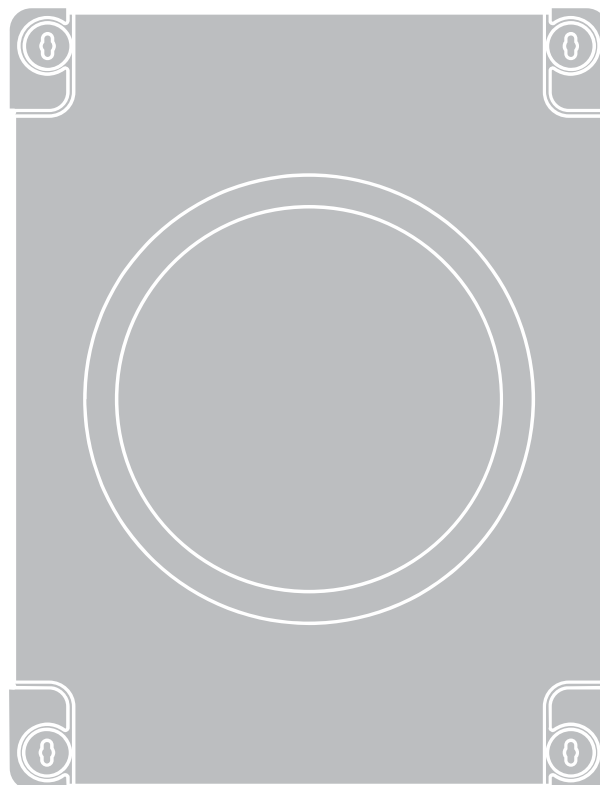


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CE

Control unit MC824H



EN - Instructions and warnings for installation and use

IT - Istruzioni ed avvertenze per l'installazione e l'uso

FR - Instructions et avertissements pour l'installation et l'utilisation

ES - Instrucciones y advertencias para la instalación y el uso

