP programming mode by pressing and holding the programming button more than 4 sec. Release the button when the LED starts blinking.

2. Enter the Operating time programming mode by touching the programming button. The LED will turn from red to green. In the current mode the LED flashes periodically according to the command set:
   - one time if the 1.5-second command is set;
   - two times if the 60-second command is set;
   - three times if the continuous command is set.

3. To select the command that follows the current one (commands appear in sequence), press and hold the programming button more than 4 sec. until the LED is off. If the selected command is not the one you need, press and hold the programming button again until the LED is off.

4. Complete programming by touching the programming button. Otherwise, the device completes programming automatically in 16 sec. The dark LED confirms that programming has been completed.

ORDER OF INSTALLATION
It is possible to install the device into a fixture mounting box of the 60x40mm size or of the 60x60mm size under the switch. Besides, the device can be installed outside the building, the installation box with the IP 65 protection level being applied.

• Remove packing;
• Open the cover by means of a screwdriver;
• While installing, follow the safety measures stated in the Introduction;
• Study the connection circuit (see Fig.38);
• Perform installation as follows:

Connecting to the power line
After the device has been connected to the power line, the LED blinks red twice.

Connecting to the motor
The motor's blue wire is intended to connect Neutral to contact 6. The black and the brown wires are responsible for the up and down directions. They are to be connected to contacts 4 and 5. In case you press the Up button after installation and the roller shutter starts moving down or vice versa, switch between the black and the brown wires.

Note: wires applied to connect the Nero 8013 UP unit to the power supply and to the motor are to be in double insulation. The lead of a cable is to be at least 0.75mm². It is forbidden to use connecting wires in polyethylene insulation.

Note: avoid short circuit between the wires responsible for the up/down directions and the Neutral main. Otherwise, contacts of the individual point relays will be damaged.

Connecting to a switch
It is required for a switch to be connected to the Nero 8013 UP to have no latching function. Otherwise, the unit won't respond to commands transmitted from the Nero 8010 central panel if a button of such a switch remains activated. Connect the common contact of the switch to contact 3 of the Nero 8013 UP. Connect the wires of up/down directions to contacts 1 and 2.
Connecting to a button with no latching function

Insert a jumper into contacts 1 and 2 (see Fig.39b). Connect the button to contacts 3 and 1/2 (interconnected with the jumper). The commands transmitted from the button are performed in the following sequence: open-stop-close.

**Note:** the length of wiring between the connected switch/button and the Nero 8013 UP is not to exceed 5m!

**Note:** the Nero 8013 UP contacts intended to connect a switch have galvanic coupling with the 220V power line.

**Note:** the motor and the power line wirings are to be done in a duct run separate from that of a switch or a button. Otherwise, the unit may function spontaneously by itself.

It is forbidden to connect the Line to the Nero 8013 UP switch contacts!
It is forbidden to connect the Line to the common contact of the switch!
It is forbidden to connect the Line directly to the motor (parallel to the radio control!)

Connecting to automation units for swing gates, slide gates, sectional garage doors

Fig.37 shows how to connect individual point relays. Through Jumper A between contacts 7 and 8 (Fig.39b) power is transmitted to the contacts of the individual point relays. If Jumper A is removed, the Line is disconnected from the relay contacts that now can switch load up to 3A~220V or 3A=30V.

To connect the Nero 8013 UP to automation units for swing gates, slide gates, or sectional garage doors, it is necessary to remove Jumper A between contacts 7 and 8 as well as to place Jumper B into contacts 4 and 5. To apply a button, connect contact 7 and interconnected contacts 4 and 5 to the corresponding contacts of the automation unit (i.e. contacts intended for a button connection). See Fig.39b for details.

Connecting to automation units for roller shutters

The Nero 8013 UP can be applied with any automation units for roller shutters that have a possibility to connect a switch or a button. If the automation unit has a low-voltage input, it is required to disconnect Line from the contacts of the Nero 8013 UP individual point relays. For this matter, remove Jumper A. If the automation unit is operated through 220V power line, the Nero 8013 UP contacts responsible for the up/down directions are directly connected to the automation unit contacts intended for a switch application (see red marks on Fig.40).

**Contacts:**
1,2 - Contacts to connect the UP and DOWN wires of a switch;
3 - Contact to connect the common wire of a switch;
4, 5 - Relay contacts to connect the UP and DOWN wires of a motor;
6 - Contact to connect the Neutral wire of a motor;
7, 8 - Jumper A transferring “phase” to the relay contacts;
8 - Contact to connect to Line of ~220V supply main;
9 - Contact to connect to Neutral of ~220V supply main.
Fig. 39. a) connecting a tubular motor and a button, b) connecting to other automation units for gates, garage doors, and barrier arms gates

Fig. 40. Connecting Nero 8013 UP to GU-4.3
NERO 8012 CORDLESS WALL TRANSMITTER

Use

The 8012 wall transmitter is designed to control Nero 8014 executive units at a distance. It allows to place the roller shutter control in a convenient location or to control a group of roller shutters with no application of extra wiring.

Features:
- Can be attached everywhere by means of the self-adhesive rear panel;
- Functions as a group switch provided the Nero 8012 device is programmed into several Nero 8014 executive units;
- Controls “OWN GROUP”, “COMFORT” mode, “COMFORT” mode of the “OWN GROUP”.

Technical specifications:

- Signal frequency: 434,42±0,15MHz
- Ambient temperature: -20 to +50°C
- Output: max 10 mW
- Switching voltage: 220±10V
- Number of independently controlled devices: 1
- Reach: 10m
- Dimensions: 81mmx81mmx20mm
- Weight: max 75g
- Power supply: galvanic battery 23A, 12V
- Ambient conditions: indoors (low humidity)
- Protection level: IP 40
- International Standard Conformity: CE (no protective grounding required)
Programming NP-Nero 8012 wall transmitters into Nero 8014 units memory

1. Enter the transmitters programming mode by pressing shortly the Programming button on the Nero 8014 front panel. The LED will flash green.

2. Program the Up button by pressing the Up button on the wall transmitter. The LED on the wall transmitter will flash for a short time. The green LED on the Nero 8014 unit will become dim for 1 sec.

3. Program the Stop button by pressing the Stop button on the wall transmitter. The LED on the wall transmitter will flash for 1 sec. The green LED on the Nero 8014 unit will become dim for 1 sec.

4. Program the Down button by pressing the Down button on the wall transmitter. The LED on the wall transmitter will flash for 1 sec. The green LED on the Nero 8014 unit will become dim for 1 sec.

5. Program the Gruppe button by pressing the Gruppe button on the wall transmitter. The LED on the wall transmitter will flash for a short time. The green LED on the Nero 8014 unit will become dim for 1 sec.

6. Complete programming by pressing the Stop button on the Nero 8014 front panel.

If no actions are performed while the programming mode is activated, the device will leave the programming mode automatically in 16 sec.