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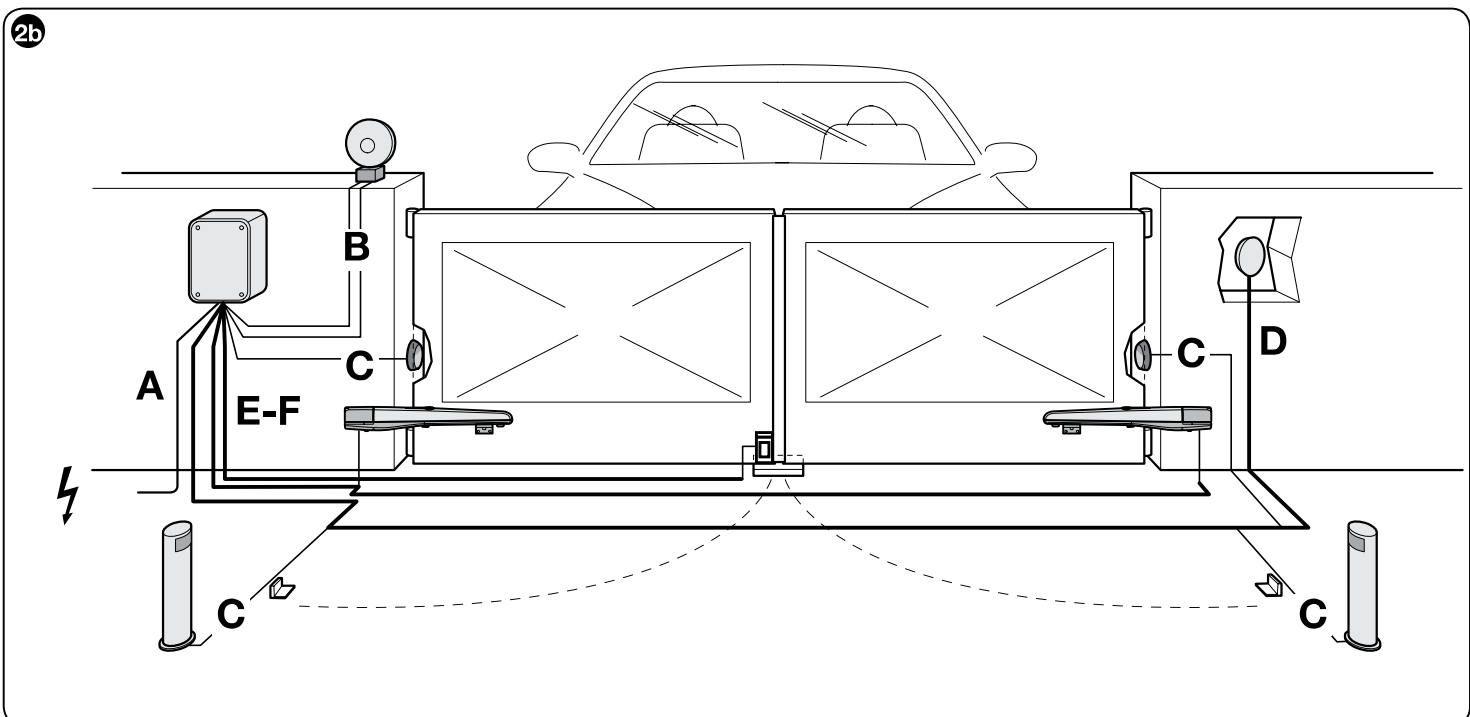
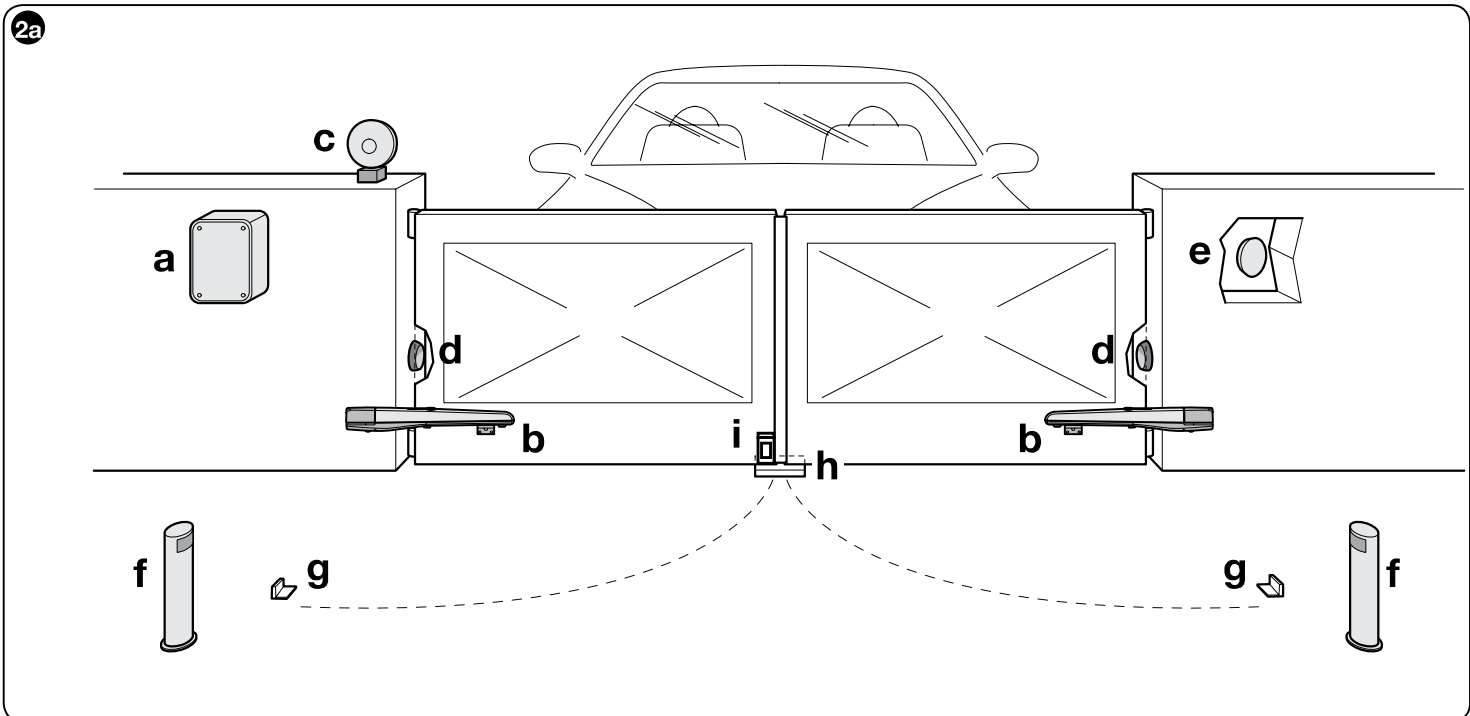
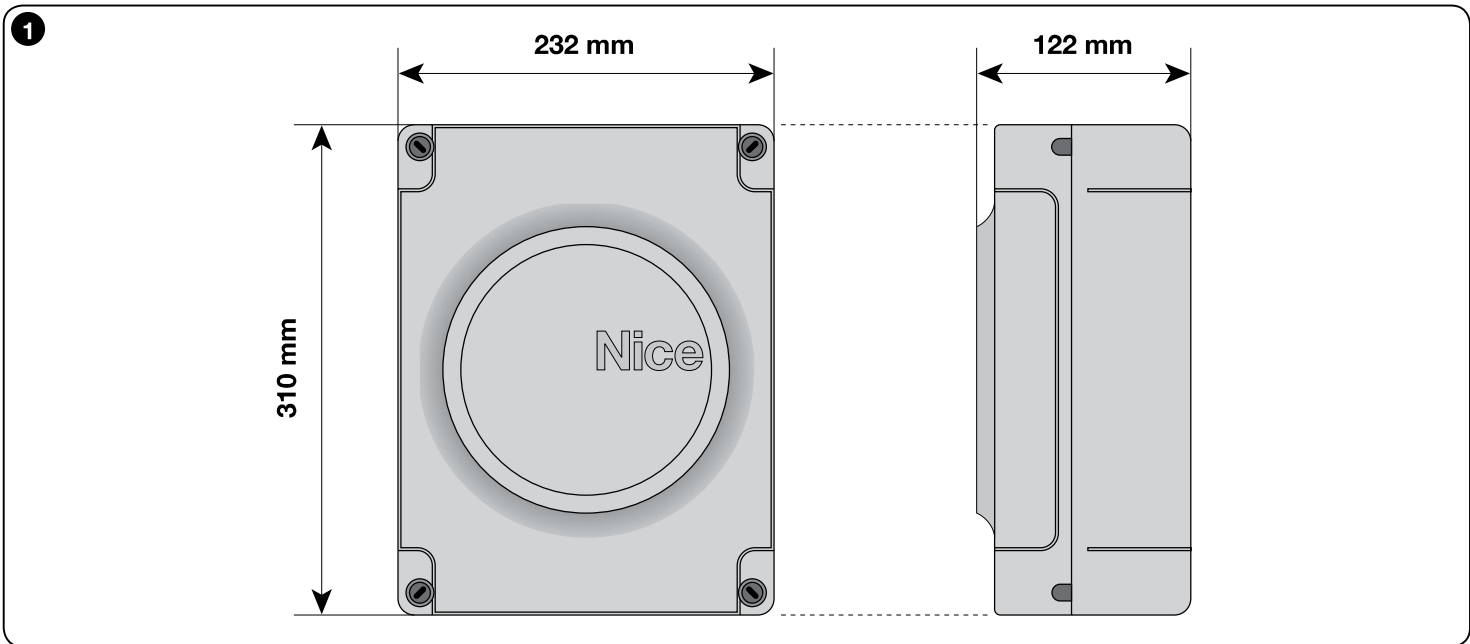
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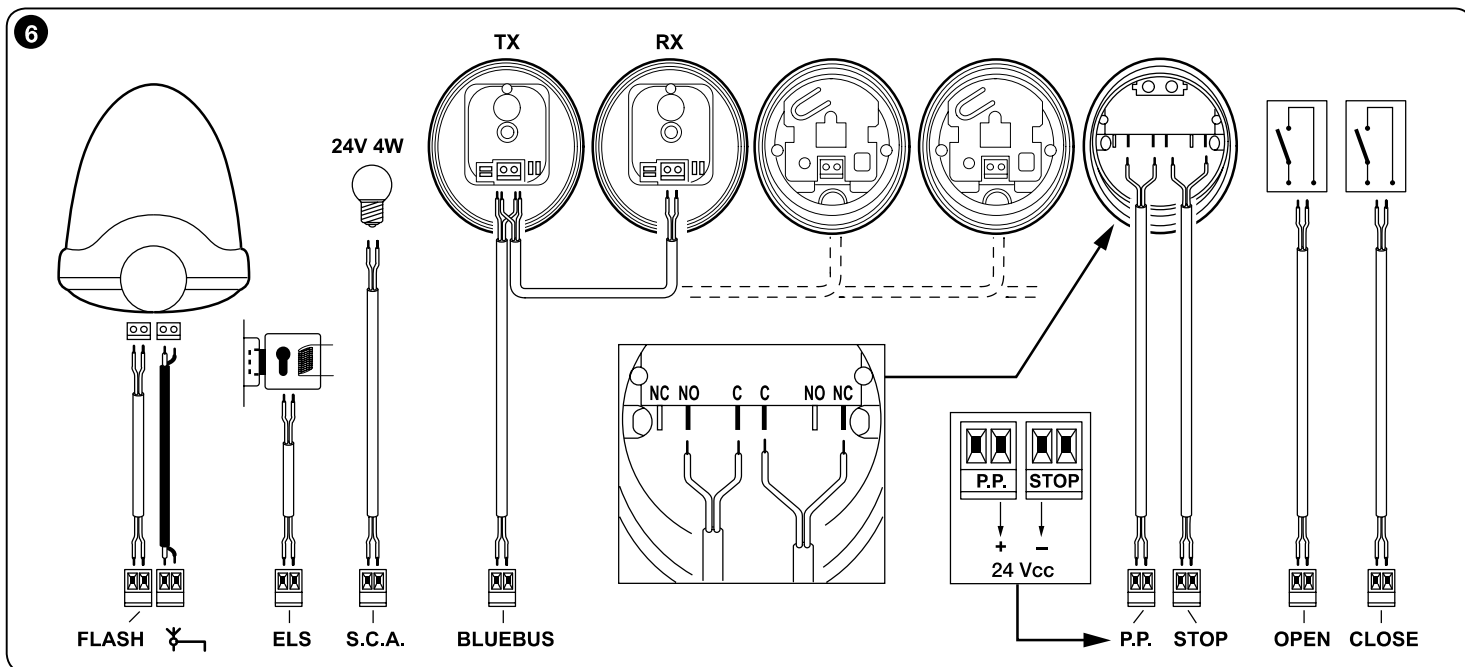
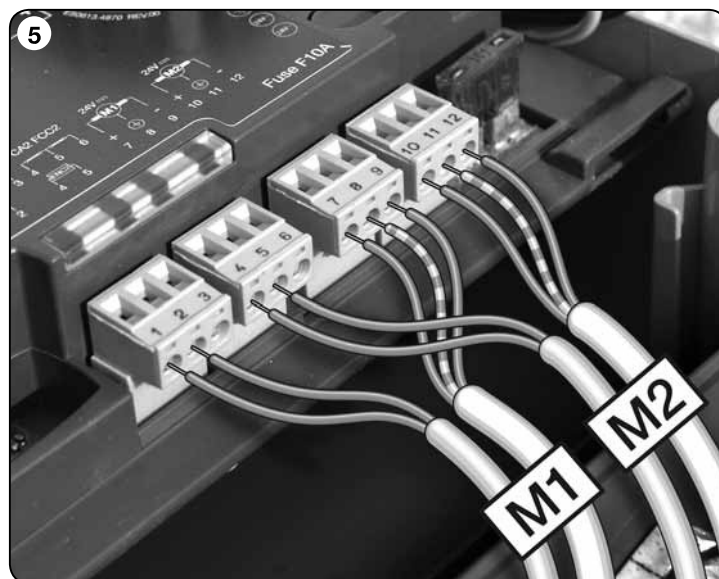
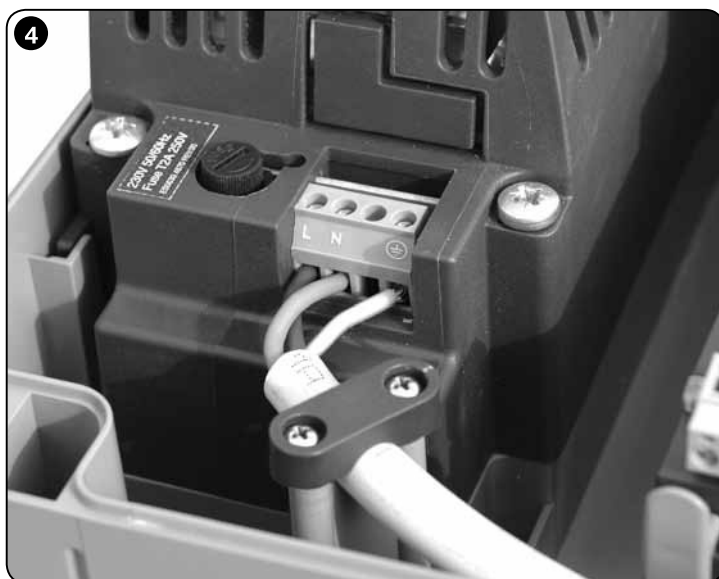
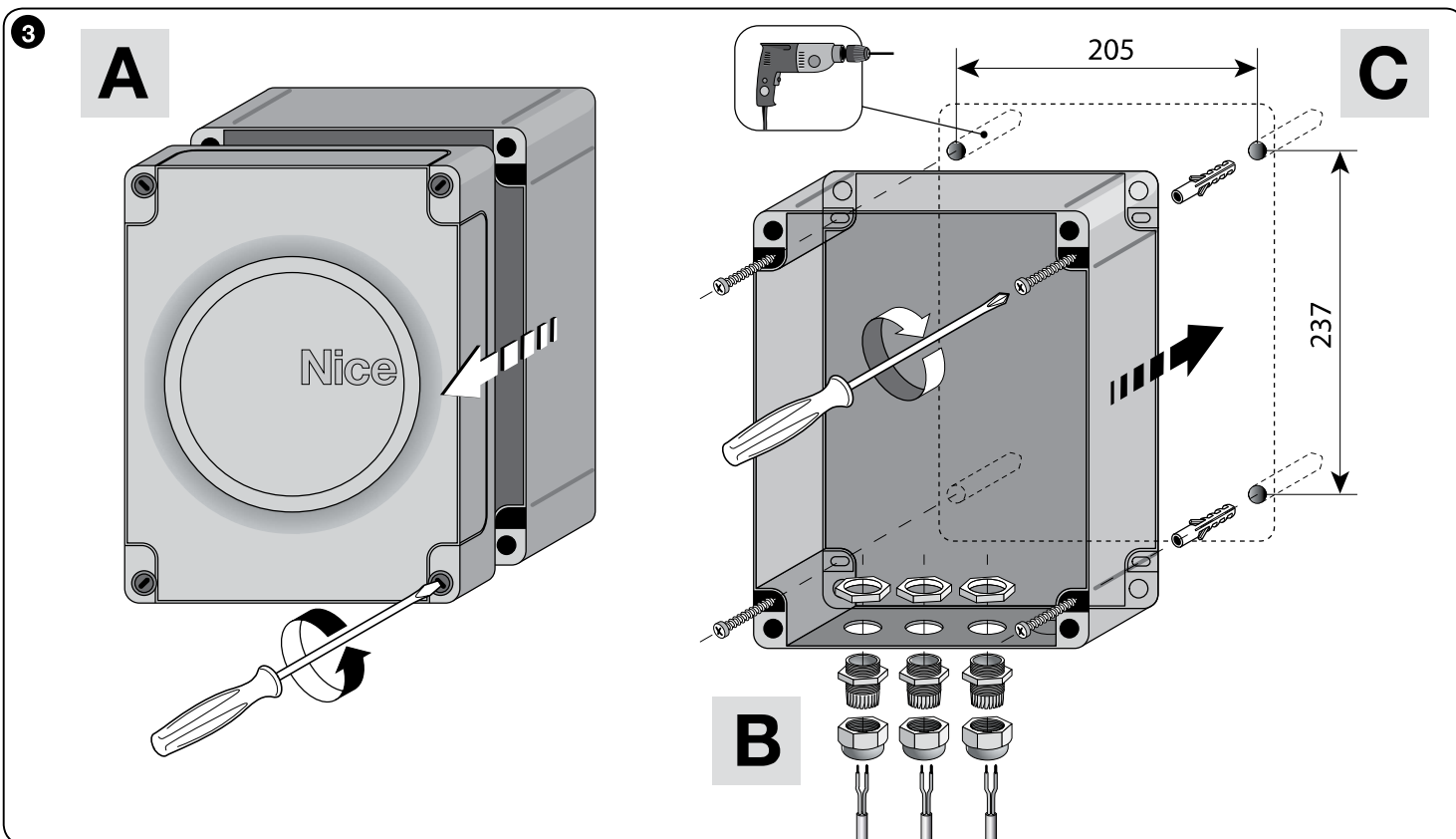
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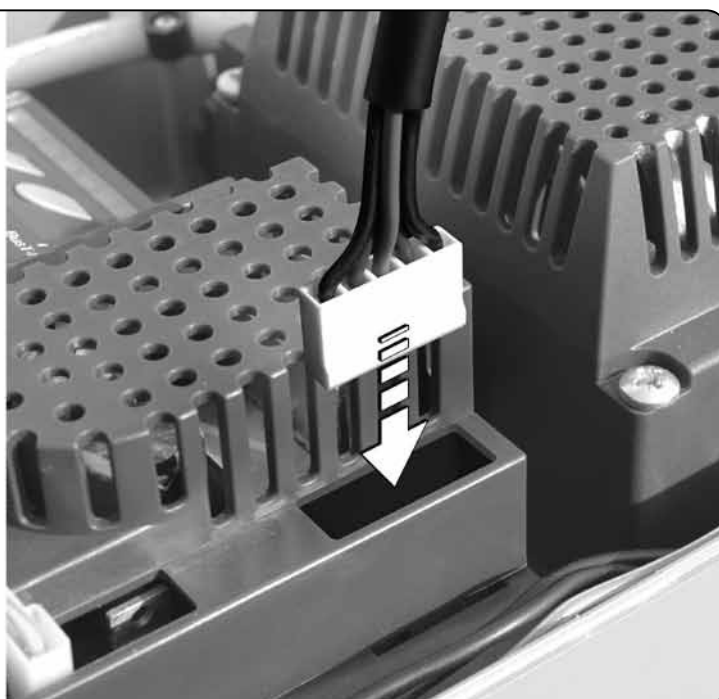
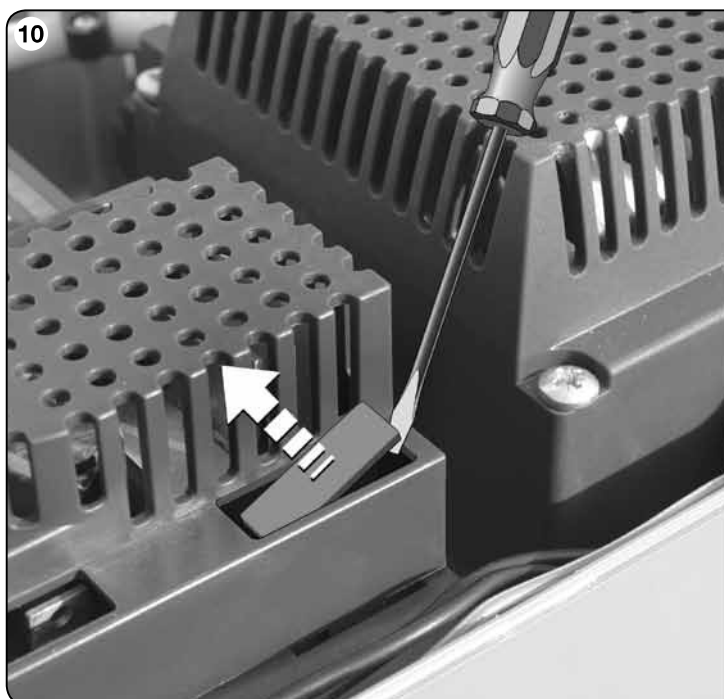
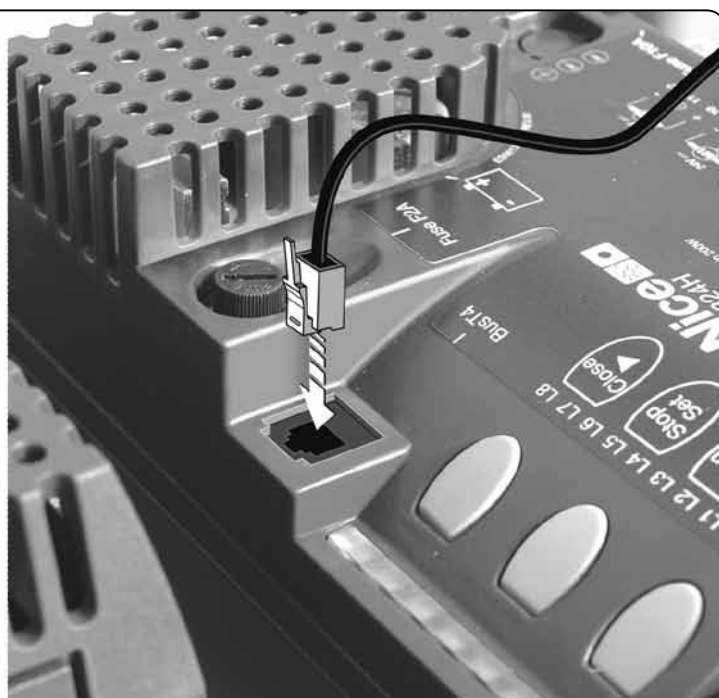
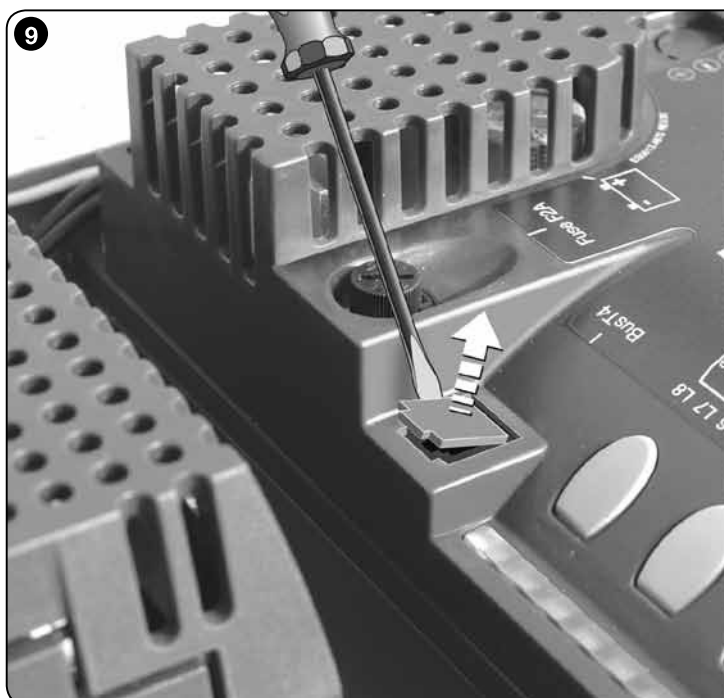
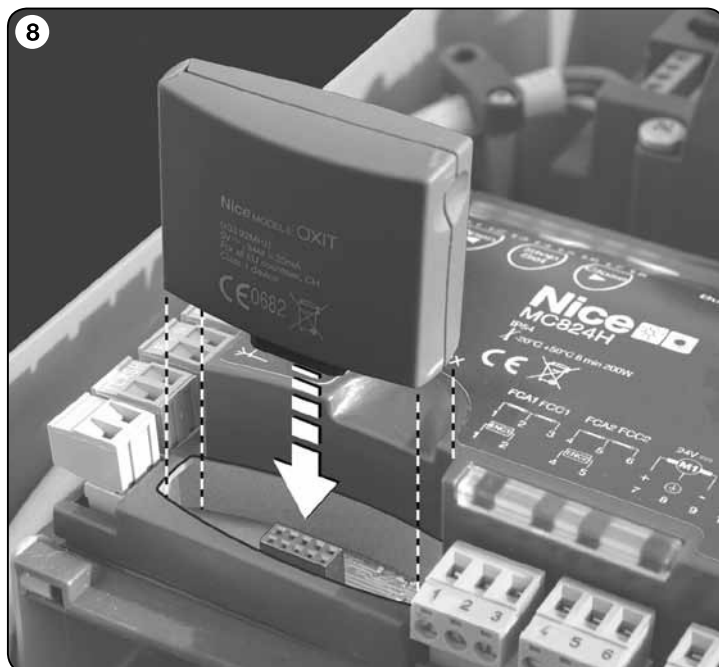
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Safety warnings