Note: The wall transmitter buttons are to be programmed in the following manner: first the Up button, then the Stop button, the Down button and finally the Gruppe button. Otherwise, the wall transmitter buttons won't perform the corresponding functions.

In case the button previously stored into the Nero 8014 memory is attempted to be programmed again, the LED on the Nero 8014 unit will become dim according to the following pattern: short-long-short.

If the Nero 8014 memory is full, the LED will start blinking at a high frequency when a button is being stored.

Erasing programmed wall transmitter buttons from the Nero 8014 unit memory

In case there have been made any mistakes while programming, it is possible to clear the unit memory and repeat programming wall transmitter buttons.

1. Enter the wall transmitters programming mode by pressing shortly the Programming button on the USR-Nero 8014 front panel. The LED will flash green.

2. Erase the wall transmitter buttons by pressing the Down button on the Nero 8014 front panel. The LED will become dim for 2 sec.

Operating roller shutters by means of Nero 8012 wall transmitters

By means of Nero 8012 wall transmitters it is possible to operate roller shutters in the same way they are operated with Nero 8013 and Nero 8013 executive units.

If the Nero 8012 LED is blinking at a high frequency, it indicates that the battery charge is very low.
**NERO 8016 MINI REMOTE CONTROL**

**Use**

The Nero 8016 mini remote control is designed to control Nero 8014 executive units at a distance.

**Technical specifications:**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal frequency</td>
<td>434,42±0,15MHz</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-20 to +50°C</td>
</tr>
<tr>
<td>Output</td>
<td>max 10 mW</td>
</tr>
<tr>
<td>Switching voltage</td>
<td>220±10V</td>
</tr>
<tr>
<td>Number of independently controlled devices</td>
<td>4</td>
</tr>
<tr>
<td>Reach</td>
<td>10m</td>
</tr>
<tr>
<td>Dimensions</td>
<td>60mmx38mmx17mm</td>
</tr>
<tr>
<td>Weight</td>
<td>max 25g</td>
</tr>
<tr>
<td>Power supply</td>
<td>galvanic battery 23A, 12V</td>
</tr>
<tr>
<td>Ambient conditions</td>
<td>indoors (low humidity)</td>
</tr>
<tr>
<td>Protection level</td>
<td>IP 40</td>
</tr>
<tr>
<td>International Standard Conformity</td>
<td>CE</td>
</tr>
</tbody>
</table>

**Programming remote controls into the Nero 8014 unit memory**

1. Enter the transmitters programming mode by pressing shortly the Programming button on the USR-Nero 8014 front panel. The LED will flash green.

2. Enter the remote controls programming mode by pressing shortly the Gruppe button on the Nero 8014 front panel. The LED will flash orange.

3. Program buttons of remote controls by pressing the buttons to be programmed one by one.

4. Complete programming by pressing the Stop button on the Nero 8014 front panel.

If no actions are performed while the programming mode is activated, the device will leave the programming mode automatically in 16 sec.

In case the button previously stored into the Nero 8014 memory is attempted to be programmed again, the LED on the Nero 8014 unit will become dim according to the following pattern: short-long-short.

If the Nero 8014 memory is full, the LED will start blinking at a high frequency when a button is being stored.
Erasing programmed remote control buttons from the Nero 8014 unit memory

In case there have been made any mistakes while programming, it is possible to clear the unit memory and repeat programming remote control buttons.

1. Enter the wall transmitters programming mode by pressing shortly the Programming button on the USR-Nero 8014 front panel. The LED will flash green.

2. Enter the remote controls programming mode by pressing shortly the Gruppe button on the Nero 8014 front panel. The LED will flash orange.

3. Erase the remote control buttons by pressing the Down button on the Nero 8014 front panel. The LED will become dim for 2 sec.

Operating roller shutters by means of Nero 8016 remote controls

The Nero 8016 remote control repeats Up-Stop-Down-Stop commands in circles. When a button is held more than 1 sec., the remote control operates the Nero 8014 OWN GROUP provided the latter has been preset.
**NERO 8021 DIMMER**

**Use**

The Nero 8021 dimmer is designed to control lighting units with incandescent and halogen bulbs.

**Features:**
- Brightness regulation;
- Smooth on/off-switching of lighting units (increases bulbs durability);
- The latest preset brightness level and the "COMFORT" mode are stored into memory;
- Can belong to 36 different groups organized on the basis of various criteria;
- Possibility to control one group ("OWN GROUP") with no use of the central panel;
- Possibility to connect an external control unit and a motion sensor;
- Possibility to control halogen bulbs with the use of an electronic or a common transformer.

**Technical specifications:**
- Operating supply voltage: 220 (±10%)V/50Hz
- Maximum load: 400W
- Ambient temperature: -20 to +50°C
- Dimensions: 81mm x 81mm x 50mm
- Ambient conditions: indoors (low humidity)
- Protection level: IP 40
- International Standard Conformity: CE
- Electrical shock protection rate according to 27570 all-Union State Standard: II (no protective grounding required)
Fig.41. Typical Nero 8021 connection circuit