- **IMPORTANT! – This manual contains important instructions and warnings for personal safety.** Incorrect installation could cause serious physical injury. Read all parts of the manual carefully before starting work. If in doubt, interrupt installation and contact the Nice Service Centre for clarifications.
- **IMPORTANT! – Important instructions: keep this manual in a safe place to enable future product maintenance and disposal procedures.**
- **IMPORTANT! – Under the latest European legislation, automatic door and gate installations must be compliant with the standards specified in Directive 2006/42/EC (formerly 98/37/EC) (the Machinery Directive) and the standards EN 12445, EN 12453, EN 12635 and EN 13241-1 in particular, which enable conformity of the automated functionality to be declared. In the light of the above, all work involving installation, connection, testing and maintenance of the product must be carried out exclusively by qualified and competent technicians!**

Installation warnings

- Before commencing installation, check that the product is suitable for the intended kind of use (see paragraph 2.2 “Limits of use” and “Product technical specifications”). If not suitable, do NOT proceed with installation.
- The contents of this manual refer to a standard system as described in **fig. 2a**.
- **All installation and maintenance work must be carried out with the automation system disconnected from the electricity supply.** If the power disconnection device cannot be seen from where the automation system is positioned, then before starting work a notice must be attached to the disconnection device bearing the words “CAUTION! MAINTENANCE IN PROGRESS”.
- On the power line to the system, install a device for disconnection from the power mains with a gap between contacts that assures complete disconnection in the conditions of overvoltage category III.
- Connect the control unit to an electric power line equipped with an earthing system.
- During installation, handle the product with care, avoiding the risk of crushing, impact, dropping or contact with any type of liquid. Never place the product near sources of heat or expose to naked flames. This may damage product components and cause malfunctions, fire or hazardous situations. If this occurs, suspend installation immediately and contact the Nice Service Centre.
- Never make modifications to any part of the product. Operations other than as specified can only cause malfunctions. The manufacturer declines all liability for damage caused by makeshift modifications to the product.
- The product’s packaging materials must be disposed of in full compliance with local regulations.

Safety warnings

- The product should not be used by children or people with impaired physical, sensorial or mental capacities or who have not received adequate training in the safe use of the product.
- In the vicinity of the automation children must be supervised to ensure that they do not play with it.
- Do not allow children to play with the fixed control devices. Keep remote control devices out of the reach of children.

1 PRODUCT DESCRIPTION AND INTENDED USE

MC824H is an electronic control unit for the automation of swing gates. **IMPORTANT! – Any other use than as specified herein or in environmental conditions other than as stated in this manual is to be considered improper and is strictly prohibited!**

The control unit is ready for connection to devices belonging to the Opera system, the Bluebus system and the Solemyo solar energy supply system. If powered from the mains, it can house a buffer battery (model PS324, optional accessory), which ensures that the automation can perform a number of manoeuvres for several hours in the event of a power failure. Other available accessories include the dedicated receivers with “SM” fitting (SMXI, OXI, etc.).

2 INSTALLATION

2.1 - Preliminary checks for installation

Before proceeding with installation, check the condition of the product components, suitability of the selected model and conditions of the intended installation environment:

- Ensure that all material used is in perfect condition and suitable for use.
- Ensure that all conditions of use remain within the limits of product application (paragraph 2.2) and within the limit values stated in the “Product technical specifications”.
- Ensure that the selected installation environment is compatible with the overall dimensions of the product (**fig. 1**).
- Ensure that the selected surfaces for product installation are solid and guarantee a stable fixture.

- Make sure that the fixing zone is not subject to flooding. If necessary, mount the product raised from the ground.
- Ensure that the space around the product enables easy and safe access.
- Make sure that all the electrical cables used are of the type listed in **Table 1**.
- Make sure that the automation is provided with mechanical stops on both closing and opening.

2.2 - Product application limits

The product may be used exclusively with gearmotors listed in Table 3.

2.3 - Typical system

Fig. 2a shows an example of an automation system set up with **Nice** components:

- a - Control unit
- b - Gearmotor
- c - Flashing light
- d - Photocell
- e - Digital keyboard - Transponder reader - Key selector
- f - Photocell post
- g - Opening mechanical stops
- h - Closure mechanical stops
- i - Electric lock

These parts are positioned according to a typical standard layout. With reference to **fig. 2a**, locate the approximate position for installation of each component making up the system. **Important** – Before installation, prepare the electrical cables needed for your system, referring to **fig. 2b** and “**Table 1 - Technical characteristics of electrical cables**”.

Important – During installation of ducting for electrical cables and the introduction of cables into the control unit enclosure, be aware that due to possible water deposits in the junction boxes, the connecting ducts may form condensation inside the control unit which is liable to damage the electronic circuits.

2.4 - Installation of control unit

To mount the control unit, proceed as shown in **fig. 3**:

- 01.** Open the control unit box by undoing the relevant screws (**fig. 3-A**);
- 02.** Prepare the electrical cable routing holes (**fig. 3-B**);
- 03.** Mount the box (**fig. 3-C**);
- 04.** The electrical connections can now be made: see chapter 3.