Fig.42. Nero 8021 front panel buttons

Fig.43. Applying Nero 8021 dimmer and Nero 8010 central panel for light control
<table>
<thead>
<tr>
<th>Button</th>
<th>Function performed</th>
<th>Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>1. Enters the OWN GROUP control mode for 16 sec.</td>
<td>Press the button quickly. If an OWN GROUP has been preset, the LED flashes for 16 sec. If not, the LED lights up and becomes dim right after the button has been pressed.</td>
</tr>
<tr>
<td></td>
<td>2. Stores the unit into a certain group and sets it as an OWN GROUP for this unit in the Groups programming mode.</td>
<td>Press the button quickly. The LED will flash for 2 sec.</td>
</tr>
<tr>
<td></td>
<td>1. Sets the latest brightness level.</td>
<td>Press the button quickly. The LED will flash for a short time.</td>
</tr>
<tr>
<td></td>
<td>2. Sets the Comfort mode (the comfortable brightness level).</td>
<td>Press and hold the button more than 1 sec. The LED will flash for a short time.</td>
</tr>
<tr>
<td></td>
<td>3. Enters the Comfort programming mode.</td>
<td>Press and hold the button more than 4 sec. The LED will start blinking.</td>
</tr>
<tr>
<td></td>
<td>4. Ends up the programming mode.</td>
<td>Press the button quickly when in the programming mode. The LED will become dim.</td>
</tr>
<tr>
<td></td>
<td>1. Switches the light on.</td>
<td>Press the button quickly. The LED will flash for a short time.</td>
</tr>
<tr>
<td></td>
<td>2. Increases the brightness level.</td>
<td>Press and hold the button until the desired brightness level has been reached. The LED will be blinking as long as the button is held.</td>
</tr>
<tr>
<td></td>
<td>3. Stores the unit into a certain Group in the groups programming mode.</td>
<td>Press the button quickly. The LED will flash for 2 sec. and then will start blinking.</td>
</tr>
<tr>
<td></td>
<td>1. Switches the light off.</td>
<td>Press the button quickly. The LED will flash for a short time.</td>
</tr>
<tr>
<td></td>
<td>2. Reduces the brightness level.</td>
<td>Press and hold the button until the desired brightness level has been reached. The LED will be blinking as long as the button is held.</td>
</tr>
<tr>
<td></td>
<td>3. Cleans the unit memory in the programming mode.</td>
<td>Press the button quickly when in the programming mode. The LED will flash for 2 sec. and then will start blinking.</td>
</tr>
<tr>
<td>OFF</td>
<td>4. Switches the button mode to the motion sensor mode when the Control outlet programming mode is activated.</td>
<td>Press the button quickly. If the LED becomes dim for 2 sec., the button mode is activated. If the LED flashes for 2 sec., the sensor mode is activated. Press the button again to switch from the current mode to the desired one.</td>
</tr>
<tr>
<td></td>
<td>5. Switches button functions in the buttons mode.</td>
<td>Press and hold the button more than 4 sec. If the LED becomes dim for 2 sec., the brightness level control function is activated. If the LED flashes for 2 sec., the OWN GROUP control function is activated.</td>
</tr>
<tr>
<td></td>
<td>6. Changes the light operation time set for the unit at the reaction of the motion sensor.</td>
<td>Press and hold the button more than 4 sec. If the LED becomes dim for 2 sec., the light will be switched on for 1 min. If the LED flashes for 2 sec., the light will be switched on for 10 sec.</td>
</tr>
<tr>
<td>PROGRAMMING</td>
<td>1. Enters the programming mode.</td>
<td>Press and hold the button until the LED starts blinking.</td>
</tr>
<tr>
<td></td>
<td>2. Enters the Control outlet programming mode.</td>
<td>In the programming mode press the button quickly. The LED will start blinking at a high frequency.</td>
</tr>
</tbody>
</table>
Outlet for a motion sensor or an extra control button connection (control outlet)
The D-Nero 8021 dimmer has a possibility of an extra device connection to control lighting units. A button (switch) or a motion sensor is connected to clamp 4 and to the neutral main (see Fig.41). To control the lighting unit, it is necessary to connect the neutral main to clamp 4.
The button connected to the control outlet can operate:
  • the lighting unit connected to the dimmer
    If the button is quickly pressed, the brightness level will gradually increase until it reaches the top limit. When the lighting unit is switched on, press the button quickly to reduce the brightness level, which will gradually decrease until the lighting unit is completely switched off. To set the desired brightness level, press and hold the button until the desired level has been reached. Then, release the button. In this case the brightness level will increase provided the lighting unit is switched off and decrease when the lighting unit is switched on.
  • the OWN GROUP
    To switch the lighting unit (directly connected to the dimmer) on or off, press the button quickly. If the button is pressed and held more than 2 sec., all the lighting units of the OWN GROUP will be switched on or off. The OWN GROUP is defined when the device is being programmed.

Note: to operate the OWN GROUP by means of an external button, it is required to set a group for the dimmer to be operated with the Gruppe button when programming.
The motion sensor connected to the control outlet of the dimmer switches the light on for 1 or 10 minutes. Every time the sensor is nullified time reckoning starts anew (for 1 or 10 minutes). The time period (1 or 10 minutes) is selected when programming.

Order of programming

Programming the control outlet

1. Enter the programming mode by pressing and holding the programming button more than 4 sec. The LED will start blinking at a low frequency.

2. Enter the Control outlet programming mode by quick pressing the programming button while in the general programming mode.

3. Set the desired mode of the control outlet (the modes change in circles) by quick pressing the Off button. If the LED becomes dim for 2 sec. and then starts blinking, the Button connection mode is activated. If the LED flashes for 2 sec. and then starts blinking, the Motion sensor connection mode is activated. To switch from one mode to the other, press the programming button one more time.

4. Change the button functions or select the desired time for which the light is switched on at the motion sensor reaction by performing the following steps:
   Press the Off button and hold it more than 4 sec.
   a) If the LED blinks, becomes dim for 2 sec. and then starts blinking again, the brightness level control function of the lighting unit connected to the dimmer is activated. The same pattern indicates that the lighting unit will be switched on for 1 min at the reaction of the motion sensor.
   b) If the LED blinks, flashes for 2 sec. and then starts blinking again, the OWN GROUP control function is activated. The same pattern corresponds to the 10-minute time set at the motion sensor reaction.

The modes are switched in circles by pressing and holding the Off button more than 4 sec. If the outlet functioning mode is preset, it is possible to change the functions the button performs. If the motion sensor functioning mode is preset, it is possible to change from 1- to 10-minute time, for which the light is switched on at the sensor reaction.
Intelligent Nero-System

Programming the comfort mode

1. Enter the Comfort programming mode by pressing and holding the Comfort button more than 4 sec. The LED will start blinking.

2. Set the desired brightness level using the On and the Off buttons.

3. Leave the Comfort programming mode by pressing the Comfort button. The LED becomes dim.

Individual light control

1. Switch on the light by quick pressing the On button. The lighting unit will gradually reach its maximum brightness level.

2. Set the desired brightness level by pressing and holding the On button until the desired level has been reached.

3. Switch the light off by quick pressing the Off button while the lighting unit is on. The lighting unit will be gradually switched off.

4. Set the latest brightness level by quick pressing the Comfort button.

5. Set the Comfort mode by pressing and holding the Comfort button more than 1 sec. The LED will flash twice. There will be set the brightness level that has been previously selected.

Groups programming

See directions under "Storing group codes into the executive unit" and "Storing group codes into the executive unit + defining an OWN GROUP" in the Nero 8010 central panel section.
**NERO 8022 UP CONTROLLABEL RELAY**

**Use**

The Nero 8022 UP relay is designed:
- to control sockets. By means of the Nero 8010 central panel all sockets can be controlled either simultaneously or according to groups.
- to switch on/off household electric appliances, fans, electric motors, pumps, etc. by means of the Nero 8010.

**Features:**
- The device can operate a wide range of electric appliances to be plugged into a socket;
- The device can be installed into a recessed fixture mounting box under a socket thanks to its small size;
- Output: dry contact (switching any voltage up to 250V);
- An external button connection for local control;
- Memory mode (after voltage has been switched on and off, the device returns to the state it had before switching the voltage off) and non-memory mode (after operating supply voltage has been switched on and off, the device is always switched off).

**Technical specifications:**

Operating supply voltage ............................................................................................................... 220(±10%)V/50Hz

Switching current:
- resistive load cos\(\phi\)=1 .............................................................................................................. max 10A
- reactive load cos\(\phi\)=0,4 .............................................................................................................. max 6A
- pulse current ............................................................................................................................... max 80A

Switching voltage:
- alternating ................................................................................................................................. max 250V
- constant ................................................................................................................................. max 24V

Dimensions ...................................................................................................................................... 51mmx51mmx27mm

Ambient temperature .................................................................................................................-20 to +50°C

Protection level ................................................................................................................................. IP 20

Ambient conditions .................................................................................................................. indoors (low humidity)

International standard conformity ............................................................................................... CE

Electrical shock protection rate according to 27570 all-Union State Standard ..................................... II

(no protective grounding required)
Description:

The Nero 8022 UP is a device that provides switching any active load on/off with power up to 2.2 kW. The controllable relay can be switched on or off. It is possible to switch between these two states by using the local control button as well as by means of the programming button (see Fig.44). When the button is pressed for the first time, the device is switched on. When the button is pressed for another time, the device is switched off. Central control is possible when using the Nero 8010 panel. There can be applied several Nero 8010 central panels. To control the device by means of the Nero 8010 central panel, it is necessary to store one or several group codes generated by the central panel into the memory of the device. The number of controllable relays in a group is not limited. The device itself can belong to 36 different groups. To activate the device, the corresponding group on the central panel is to be selected. After the Up button has been pressed, the device is switched on. If the Down button has been pressed, the device is switched off. When the device is activated, the LED starts blinking at a high frequency.

Functioning modes

*Operating mode* — a mode, in which the appliances to be plugged in are controlled.

*Memory operating mode* — a mode that sets the state (on or off) of the Nero 8022 UP relay it had before the power was switched off and then switched on again. For example, if the device was on when the power was switched off, the former will be on again after the power has been switched on.

*Non-Memory operating mode* — a mode that switches the relay off if the power has been switched off and then switched on again.

*Programming mode* — a mode that stores a group code generated by the Nero 8010 central panel into the Nero 8022 UP memory.

Programming

**Altering the functioning modes**

1. Enter the Nero 8022 UP programming mode by pressing and holding the programming button more than 4 sec. Release the button when the LED starts blinking.

2. Change the functioning mode by quick pressing the external control button. If the LED flashes for 2 sec., the memory operating mode is activated. If the LED becomes dim for 2 sec., the non-memory operating mode is activated.
Storing group codes into the Nero 8022 UP memory
Before programming, follow the steps listed in the Nero 8010 central panel section under the title "Showing groups on the LCD".

1. Select the desired group. Groups are indicated one after another by quick pressing the Gruppe button ( and again ).

2. Enter the Nero 8022 UP programming mode by pressing and holding the programming button. Release the button when the LED starts blinking.

3. Store the group codes into the Nero 8022 UP memory by pressing and holding the programming button for 1 sec. The LED will flash for 1 sec. and then will start blinking. If the LED becomes dim for 4 sec., the code has not been stored. It is possible to store a group code into the memory of several relays (repeat steps 2 and 3 for each relay).

4. Leave the Nero 8010 programming mode by pressing the Stop button. You will hear a short beep. The LCD will indicate the number of the group selected last in the programming mode.

5. Leave the Nero 8022 UP programming mode by quick pressing the programming button. The LED will stop blinking. If the programming button is not pressed, the Nero 8022 UP will leave the programming mode automatically in 16 minutes.

Operating by means of the Nero 8010 central panel
1. Select the desired group by pressing the Gruppe button as many times as it is necessary for the LCD to indicate the desired group (groups are shown one by one ).

2. Switch on the Nero 8022 UP relay group by pressing the Up button. The LCD will show ascending dashes .

3. Switch off the Nero 8022 UP relay group by pressing the Down button. The LCD will show descending dashes .

Connecting Nero 8022 UP devices

Fig.45. Nero 8022 UP connection circuits

a) for bulb operation  b) for any load operation
Figure 45 shows the way Nero 8022 UP relays are to be connected. The relay is connected to the power line and to the appliance to be controlled. It is possible to interchange L and N while connecting the power line. When needed, an external control button can be connected to clamp 5. The button is connected to contacts 4 and 5. Potential is transferred from contact 4 to contact 5. The switching relay is connected between contacts 1 and 2. In order to switch on or off the appliance to be controlled, it is necessary to connect Line to contact 2 (see Fig. 45 a, b). The appliance itself is to be connected between contact 1 and Neutral.

**Note:** regarding the safety measures it is required to connect Line to the switching relay. In case Neutral is connected to contact 1 or 2, and Line is connected to the appliance, the device will be alive (i.e. will be under 220V voltage) after the appliance has been switched off!

**Nero 8022 UP relays can be applied to create controllable sockets in apartments, houses and office buildings** (see Fig. 46).

### Connecting the Nero 8022 UP relay to various load types

**Resistive load**

Electric heaters, fan heaters, thermoelectric heaters, and floor heaters can serve as examples of resistive load. The power of the resistive load to be connected without any extra switching devices equals 2200W.

**Non-linear load**

Regular bulbs belong to non-linear load. The glower resistance of a cold bulb is 15 times as low as that of a hot bulb. That is why when the bulb lights up, the starter current flowing through the relay contacts can greatly exceed the current flowing after the bulb has been alight for some time. Below is the formula to calculate the minimum load resistance at the power up time:

$$ R_{\text{min}} = \frac{U_c \times \sqrt{2}}{I_{\text{max}}} = \frac{220 \times \sqrt{2}}{80} = 3.8 \text{ohms} $$

where $R_{\text{min}}$ stands for minimum initial bulb resistance measured in ohms, $U_c$ stands for alternating power line voltage measured in volts, $I_{\text{max}}$ stands for maximum relay pulse current measured in amperes.

For example, the glower resistance of a cold 60W bulb by Philips equals 67 ohms, and that of a hot bulb — 1000 ohms. If a bulb when cold and hot had the same glower resistance (1000 ohms), it would be possible to connect 36 bulbs. However, in reality due to the low resistance of a bulb when cold it is possible to connect the following number of bulbs:

$$ K = \frac{R_h}{R_{\text{min}}} \times \frac{67}{3.8} = 18 $$

where $K$ is the number of bulbs, $R_h$ is the glower resistance in ohms, $R_{\text{min}}$ is the minimal initial bulb resistance in ohms. Taking into consideration the 10% voltage fluctuations in the power line, it is required to reduce the number of bulbs to be connected by 10%. Thus, the total number of bulbs will be 16 with the 960V total power.
Capacitance load

**Note:** it is forbidden to connect capacitance load without limiting starter current flowing to the Nero 8022 UP relay. One of the capacitance load examples is luminous lamps with an electronic ballast that don't have a smoothing resistor at the input (e.g. FERON CAB28, VITOVT2001 and other similar lamps). One lamp can be connected to the relay as a single lamp input capacitor capacity is not high. However, when several lamps are connected parallel to the relay, pulse starter current may increase, which will cause the relay contacts to seal. To avoid it, a 7.4-ohm current-limiting resistor is to be connected in sequence with the lamps. The relay dissipation power should be 6W. In this case the total power of the lamps connected can be up to 100W. If the relay dissipation power is increased, the lamps total power can be also increased.

Figure 47 shows how to connect the NERO 8022 UP relay to luminous lamps with an electronic ballast through a current-limiting resistor.