Important! – To prepare the inlets for the electrical cable ducting, holes must be drilled in the lower side of the control unit box. **Note** – If necessary, the lateral cable inlet may be used, but only with the aid of suitable duct fittings. To install the other devices present in the automation, refer to the relevant instruction manuals.

TABLE 1 - Technical specifications of electrical cables (fig. 2b)

Connection	Cable type	Maximum admissible length
A: CONTROL UNIT POWER cable	1 cable 3 x 1,5 mm ²	30 m (note 1)
B: FLASHING LIGHT with aerial cable	1 cable 2 x 0,5 mm ² 1 shielded cable type RG58	20 m 20 m (less than 5 m recommended)
C: BLUEBUS DEVICES cable	1 cable 2 x 0,5 mm ²	20 m (note 2)
D: KEY-OPERATED SELECTOR SWITCH cable	2 cables 2 x 0,5 mm ² (note 3)	50 m
E: GEARMOTOR POWER cable	1 cable 3 x 1,5 mm ² (note 4)	10 m
F: ENCODER CONNECTION cable	1 cable 2 x 1 mm ² (note 4)	10 m
G: ELECTRIC LOCK CONNECTION	1 cable 2 x 1 mm ²	10 m

Note 1 – If the power cable is longer than 30 m, a cable with a larger cross-section is required (3 x 2.5 mm²) and safety earthing is necessary in the vicinity of the automation.

Note 2 – If the Bluebus cable is longer than 20 m (up to max. 40 m), a cable with a larger cross-section is required (2 x 1 mm²).

Note 3 – These 2 cables can be replaced by a single 4 x 0.5 mm² cable.

Note 4 – These 2 cables can be replaced by a single 5 x 1.5 mm² cable.

IMPORTANT! – The cables used must be suited to the installation environment.

3 ELECTRICAL CONNECTIONS

The electrical connection of the various devices (photocells, digital keyboard, transponder card readers, etc.) contained in the automation with the control unit must be made by means of the Nice “Bluebus” system.

3.1 - Description of electrical connections (fig. 6)

AERIAL	input for the radio receiver aerial
FLASH	output for 1 flashing light with 12V (maximum 21W) bulb. [*]
ELS	output for 12Vac (maximum 15VA) electric lock. [*]
S.C.A.	“Open Gate Light”: output for 1 indication lamp (24V maximum 4W). [*]
BLUEBUS	input for compatible devices (MOFB, MOFOB, MOB and MOTB); they are connected in parallel using two conductors through which both the electricity supply and the communication signals travel; no polarity needs to be observed. The electrical connection to be used is of the parallel type and no polarity needs to be observed. During the learning stage, the control unit will recognise individually all devices connected to it thanks to a unique code. Each time a device is added or eliminated, it will be necessary to make the control unit perform the learning operation (see paragraph 3.6).
STOP	input for devices that cause the immediate interruption of the manoeuvre in progress (with a short reverse run); NO and NC contacts, as well as devices with 8.2 kΩ constant resistance output (sensitive edges) can be connected to this input. Each device connected to this input is recognised individually by the control unit during the learning stage (paragraph 3.6); in this stage, if the control unit detects any variations with respect to the learned state, it causes a STOP. One or more devices of the same or different kinds can be connected to this input: <ul style="list-style-type: none"> – connect a number of NO devices in parallel without quantity limits; – several NC devices can be connected in series, with no limits as to quantity;

- connect 2 devices with 8.2 kΩ constant resistance output in parallel. If there are more than 2 devices, they must be connected in a cascade with just one 8.2 kΩ termination resistance;
- connect 2 NO and NC devices in parallel, placing a 8.2 kΩ resistance in series on the NC contact (this also allows for a combination of three devices NO - NC and 8.2 kΩ)

P.P.	input for devices which control Step-by-Step manoeuvres. NO contacts can be connected to this input
OPEN	input for devices which control only opening manoeuvre, NO contacts can be connected to this input
CLOSE	input for devices which control only closure manoeuvre. NO contacts can be connected to this input
ENC1	input encoder – gearmotor 1 (terminal 1, 2); it is not necessary to observe any polarity
ENC2	input encoder – gearmotor 2 (terminal 4, 5); it is not necessary to observe any polarity
M1	output for gearmotor 1 (terminal 7, 8, 9)
M2	output for gearmotor 2 (terminal 10, 11, 12)

[*] The FLASH, ELS and S.C.A. outputs can be programmed with other functions (see “TABLE 5 - 1st level functions”; or via Oview programmer, see chapter 7.2).

3.2 - Electrical connections of MC824H control unit

After mounting the control unit box and preparing the electrical cable holes (chapter 2.4 and fig. 3), make the electrical connections:

IMPORTANT!

– All electrical connections must be made with the unit disconnected from the mains power supply and with the buffer battery disconnected, if present in the automation.

– Connections must be made exclusively by qualified personnel.

– The electrical power line must be fitted with a device that enables complete disconnection of the automation from the mains. The disconnection device must have a gap between contacts that ensures complete disconnection in the conditions of overvoltage category III, in compliance with installation regulations. If necessary, this device guarantees rapid and safe disconnection from the mains, and therefore should be located in view of the automation. However, if located in a concealed position, it must have a system that blocks against inadvertent or unauthorised reconnection to prevent all risks. The disconnection device is not supplied with the product.

01. First connect the electric power cable (fig. 4) and secure by means of the cable clamp;
02. Then connect the electric cables of motors M1 and M2, observing the symbols on the label (fig. 5):
 - a) connect the motor that activates the lower leaf (the second to start the opening manoeuvre) to terminal M1 and then the respective encoder to terminals 1-2;
 - b) connect the motor that activates the upper leaf (the first to start the opening manoeuvre) to terminal M2 and then the respective encoder to terminals 4-5;

IMPORTANT! – If there is only one gearmotor in the system, connect it to terminal M2 leaving terminal M1 free;
03. Then connect the electric cables of the various devices present, with reference to fig. 6 and paragraph 3.3 Note – To facilitate cable connections, the terminals can be removed from their seats;

3.3 - Connection of other devices to MC824H

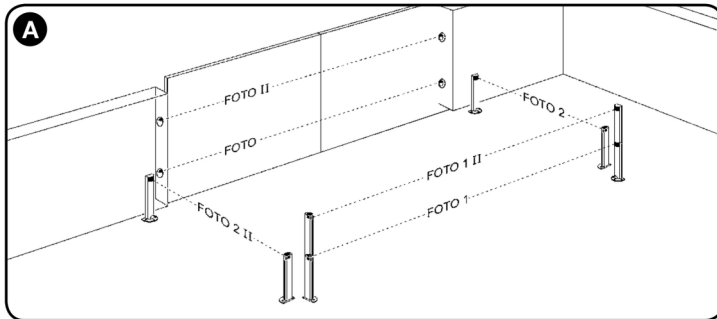
If further devices present in the system need to be powered, for example a transponder card reader or the key selector light, these devices can be connected to the control unit using terminals “P.P. (positive)” and “STOP (negative)” (fig. 6). The power supply voltage is 24 Vdc, -30% ÷ +50%, with maximum available current 200 mA.

Note – The voltage present on terminals “P.P.” and “STOP” remains connected even when the “Stand By” function is activated on the card.

3.4 - Connected device address assignment to MC824H

To enable control unit recognition of the devices connected to the BlueBus system, they need to be routed. This operation must be performed by positioning the electric jumper correctly on each device; see the relative instruction manual of individual devices: see fig. A and Table 2.

At the end of the installation procedure or following the removal of photocells or other devices, the self-learning procedure for these devices must be performed. See paragraph 3.6.



Photocell	Jumpers
FOTO External photocell h = 50 with trip on closure (stops and inverts movement)	
FOTO II External photocell h = 100 with trip on closure (stops and inverts movement)	
FOTO 1 Internal photocell h = 50 with trip on closure (stops and inverts movement) and opening (stops and restarts when photocell is disengaged)	
FOTO 1 II Internal photocell h = 100 with trip on closure (stops and inverts movement) and opening (stops and restarts when photocell is disengaged)	
FOTO 2 Internal photocell with trip on opening (stops and inverts movement)	
FOTO 2 II Internal photocell with trip on opening (stops and inverts movement)	
FOTO 3 CONFIGURATION NOT ADMITTED	

3.5 - Initial start-up and electrical connections

After powering up the control unit, perform the following checks:

- After a few seconds, make sure that the “Bluebus” LED (fig. 7) flashes regularly with a frequency of about one flash per second.
- Make sure that the LEDs on the photocells (fig. 7) flash (both on TX and RX). The type of flashing is not important during this stage.
- Make sure that the flashing light connected to the FLASH output is off.

If the above conditions are not satisfied, switch off the power supply to the control unit and check the electrical connections previously made.

3.6 - Learning of the devices connected to MC824H

After the initial power-up, the control unit must be able to recognise the devices connected to the “Bluebus” and “Stop” inputs.

IMPORTANT! – The learning procedure must be performed even if no device is connected to the control unit.

The control unit is able to recognise the various connected devices individually through the self-learning procedure and detect possible faults. For this reason it is necessary to perform self-learning every time a new device is added or an existing device is removed.

To indicate when the self-learning procedure is required, LEDs L1 and L2 on the control unit (fig. 7) emit a number of slow flashes:

01. Press and hold down ◀ and “Set” keys at the same time (fig. 7).
02. Release the keys when LEDs L1 and L2 start flashing quickly (after approx. 3 seconds).
03. Wait a few seconds for the control unit to complete the device learning phase.
04. At the end of this phase, the “Stop” LED must be lit and LEDs “L1” and “L2” must be turned off (LEDs L3 and L4 may start flashing).

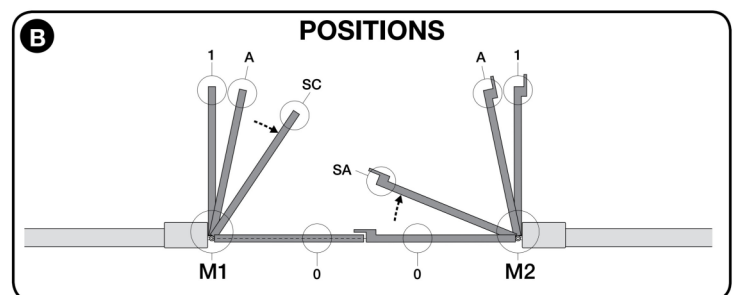
3.7 - Selecting the type of gearmotor connected to MC824H and learning the mechanical stop positions

After learning the devices (paragraph 3.6), the type of motors connected must be selected (see Table 3) and the positions of the mechanical stops must also be learnt (maximum opening and maximum closing). There are three ways to perform this procedure: **automatic, manual and combined.**

In **automatic mode**, the control unit learns the positions of the mechanical stops and calculates the most suitable offset value for the leaves (SA and SC, fig. B). In **manual mode**, the eight positions of the mechanical stops (fig. B) are programmed one by one, moving the leaves to the required points. The position to program is identifiable by the flashing status of one of the eight leds (L1-L8), see Table 4.

In **combined mode**, the automatic procedure can be performed and then, using the manual procedure, one or more positions may be modified, with the exception of positions “0” and “1” (fig. B) which coincide with the positions of the mechanical stops.

Led	Gearmotor type
L1	MB4024 - MB5024 - HY7024 - HY7124
L2	ME3024
L3	TO4024 - XME2124 - BM4024
L4	TO5024 -TO5024I
L5	TO7024
L6	BM5024
L7	METROELITE
L8	WINGOELITE



Position	Led	Description
Position 0 (motor 1)	L1	Maximum closing position: when leaf 1 reaches closing mechanical stop
Position 0 (motor 2)	L2	Maximum closing position: when leaf 2 reaches closing mechanical stop
Position SA (motor 2)	L3	Opening offset: when leaf 2 passes this position the opening of leaf 1 begins
Position A (motor 1)	L4	Required opening position: position in which the leaf connected to motor 1 must stop at the end of an opening manoeuvre. This position does not have to coincide with the opening mechanical stop, and can be selected as required from position “0” or “1”.
Position A (motor 2)	L5	Required opening position: position in which the leaf connected to motor 2 must stop at the end of an opening manoeuvre. This position does not have to coincide with the opening mechanical stop, and can be selected as required from position “0” or “1”.
Position SC (motor 1)	L6	Closing offset: when leaf 1 reaches this position, leaf 2 begins to close
Position 1 (motor 1)	L7	Maximum opening position: when leaf 1 reaches the opening mechanical stop
Position 1 (motor 2)	L8	Maximum opening position: when leaf 2 reaches the opening mechanical stop

3.7.1 - Learning in automatic mode

01. Press and hold down “Set” and ▶ keys at the same time.

02. Release the keys when LED **L1** begins to flash (motor selection: **not performed**) or when any of the LEDs L1 ... L8 lights up (motor selection: **already performed**).
03. Press ◀ or ▶ keys within 10 seconds to go to the **LED** corresponding to the type of gearmotor connected to the control unit (see **Table 3**);
04. Press and hold down the **"Set"** key for at least 3 seconds to memorize the selected gearmotor. After 3 sec. LED **L1** starts flashing, then release the key;
05. Press and hold keys **"Set"** and **"▶"** at the same time.
06. Release the keys when leds **"L3"** and **"L4"** start flashing quickly (after approx. 3 seconds).
07. Ensure that the automation completes the following sequences of manoeuvres:
 - a - Low speed closure of gearmotor M1 through to the mechanical stop
 - b - Low speed closure of gearmotor M2 through to the mechanical stop
 - c - low speed opening of gearmotor M2 and gearmotor M1 through to the mechanical stop
 - d - High speed closure of gearmotors M1 and M2

Warnings:

- If the first manoeuvre (a) does not close the leaf controlled by motor M1 but closes the one controlled by M2, press key "◀" or "▶" to stop the learning phase. At this point, invert the connections of motors M1 and M2 on the terminals on the control unit and then those of the respective encoders; after this start the procedure from point 05;
 - If the first two manoeuvres (a e b) are not "closing" but are "opening", press key "◀" or "▶" to stop the learning phase. At this point, on the gearmotor that completed the opening manoeuvre, invert the polarity of the two wires of gearmotor M1 (terminals 7 and 9 for M1; terminals 10 and 12 for M2) and then start the procedure from point 05;
08. At the end of the Closing manoeuvre of the 2 motors (d), leds **"L3"** and **"L4"** turn off to indicate that the procedure has been completed correctly.

Warnings:

- During the automatic learning procedure, if a photocell trips or a device connected to the "stop" input is activated, the procedure is interrupted and led L1 starts flashing. To resume the learning process, the procedure must be started again from point 05;
- The automatic learning procedure can be repeated at any time, also after installation; for example following modifications to the position of the mechanical stops.

3.7.2 - Learning in manual mode**Caution! – From step 05 onwards:**

- to move from led L1 to L8, briefly press key ◀ or ▶ (the led flashes to indicate the current position);
- to move the motor in one or the other direction, press and hold key ◀ or ▶.

01. Press and hold down **"Set"** and ▶ keys at the same time;
02. Release the keys when LED **L1** begins to flash (motor selection: **not performed**) or when any of the LEDs L1 ... L8 lights up (motor selection: **already performed**);
03. Press ◀ or ▶ keys within 10 seconds to go to the **LED** corresponding to the type of gearmotor connected to the control unit (see **Table 3**);
04. Press and hold down the **"Set"** key for at least 3 seconds to memorize the selected gearmotor. After 3 sec. LED **L1** starts flashing, then release the key;
05. **LED L1 flashes: position 0 of M1**
To bring motor 1 to **position 0 (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L1 remains on and on releasing the "Set" key LED L2 begins flashing).
 - **LED L2 flashes: position 0 of M2**
To bring motor 2 to **position 0 (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L2 remains on and on releasing the "Set" key LED L3 begins flashing).
 - **LED L3 flashes: position SA of M2**
To bring motor 2 to **position SA (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L3 remains on and on releasing the "Set" key LED L4 begins flashing).
 - **LED L4 flashes: position A of M1**
To bring motor 1 to **position A (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L4 remains on and on releasing the "Set" key LED L5 begins flashing).
 - **LED L5 flashes: position A of M2**
To bring motor 2 to **position A (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L5 remains on and on releasing the "Set" key LED L6 begins flashing).
 - **LED L6 flashes: position SC of M1**
To bring motor 1 to **position SA (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L6 remains on and on releasing the "Set" key LED L7 begins flashing).
 - **LED L7 flashes: position 1 of M1**
To bring motor 1 to **position 1 (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To

memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it (after 2 seconds LED L7 remains on and on releasing the "Set" key LED L8 begins flashing).

• **LED L8 flashes: position 1 of M2**

To bring motor 2 to **position 1 (fig. B)**: press and hold down the ◀ or ▶ keys. On reaching the position, release the key to stop the manoeuvre. To memorise the position, press and hold down the **"Set"** key for at least 3 seconds and then release it to exit programming (after 2 seconds LED L8 remains on until the "Set" key is released).

Note – Manual programming in a system with a single gearmotor: proceed as described at the beginning of this paragraph from step 01. **At step 05** proceed as follows:

- **Program the positions related to led L1 (0 of M1) and L7 (1 of M1) as follows:** press and hold the **"Set"** key for at least 3 seconds and then release (after 2 seconds the LED remains on, and on release of the "Set" key the next LED begins flashing).
- **Do not program the positions related to led L3 (SA of M2) - L4 (A of M1) - L6 (SC of M1):** briefly press key ◀ or ▶ to move between positions.