![Diagram of connecting Nero 8022 UP to luminous tubes with electronic ballast](image)

**Fig.47.** Connecting Nero 8022 UP to luminous tubes with electronic ballast
**NERO 8010 CENTRAL PANEL**

**Use**

The Nero 8010 central panel is designed to combine the Nero 8013 and the Nero 8014 executive units as well as the Nero 8021 dimmer into groups and to control them. Control commands are transmitted through 220V power line.

**Features:**

- Connected to 220V network;
- LCD-indicator for easy programming and control (indication of the command executed);
- The Nero 8010 panel is capable to control 9 groups of Nero 8013/8014 units and Nero 8021 dimmers independently;
- The number of Nero 8013/8014 units and Nero 8021 dimmers the Nero 8010 central panel can control is not limited;
- The number of executive units in a group is not limited (a group can comprise one, several or all executive units in the building);
- Possibility to connect an external control unit (switch, timer, remote control) for light and roller shutters control;
- The group to be controlled with the external unit can be defined in the process of programming;
- Possibility to hide the group controlled with the external unit (i.e. to make it inaccessible for the Nero 8010 front panel buttons);
- The numbers of the groups not used can be skipped and not shown on the indicator. In this case only the groups being used (e.g. "1", "3", "7") are indicated when listed through.

**Technical specifications:**

- Operating supply voltage .......................................................... 220(±10%)V/50Hz
- External control signal voltage ....................................................... 220V
- Dimensions ................................................................. 81mmx81mmx50mm
- Ambient temperature .......................................................... -5 to + 50°C
- Ambient conditions .......................................................... indoors (low humidity)
- Protection level ................................................................. IP 40
- International Standard Conformity ................................................ CE
- Electrical shock protection rate according to 27570 all-Union State Standard ............................................ II (no protective grounding required)
When the central panel has been connected to the power line, the LCD will show the number of a group (.), (.), (.), ..., or the dash symbol −. You will also hear a short beep, which indicates that the device is ready to function properly.

Fig. 48. Typical Nero 8010 connection circuit

Fig. 49. Nero 8010 front panel buttons
<table>
<thead>
<tr>
<th>Button</th>
<th>Function performed</th>
<th>Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUP</td>
<td>1. Selects the group to be controlled or programmed.</td>
<td>Select the desired group by quick pressing the button as many times as it is necessary for the LCD to indicate the number of this group (characters appear in circles).</td>
</tr>
<tr>
<td></td>
<td>2. Sets the Comfort mode for the selected group of roller shutters.</td>
<td>Press and hold the button more than 1 sec. The LCD will display the number of the group to be controlled . After the button has been released, the dynamic Comfort symbol is displayed.</td>
</tr>
<tr>
<td></td>
<td>3. Ends up the programming mode.</td>
<td>Press the button quickly when in the programming mode. The LCD will display the number of the current group .</td>
</tr>
<tr>
<td>STOP</td>
<td>1. Stops the moving roller shutter.</td>
<td>Press the button quickly. The LCD will indicate the number of the group to be stopped. After the button has been released, the Stop symbol is displayed.</td>
</tr>
<tr>
<td></td>
<td>2. Opens and hides the group when programming.</td>
<td>Press the button quickly. The LCD will display the number of the group to be controlled . After the button has been released, the dynamic Up symbol is displayed.</td>
</tr>
<tr>
<td></td>
<td>2. Erases its own codes from the memory of all the units belonging to a certain group when in the group programming mode.</td>
<td>Press the button quickly. The LCD will display the number of the group to be controlled . After the button has been released, the dynamic Down symbol is displayed.</td>
</tr>
<tr>
<td>UP</td>
<td>1. Performs the Up command.</td>
<td>Press the button quickly. The LCD will display the number of the group to be controlled . After the button has been released, the dynamic Up symbol is displayed.</td>
</tr>
<tr>
<td>DOWN</td>
<td>2. Erases its own codes from all the units when Group &quot;All&quot; is selected.</td>
<td>Press the button quickly. The LCD will display the character for 2 sec. followed by a long beep .</td>
</tr>
<tr>
<td>PROGRAMMING</td>
<td>1. Enters the group programming mode.</td>
<td>Press and hold the button more than 4 sec. The LCD will be alternately displaying group numbers and group characters .</td>
</tr>
<tr>
<td></td>
<td>2. Switches group characters.</td>
<td>Press the button quickly. The LCD will display the character for 2 sec. followed by a long beep .</td>
</tr>
</tbody>
</table>
GROUPS

The Nero system presupposes unlimited application of executive units. By means of the Nero 8010 central panel it is possible to divide the latter into 9 groups and control the groups separately from one another. To do it, you are to select the desired group which will be displayed on the LCD. To control all executive units in the system, you are to select Group “All” (     ) on the LCD.

Groups can be open or hidden.

A hidden group is a group that doesn’t have access for the central panel buttons control (the group number is not displayed on the LCD). The following symbols of the programming mode indicate that the group is hidden: .                .

An open group —a group that can be accessed by means of the central panel buttons (the group number is displayed on the LCD). The following symbols of the programming mode indicate that the group is open:                  .

When the system is programmed, you can open the groups intended for the building control.

Each group has its unique code stored into the memory of all the executive units belonging to the same group.

The code of Group “All” is not stored into executive units memory.

Groups can have:

• all different units (Fig.50a) — separate groups;
• some units that belong to several groups simultaneously and some units that belong only to the given group (Fig.50b) — interconnected groups;
• all units that belong to at least two groups simultaneously, the other group containing a greater number of executive units (Fig.50c) — enclosed groups.
CONTROL OUTLETS

It is possible to connect an external control unit to the Nero 8010 central panel. Figure 51 shows how to connect the R-5.7 and the R-5.5 radio controls as well as the Lumina timer to the central panel.

Through control outlets it is possible to control only one group of objects. To define the group of objects operated through control outlets, you are to enter the programming mode and select \( \text{EU}_1 \), \( \text{EU}_2 \) or \( \text{EU}_3 \).

Symbols \( \text{EU}_1 \), \( \text{EU}_2 \) are selected to operate asynchronous motors (roller shutter motors) by means of external units. The character \( \text{EU}_1 \) in the upper case indicates that the group is open and can be controlled either by means of the Nero 8010 panel buttons or an external unit. The character \( \text{EU}_2 \) in the lower case indicates that the group is hidden and can be operated only by means of an external unit.

Symbols \( \text{EU}_3 \) are selected to operate light by means of an external unit. The character \( \text{EU}_3 \) in the upper case indicates that the group is open and can be controlled either by means of the Nero 8010 panel buttons or an external unit. The character \( \text{EU}_4 \) in the lower case indicates that the group is hidden and can be operated only by means of an external unit.

As pointed out above, it is possible to control only one group of objects through the Nero 8010 control outlets. If such a group has been already programmed and another group is being programmed, the device will erase all the data on the previously defined group and store the latest group programmed.

OWN GROUP

Each executive unit can operate a group of objects without the Nero 8010 central panel. This group is called OWN GROUP and defined when the unit is programmed.

An executive unit can belong to several groups, but it can have only one OWN GROUP.