3.7.3 - Learning in combined mode

Perform this procedure after completing the automatic learning cycle:

01. Press and hold keys **"Set"** and **"▶"** at the same time.
02. Release the key when led **L1** starts to flash (selection of motors: **never performed**) or when any one of leds L1 to L8 lights up (selection of motors: **already performed**);
03. Within 10 seconds, press key "◀" or "▶" to move the **Led** corresponding to the type of gearmotor connected to the control unit (see **Table 3**);
04. Press and hold the key **"Set"** for at least 3 seconds, to memorise the selected gearmotor. After the 3-second interval, led **"L1"** starts flashing; at this point release the key;
05. Briefly press key "◀" or "▶" to move the flashing led (L1-L8) to the position to be programmed and proceed for each position, as described in step 05 of the manual learning procedure (paragraph 3.7.2).
Repeat this operation for all other positions to be modified.

To complete the manual learning process, press key "▶" repeatedly to move the led that flashing beyond position L8.

3.8 - Checking movement of gate leaves

At the end of the learning procedure, it is advisable to make the control unit perform a few opening and closing manoeuvres to ensure that the gate moves correctly and to check for installation or setting defects.

01. Press **"Open"**. Verify correct offset of the leaves on opening and ensure that the opening manoeuvre comprises the acceleration phase, the constant speed phase and the deceleration phase. At the end of the manoeuvre, the leaves must stop a few centimetres from the opening mechanical stop.
02. Press the **"Close"** key and check that the closure manoeuvre includes the acceleration, constant speed and deceleration phases. Check that the leaf closure offset is correct. At the end of the manoeuvre, the leaves must be perfectly closed on the mechanical closure stop.
03. Make sure that the flashing light flashes at intervals of 0,5 sec on, 0,5 sec off during manoeuvres.

4 TESTING AND COMMISSIONING

These are the most important phases of automation set-up for ensuring maximum system safety. The test can also be performed as a periodic check of automation devices. Testing and commissioning of the automation must be performed by skilled and qualified personnel, who are responsible for the tests required to verify the solutions adopted according to the risks present, and for ensuring observance of all legal provisions, standards and regulations, and in particular all requirements of the standard EN 12445, which establishes the test methods for checking automations for doors and gates. The additional devices must undergo a specific test for functionality and correct interaction with MC824H. Refer to the instruction manuals of the individual devices.

4.1 - Testing

The sequence of operations to be performed for testing and described below refers to a typical system (**fig. 2**):

- 1 Ensure that everything stated in the "Installation warnings" chapter has been observed.
- 2 Release the gearmotors for manual operation as described in the relevant instruction manual. Pushing at the prescribed point for manual operation, check that it is possible to open and close the leaves with a force lower than 390 N.
- 3 Lock the gearmotors (see relevant instruction manual).
- 4 Using the control devices (transmitter, key-operated selector switch or control pushbuttons, etc.), perform tests of opening, closing and stopping the gate, and ensure that leaf movement corresponds to specifications. Test several times to check for leaf movement and any defects in assembly or adjustment and any possible points of friction.
- 5 Check operation of all system safety devices one at a time (photocells, sensitive edges, etc.). Each time a device is activated the "BLUEBUS" LED on the control unit must flash rapidly twice to confirm acknowledgement of the event.

- 6 If hazardous situations generated by the moving leaves are protected by means of impact force limitation, measure the force as specified in the standard EN 12445. If gearmotor force control is used as auxiliary function with the system for reduction of impact force, test and identify the setting that obtains the best results.

4.2 - Commissioning

Commissioning can only be performed after positive results of all test phases.

- 1 Prepare the automation technical documentation, which must contain the following documents: overall drawing of the automation, electrical wiring diagram, risk assessment and solutions adopted, manufacturer's declaration of conformity for all devices used and installer's declaration of conformity.
- 2 Apporre sul cancello una targhetta contenente almeno i seguenti dati: tipo di automazione, nome e indirizzo del costruttore (responsabile della "messa in servizio"), numero di matricola, anno di costruzione e marchio "CE".
- 3 Affix a dataplate on the door, specifying at least the following data: type of automation, name and address of manufacturer (responsible for commissioning), serial number, year of construction and CE mark.
- 4 Compile the "**Operation manual**" for the automation and forward it to the owner.
- 5 Compile the form "**Maintenance schedule**" containing all maintenance instructions for all devices in the automation and forward it to the owner.
- 6 Before commissioning the automation, ensure that the owner is adequately informed of all associated risks and hazards.

For all the above-mentioned documentation, Nice provides instruction manuals, guides and pre-filled forms through its technical support service. Also see: www.nice-service.com

5 PROGRAMMING

The control unit has 3 keys **OPEN** (◀), **STOP (SET)**, **CLOSE** (▶) that can be used both for controlling the unit during testing and for programming the available functions.

The programmable functions available are divided into 2 levels and their relative operating status is displayed by means of the 8 LEDs (**L1...L8**) on the control unit (**LED lit** = function active; **LED off** = function not active).

Use the programming keys:

OPEN (◀): – key for controlling gate opening; – selection key during programming.

STOP/SET: key for stopping a manoeuvre; if pressed for more than 5 seconds, it enables entry to programming mode.

CLOSE (▶): – key for controlling gate closure; – selection key during programming.

5.1 - Level one programming (ON-OFF functions)


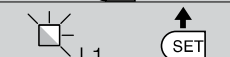


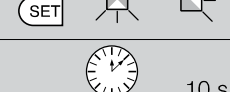
All level 1 functions are set by default to "**OFF**" and may be modified at any time. To check the functions see **Table 5**. For the programming procedure see **Table 6**.

IMPORTANT – In the programming procedure, the maximum time interval that can elapse between activation of one key and the next is 10 seconds. When this time elapses, the procedure terminates automatically, memorising the modifications made up until then.

TABLE 5 - First level functions

LED	Function	Description
L1	Automatic closure	Function ACTIVE: after an opening movement, there is a pause (equal to the programmed time) after which the control unit automatic initiates a closure movement. The factory setting for the Pause time is 30 sec. Function NOT ACTIVE: function is "semiautomatic" type.
L2	Reclose after photo	Function ACTIVE: if the photocells are activated during the opening or closing manoeuvre, the pause time is reduced to 5 seconds regardless of the programmed pause time. With "automatic closure" disabled, if the photocells are activated during closure the "automatic closure" is activated with the programmed "pause time".
L3	Always close	Function ACTIVE: in the event of a power failure, even of short duration, when power is restored the control unit detects gate open and automatically starts a closure manoeuvre, preceded by 5 seconds of pre-flashing. Function NOT ACTIVE: when power is restored the gate remains where it is.
L4	Stand by (Bluebus)	Function ACTIVE: 1 minute after the end of the manoeuvre, the control unit turns off the "Bluebus" output (connected devices) and all the LEDs apart from the Bluebus LED which will flash more slowly. When the control unit receives a command normal operation is restored (with a short delay). This function has the purpose of reducing consumption, an important aspect with battery or photovoltaic panel power supply.
L5	Electric lock/Courtesy light	Function ACTIVE: the "electric lock" output switches its operation to "courtesy light". Function NOT ACTIVE: the output operates as an electric lock.
L6	Pre-flash	Function ACTIVE: a 3 second pause can be added between the flashing light signal and the start of the manoeuvre to provide advance warning of a hazard situation. Function NOT ACTIVE: flashing light signal coincides with the start of the manoeuvre.
L7	"Close" becomes "Partial open 1"	Function ACTIVE: the "Close" input of the control unit switches operation mode to "Partial Open 1"
L8	"Gate open light" or "Maintenance light"	Function ACTIVE: the "gate open light" output on the control unit switches to the "maintenance light" function. Function NOT ACTIVE: the output operates as "gate open light".

TABLE 6 – Programming procedure (first level functions)

01. Press and hold down the " Set " key for approx. 3 seconds;	
02. Release the key when LED " L1 " starts flashing;	
03. Press the "◀" or "▶" key to move the flashing LED to the LED representing the function to be modified;	
04. Press " Set " to change the status of the function: (short flash = OFF; long flash = ON);	
05. Wait 10 seconds (maximum time) to exit the programming mode.	
Note – During this procedure, points 03 and 04 need to be repeated when programming other functions to "ON" or "OFF" during the phase itself.	

5.2 - Level two programming (adjustable parameters)

All level 2 functions are set by default as highlighted in **grey** in **Table 7**, and may be modified at any time as explained in **Table 8**.