Figure 52 shows devices belonging to group 1 (they are outlined by the bigger dotted line) and devices belonging to group 2 (they are outlined by the smaller dotted line). The arrows are pointed to the units controlled.
If group 1 is programmed for the EU1 executive unit as an OWN GROUP, the EU1 unit will operate the following executive units: EU2, EU3, and EU4. The same regards group 2 as the EU4 unit operates such units as EU3, EU5, and EU6. Thus, the EU3 and the EU4 units belong to the two groups. The EU3 unit can operate both the EU1 and the EU4 units. At the same time the EU1 device can operate the EU4 device.

The OWN GROUP function makes the control process more convenient and allows to control a group of such devices as the Nero 8013/8014 executive units and the Nero 8021 dimmer without the Nero 8010 central panel application.

**Showing groups on the LCD**

1. Connect the Nero 8010 panel to the 220V power line. The LCD will display followed by a short beep.

2. Enter the programming mode by pressing and holding the programming button more than 4 sec. You will hear a short tone. The LCD will be alternately displaying and .

3. Open the group by pressing the Up button. You will hear a short beep. The lower case of the will change to the upper case .

4. Select the next group to be opened. The groups from 1 to 9 are changed in turns. To switch from one group to another, you are to press the Gruppe button. After the button has been pressed, you will hear a short beep.

5. Perform step 3.

If you need to open a greater number of groups, you are to perform steps 4 and 3.

**Hiding groups**

The open group can be closed by request.

1. Close the group by pressing the Up button. You will hear a short beep. The LCD will indicate the upper case of the change to the lower case .

**Programming the group to be operated through control outlets** (by means of an external unit)

1. Select the desired group by pressing the Gruppe button as many times as it is necessary for the LCD to display the desired group (groups are changed one by one or ).

2. Select the necessary symbol. To switch from one symbol to another, press the programming button. The symbols are changed one by one: or (see Table 4 to learn about the symbols used).
**Storing group codes into the memory of Nero 8013, Nero 8014, Nero 8021 units**

Perform the steps listed under “Showing groups on the LCD” in the current section.

1. Select the desired group. Groups are changed from 1 to 9 in turns. To switch from one group to another, you are to press the Gruppe button.

2. Enter the programming mode by pressing and holding the programming button more than 4 sec. Release the button when the LED will start blinking.

3. Store the group code into the Nero 8013 memory by pressing the Up button. The LED will flash for 2 sec and then will start blinking. If the LED becomes dim for 2 sec., the code has not been stored.

4. Leave the Nero 8013 unit programming mode by pressing the Stop button. If the button has not been pressed, the unit leaves the programming mode automatically in 16 sec.

5. Leave the Nero 8010 panel programming mode by pressing the Stop button. You will hear a short beep. The LCD will display the current group number (e.g. ![Group 1](image.png)).

**Storing group codes into the memory of executive units. Programming an OWN GROUP**

Perform all the steps, but 3 listed in the section under the subtitle “Storing group codes into the memory of Nero 8013, Nero 8014, Nero 8021 units”. Instead of step 3, perform the following:

- Store the group code into the executive unit memory by pressing the Gruppe button. The LED will flash for 2 sec. and then will start blinking. If the LED becomes dim for 2 sec., the group code has not been stored.

Each executive unit can have only one OWN GROUP. If such a group has been already programmed and you intend to program another one, the device will save data only on the newly created OWN GROUP.

**Cleaning executive units memory by means of the Nero 8010 central panel**

To erase all group codes stored into the memory of all the executive units in the system, perform the following steps:

1. Enter the programming mode by pressing and holding the programming button more than 4 sec. Select symbol ![Symbol](image.png).

2. Erase all group codes by pressing the Down button. You will hear a short beep. The LCD will display ![Erased](image.png).

**To erase codes of a certain group by means of the Nero 8010 central panel, perform the following steps:**

1. Enter the programming mode by pressing and holding the programming button more than 4 sec.

2. Select the desired group. Groups are changed from 1 to 9 in turns. To switch from one group to another, you are to press the Gruppe button.

3. Erase all codes of a certain group by pressing the Down button. You will hear a short beep. The LCD will display ![Erased](image.png).

When the Down button is pressed in the programming mode, the Nero 8010 central panel signals to all the executive units belonging to a certain group to delete the code of this group.
**Operating a group of roller shutters**

1. Select the desired group. Groups are changed from 1 to 9 in turns. To switch from one group to another, you are to press the Gruppe button.

2. a) Raise a group of roller shutters by pressing the Up button. You will see the corresponding roller shutters move up. The LCD will display the dynamic symbol of the Up command.

   b) Lower a group of roller shutters by pressing the Down button. You will see the corresponding roller shutters move down. The LCD will display the dynamic symbol of the Down command.

3. Stop a group of roller shutters in the position needed by pressing the Stop button. The corresponding roller shutters will stop. The LCD will display the symbol of the Stop command.

4. Set a group of roller shutters into the Comfort mode by pressing and holding the Stop button more than 1 sec. The LCD will display the dynamic symbol of the Comfort mode.

**Operating an OWN GROUP (of roller shutters)**

1. Select the OWN GROUP control mode by pressing the Gruppe button. The LED will flash for 16 sec. During these 16 sec. it is possible to operate an OWN GROUP.

2. a) Raise the roller shutters of an OWN GROUP by pressing the Up button. The LED will start blinking. The roller shutters will start moving up.

   b) Lower the roller shutters of an OWN GROUP by pressing the Down button. The LED will start blinking. The roller shutters will start moving down.

3. Set an OWN GROUP into the Comfort mode by pressing and holding the Stop button more than 1 sec. The LCD will display the dynamic symbol of the Comfort mode buttons. The corresponding roller shutters will first reach the bottom position and then the Comfort position.

The Nero 8014 executive unit with a built-in radio receiver can operate an OWN GROUP by means of the following devices:

- the front panel buttons of the Nero 8014 unit;
- the front panel buttons of the Nero 8012 cordless wall transmitter (the Nero 8012 buttons completely copy the Nero 8014 buttons);
- a button of the Nero 8016 remote control if the button is held more than 1 sec.
**Intelligent Nero-System**

**NERO 8015 PHASE CHANGER**

**Use**

The Nero 8015 phase changer is designed to transmit control commands from one phase to another. The device is applied when the central panel and/or executive units are connected to different phases.

**Features:**
- The phase changer is installed into a distributing frame;
- The device case is made to be placed on a DIN-bus.

**Technical specifications:**

- Operating supply voltage: 380(±10%)V/50Hz
- Dimensions: 90mmx52mmx66mm
- Ambient temperature: -20 to + 50°C
- Ambient conditions: indoors (low humidity)
- Protection level: IP 20
- International standard conformity: CE
- Electrical shock protection rate according to 27570 all-Union State Standard: II
  (no protective grounding required)

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**Fig. 53. Typical Nero 8015 connection circuit**

![Diagram of Nero 8015 connection circuit](image-url)
INTELLIGENT CONTROL SYSTEM

✓ High comfort level
✓ Modern design
✓ Reliability
✓ Simple installation
✓ Controlling thru power line and radio channel

LIGHT CONTROL

ROLLE SHUTTERS CONTROL

NERO 8016 REMOTE CONTROL

NERO 8012 CORDLESS WALL TRANSMITTER

LUMINA TIMER

NERO 8010 CENTRAL PANEL

NERO 8014 ROLLER SHUTTER CONTROL + RADIO RECEIVER

NERO 9013 ROLLER SHUTTER CONTROL
PATeRNEs OF THE NERO SYSTEM APPLICATION

CENTRAL CONTROL, ROLLER SHUTTER GROUPS CONTROL

Pattern 1:
Number of roller shutters: 9.
Problem:
- individual control of each roller shutter;
- central control;
- independent control of three roller shutter groups, each group containing 3 roller shutters.

Solution 1 is shown on Fig. 54., where

CP-Nero 8010 central panel
EU-an executive unit

Programming:
1. Enter the programming mode of the CP1 central panel;
2. Select symbol \( \text{All} \) for Group "All" \( \text{All} \);
3. Select group \( \text{All} \) and set symbol \( \text{All} \);
4. Enter the programming mode of the EU1, EU2, and EU3 executive units;
5. Press the Up buttons on these executive units one by one to store the code of group 1 into the memory of EU1, EU2, and EU3;
6. Press the Stop buttons on these executive units one by one to complete programming of group 1;
7. Select group \( \text{All} \) on the central panel and set symbol \( \text{All} \);
8. Repeat steps 4-6 for EU4, EU5, and EU6.
9. Select group 3 on the central panel and set symbol \( \text{All} \);
10. Repeat steps 4-6 for EU7, EU8, and EU9.
11. Complete programming by pressing the Stop button on the CP1 central panel.

Result 1:
1. All the executive units (EU1-EU9) perform functions of a local switch.
2. If the group \( \text{All} \) is selected, the central panel performs functions of a central switch.
3. If one of the three groups is selected, the central panel operates the chosen group of roller shutters.
**Solution 2**

Apply additional CP2, CP3, and CP4 central units. Connections are shown with a dotted line on Fig.54.

1. Perform steps 1-11 listed in Solution 1 for the CP1 central panel;
2. Enter the CP2 programming mode;
3. Select group [1] and set symbol [2];
4. Enter the programming mode of the EU1-EU3 executive units;
5. Store the group [1] code of the CP2 into the memory of the EU1-EU3 executive units;
6. Select group [3] and set symbol [4];
7. Enter the programming mode of the EU1-EU9 executive units;
8. Store the group [5] code of the CP2 into the memory of the EU1-EU9 executive units;
9. Leave the programming mode of the EU1-EU9 executive units;
10. Repeat steps 2-9 for the CP3 central panel and the EU4-EU6 executive units;
11. Repeat steps 2-9 for the CP3 central panel and the EU7-EU9 executive units.

**Result 2:**

1. The first three points of Result 1 remain;
2. If group [1] is selected on the CP2-CP4 central panels, the CP2 central panel functions as a central switch for the EU1-EU3 executive units, the CP3 central panel functions as a central switch for the EU4-EU6, the CP4 functions as a central switch for the EU7-EU9;
3. If group [3] is selected on the CP2-CP4, the latter operate all the roller shutters.

Solution 2 provides an extra function:
- possibility to operate all the roller shutters by means of any central panel in the building, so that there wouldn't be any need for the user to reach a certain central panel located at a different place (room, floor, etc.).

**Solution 3:**

Perform steps 1-11 listed in Solution 1 for the CP1-CP4 central panels.

**Result 3:**

There appears an additional possibility to control all roller shutters in a building and all groups of roller shutters by means of any central panel.
LIGHT CENTRAL CONTROL, GROUP CONTROL OF LIGHTING UNITS

Pattern 2:
Number of lighting units: 9 (up to 400W each).
Problem:
• individual control of each lighting unit;
• central control of all lighting units;
• group control, each group containing three lighting units.

The problem has a similar solution to Solutions 1-3 of Pattern 1.
Figure 55 shows how to connect the units.

CP — a Nero 8010 central panel;
D — a Nero 8021 dimmer.
CONTROLLING ROLLER SHUTTERS AND LIGHT BY MEANS OF ONE CENTRAL PANEL

Pattern 3
Number of objects: 9 roller shutters and 6 lighting units (up to 400W each).
Problem:
• central control of roller shutters and lighting units;
• individual control of roller shutters and lighting units;
• group control of roller shutters and lighting units.

Solution
See Fig.56.

Fig.56. Controlling roller shutters and light

CP — a Nero 8010 central panel;
EU — a Nero 8013 executive unit;
D — a Nero 8021 dimmer.
1. Enter the CP1 programming mode;
2. Select group ✂ and set symbol ☑;
3. Select group ▶ and set symbol ☑;
4. Enter the programming mode of the EU1-EU9 executive units;
5. Store the code of group ☑ into the EU1-EU9 executive units;
6. Leave the programming mode of the EU1-EU9 executive units;
7. Select group ✂ on the CP central panel and set symbol ☑;
8. Enter the programming mode of the D1-D6 dimmers;
9. Store the code of group ☑ into the memory of the D1-D6 dimmers;
10. Leave the programming mode of the D1-D6 dimmers;
11. Select group ▶ on the central panel and set symbol ☑;
12. Enter the programming mode of the EU1-EU3;
13. Store the code of group ☑ into the memory of the EU1-EU3 executive units;
14. Leave the programming mode of the EU1-EU3 executive units;
15. Select group ▶ on the central panel and set symbol ☑;
16. Enter the programming mode of the EU4-EU6 executive units;
17. Store the code of group ☑ into the memory of the EU4-EU6 executive units;
18. Leave the programming mode of the EU4-EU6 executive units;
19. Repeat steps 11-14 for group ☑ and the EU7-EU9 executive units;
20. Select group ▶ on the central panel and set symbol ☑;
21. Enter the programming mode of the D1 and D2 dimmers;
22. Store the code of group ☑ into the memory of the D1-D2 dimmers;
23. Leave the programming mode of the D1 and D2 dimmers;
24. Repeat steps 20-23 for group ☑ and the D3-D4 dimmers;
25. Repeat steps 20-23 for group ▶ and the D5-D6 dimmers;
26. Leave the programming mode of the CP1 central panel.

Result:
1. Group 1 operates all roller shutters in the building;
2. Group 2 operates all lighting units in the building;
3. Group 3 operates the EU1-EU3 executive units, Group 4 operates the EU4-EU6 executive units, Group 5 operates the EU7-EU8 executive units;
4. Group 6 operates the D1-D2 dimmers, Group 7 operates the D3-D4 dimmers, Group 8 operates the D5-D6 dimmers.
AN EXTERNAL UNIT APPLICATION FOR ROLLER SHUTTERS AND LIGHTING UNITS CONTROL

At the customer's request it is possible to provide additional automation units in the building. For example, it is possible to operate the building completely or partially by means of timers or remote controls. The latter can be connected to the Nero 8010 central panel.

Pattern 4
Number of roller shutters: 9.

Problem:
1. Individual control of each roller shutter;
2. Central control of all roller shutters;
3. Group control of roller shutters, each group containing 3 roller shutters;
4. Remote control of the whole building and each group of roller shutters separately.

Solution is shown on Fig. 57.

Programming:
1. Enter the programming mode of the CP1 central panel;
2. Set symbol for group ;
3. Repeat steps 3-11 listed in Solution 1 of Pattern 1;
4. Enter the programming mode of the CP2 central panel;
5. Select group 1 and set symbol ;
6. Repeat steps 5-6 listed in Solution 2 of Pattern 1;
7. Repeat steps 4-7 for the CP3 and CP4 central panel;
8. Store a button of a four-channel transmitter into the memory of the R1 radio receiver; store a second button of the transmitter into the memory of the R2 radio receiver; store a third button into R3, a fourth into R4.

Result:
1. The EU1-EU9 executive units function as local switches;
2. If group is selected on the CP1 central panel, the latter functions as a central switch;
3. If groups , , are selected on the CP1 central panel, the CP1 will operated the selected group of roller shutters;
4. If group is selected on the CP2-CP4 central panels, the CP2 functions as a central switch for the EU1-EU3 executive units, the CP3 functions as a central switch for the EU4-EU6 executive units, the CP4 functions as a central switch for the EU7-EU9 executive units;
5. If group is selected on the CP2-CP4 central panels, the latter operate all the roller shutters in the building;
6. The remote control button stored first operates all the roller shutters; the one stored second—the EU1-EU3 units, etc.;
7. The timer operates all the roller shutters in the building.
Pattern 5:
Number of roller shutters: 3.
Problem:
1. central control of all roller shutters;
2. individual control of each roller shutter;
3. central control of all roller shutters by means of a timer.

Supply main ~220V

CP — a Nero 8010 central panel;
EU — a Nero 8013 executive unit;
T — a timer.

Solution
See Fig.58

Programming:
1. Enter the programming mode of the CP1 central panel;
2. Set symbol 国 for group 国;
3. Select group 国 and set symbol 国;
4. Enter the programming mode of the EU1 executive unit;
5. Store the code of group 国 into the memory of the EU1 unit;
6. Leave the programming mode of the EU1 unit;
7. Select group 国 on the CP1 central panel and set symbol 国;
8. Repeat steps 4-6 for group 2 and the EU2 executive unit;
9. Select group 国 on the CP1 central panel and set symbol 国;
10. Repeat steps 4-6 for group 国 and the EU3 executive unit;
11. Leave the programming mode of the CP1 central panel.
**Result:**
1. The EU1-EU3 executive units function as local switches;
2. If group A is selected, the central panel functions as a central switch;
3. If one of the groups 1, 2, 3 is selected, the central panel operates the selected group;
4. The timer can operate either all roller shutters or any group of roller shutters.

**Pattern 6:**
Number of lighting units: 3.
Problem:
- individual control of each lighting unit;
- central control of all lighting units;
- controlling three groups of lighting units;
- central control of all lighting units by means of a timer.

**Solution:**
See Fig. 59. The problem is solved as it was in Pattern 5. The only difference is that it is necessary to set symbol L for an open group or l for a hidden group to be controlled by the timer. It is not possible to alter brightness level by means of external units.

![Diagram](image)

**Fig. 59. Applying timers and Nero devices for light control**

CP-a Nero 8010 central panel;
D-a Nero 8021 dimmer;
T-a timer.
APPLICATION OF REMOTE CONTROL DEVICES

It is possible to control local groups of roller shutters by means of Nero 8014 executive units with built-in radio receivers and Nero 8012 wall transmitters.

Pattern 6
Let's consider a two-storied house with 4 rooms, each room having two roller shutters.

Problem:
1. individual control of each roller shutter;
2. central control of all roller shutters;
3. central control of all roller shutters on each floor;
4. simultaneous control of all roller shutters in a room.

Solution:
See Fig.60.

Fig.60. Applying Nero devices with built-in radio control

CP-a Nero 8010 central panel;
EU-a Nero 8014 executive unit;
NP-a Nero 8012 cordless wall transmitter.
Programming:
1. Enter the programming mode of the CP1 central panel;
2. Set symbol \( \text{\textbullet} \) for group \( \text{\textbullet} \);
3. Select group \( \text{\textbullet} \) and set symbol \( \text{\textbullet} \);
4. Enter the programming mode of the EU1-EU4 executive units;
5. Store the group 1 code into the memory of the EU1-EU4 units by pressing the Up button one by one;
6. Leave the programming mode of the EU1-EU4 executive units;
7. Select group \( \text{\textbullet} \) on the CP1 central panel and set symbol \( \text{\textbullet} \);
8. Repeat steps 4-6 for group \( \text{\textbullet} \) and the EU5-EU8 executive units;
9. Leave the programming mode of the CP1 central panel;
10. Enter the wall transmitters programming mode of the EU1-EU2 executive units;
11. Store the NP1 wall transmitter buttons into the memory of the EU1-EU2 executive units;
12. Leave the programming mode of the EU1-EU2 executive units;
13. Enter the wall transmitters programming mode of the EU3-EU4 executive units;
14. Repeat steps 11-12 for the EU3-EU4 executive units and the NP2 wall transmitter;
15. Repeat steps 11-12 for the EU5-EU6 executive units and the NP3 wall transmitter as well as for the EU7-EU8 executive units and the NP4 wall transmitter.

Result:
1. The EU1-EU9 executive units function as local switches;
2. If group \( \text{\textbullet} \) is selected, the central panel functions as a central switch; if group \( \text{\textbullet} \) or \( \text{\textbullet} \) is selected, the central panel operates roller shutters by floors;
3. The NP1 wall transmitter functions as a group switch for the EU1-EU2 executive units; the NP2 functions as a group switch for the EU3-EU4 executive units, etc.

If there is a need to control an entrance door roller shutter, a Nero 8014 unit can operate it within the system.
AN "OWN GROUP" APPLICATION

The "OWN GROUP" function allows controlling a group of roller shutters locally, without any extra Nero 8010 central panels or radio controls. The group of roller shutters is operated by means of an executive unit, for which this group has been set as an OWN GROUP while programming. For each unit belonging to this group, it is possible to set an OWN GROUP function and control the entire group by means of any Nero 8013 unit.

In this way, it is also possible to control light by means of dimmers.

Pattern 8

See Fig.61.

The EU1-EU4 executive units belong to one group of the CP1 central panel. This group has been set as an OWN GROUP for the EU2 executive unit. The latter can operate all the roller shutters in this group without the CP1.

Fig.61. Operating a group of roller shutters without an OWN GROUP function

CP — a Nero 8010 central panel;
EU — a Nero 8013 executive unit.