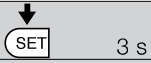
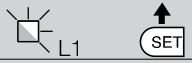



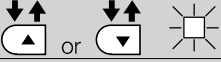


The parameters can be set on a scale from 1 to 8. To check the value corresponding to each LED see **Table 8**. **IMPORTANT** – In the programming procedure, the maximum time interval that can elapse between activation of one key and the next is 10 seconds. When this time elapses, the procedure terminates automatically, memorising the modifications made up until then.

TABLE 7 - Second level functions				
Input LED	Parameter	LED (level)	Value	Description
L1	Pause time	L1	5 seconds	Sets the pause time, namely the time which lapses before automatic closure. This will only take effect if closing is active.
		L2	15 seconds	
		L3	30 seconds	
		L4	45 seconds	
		L5	60 seconds	
		L6	80 seconds	
		L7	120 seconds	
		L8	180 seconds	
L2	Step by step function	L1	Open – stop – close – stop	Sets the sequence of commands associated with the “Step-by-Step”, “Open”, or “Close” inputs or the radio control. Note – When setting L4 , L5 , L7 and L8 , the behaviour of the “Open” and “Close” commands is also modified.
		L2	Open – stop – close – open	
		L3	Open – close – open – close	
		L4	Apartment block: • In the opening manoeuvre the “Step by Step” and “Open” commands have no effect; the “Close” command causes the movement to be inverted, i.e. the closure of the leaf. • In the closure manoeuvre the “Step by Step” and “Open” commands cause the movement to be inverted, i.e. the leaf to open; the “Close” command has no effect.	
		L5	Apartment block 2: • In the opening manoeuvre the “Step by Step” and “Open” commands have no effect; the “Close” command causes the movement to be inverted, i.e. the closure of the leaf. If the transmitted command persists for more than 2 seconds, a “Stop” is performed. • In the closure manoeuvre the “Step by Step” and “Open” commands cause the movement to be inverted, i.e. the leaf to open; the “Close” command has no effect. If the transmitted command persists for more than 2 seconds, a “Stop” is performed.	
		L6	Step-by-step 2 (less than 2 sec. generates partial opening).	
		L7	Hold-to-run: the manoeuvre is performed only if the transmitted command persists; if the command is interrupted the manoeuvre stops.	
		L8	Opening in semi-automatic mode, closing in hold-to-run mode.	
L3	Motor speed	L1	Very slow	Sets the motor speed during normal travel.
		L2	Slow	
		L3	Medium	
		L4	Fast	
		L5	Very fast	
		L6	Extremely fast	
		L7	Fast opening, Slow Closing	
		L8	Extremely fast Opening, Medium Closing	
L4	Motor discharge after closing	L1	No discharge	Sets duration of “short inversion” of both motors after performing Close manoeuvre with the aim of reducing the final residual thrust.
		L2	Level 1 - Minimum discharge (about 100 ms)	
		L3	Level 2 - ...	
		L4	Level 3 - ...	
		L5	Level 4 - ...	
		L6	Level 5 - ...	
		L7	Level 6 - ...	
		L8	Level 7 - Maximum discharge (about 800 ms)	
L5	Motor force	L1	Level 1 - Minimum Force	Adjusts the force of both motors
		L2	Level 2 - ...	
		L3	Level 3 - ...	
		L4	Level 4 - ...	
		L5	Level 5 - ...	
		L6	Level 6 - ...	
		L7	Level 7 - ...	
		L8	Level 8 - Maximum Force	
L6	Pedestrian or partial opening	L1	Pedestrian 1 (opening of leaf M2 to 1/4 of total opening)	Sets type of opening associated with “Partial open 1” command. In levels L5, L6, L7, L8; “minimum” opening means the smaller opening out of M1 and M2; for example, if M1 opens to 90° and M2 opens to 110°, the minimum opening is 90°
		L2	Pedestrian 1 (opening of leaf M2 to 1/2 of total opening)	
		L3	Pedestrian 3 (opening of leaf M2 to 3/4 of total opening)	
		L4	Pedestrian 4 (Complete opening of leaf 2)	
		L5	Partial 1 (opening of two leaves to 1/4 of “minimum” opening)	
		L6	Partial 2 (opening of two leaves to 1/2 of “minimum” opening)	
		L7	Partial 3 (opening of two leaves to 3/4 of “minimum” opening)	
		L8	Partial 4 (opening of two leaves to “minimum” opening)	

L7	Maintenance warning	L1	500	Controls the number of manoeuvres: when this number is exceeded, the control unit signals an automation maintenance request; see paragraph 5.3.2. – Maintenance warning.
		L2	1000	
		L3	1500	
		L4	2500	
		L5	5000	
		L6	10000	
		L7	15000	
		L8	20000	
L8	List of faults	L1	Manoeuvre 1 result (most recent)	The type of fault that has occurred in the last 8 manoeuvres can be established See TABLE 12 – Fault log.
		L2	Manoeuvre 2 result	
		L3	Manoeuvre 3 result	
		L4	Manoeuvre 4 result	
		L5	Manoeuvre 5 result	
		L6	Manoeuvre 6 result	
		L7	Manoeuvre 7 result	
		L8	Manoeuvre 8 result	

Note – The factory settings are highlighted in grey.

TABLE 8 – Programming procedure (second level functions)

01. Press and hold down the “Set” key for approx. 3 seconds.;	
02. Release the key when LED “L1” starts flashing;	
03. Press the “◀” or “▶” key to move the flashing LED to the LED representing the “input LED” of the parameter to be modified;	
04. Press and hold the “Set” key through to completion of point 06;	
05. Wait approx. 3 seconds, until the LED representing the current level of the parameter to be modified illuminates;	
06. Press keys “◀” or “▶” to move the LED representing the value of the parameter;	
07. Release the “Set” key;	
08. Wait 10 seconds (maximum time) to exit the programming mode.	

Note – During this procedure, points 03 to 07 need to be repeated when programming other parameters during the phase itself.

5.3 - Special functions

5.3.1 - Function: “Move anyway”

This function allows the automation to be operated even when any of the safety devices does not work correctly or is out of use.

The automation can be controlled in the “hold-to-run” mode. Proceed as follows:

01. Send a command to operate the gate using a transmitter or a key selector, etc. If everything operates correctly, the gate will move normally, otherwise proceed as follows;
02. within 3 seconds, activate the control again and keep it activated;
03. after approximately 2 seconds, the gate will perform the required movement in “hold-to-run” mode; i.e. the gate will continue to move only as long as the control is activated.

If the safety devices do not operate, the flashing light flashes a few times to indicate the kind of problem (see chapter 6 - Table 10).

5.3.2 - Function: “Maintenance warning”

This function serves to indicate when the automation requires maintenance. The maintenance warning signal is given by way of a lamp connected to the S.C.A. (open gate light) output when this output is programmed as “Maintenance light”. The various warning lamp signals are shown in **Table 9**.

Table 9 - “Maintenance light”

Number of manoeuvres	Signal
Below 80% of the limit	Light on for 2 seconds at the start of the opening manoeuvre.
Between 81% and 100% of the limit	Light flashing for the entire duration of the manoeuvre.
Beyond 100% of the limit	Light flashing continuously.

To program the limit value of the maintenance operations, see **Table 8**.

5.4 - Deleting the memory

To delete the control unit memory and restore all factory settings, proceed as follows: press and hold keys “◀” and “▶” until leds L1 and L2 start flashing.

6 WHAT TO DO IF... (troubleshooting guide)

Some devices are able to emit signals that serve to recognise their state of operation or possible faults.

If a flashing light is connected to the FLASH output on the control unit, it will

flash at intervals of 1 second during a manoeuvre. If faults occur, the flashing light will emit a sequence of two shorter flashes separated by a 1 second pause. **Table 10** shows the cause and solution for each type of signal.

The LEDs on the control unit also emit signals.

Table 11 shows the cause and solution for each type of signal.

It is possible to verify faults that have occurred during the last 8 manoeuvres.

See **Table 12**.

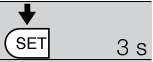
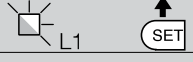



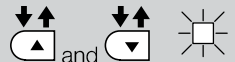

TABLE 10 - Flashing light signals (FLASH)

Flashes	Problem	Solution
1 short flash 1 second pause 1 short flash	Bluebus system error	At the start of the manoeuvre, the devices connected to Bluebus do not correspond to those recognized during the self-learning phase. One or more devices may be disconnected or faulty; check and, if necessary, replace them. In case of modifications repeat the device self-learning process (see paragraph 3.4).
2 short flashes 1 second pause 2 short flashes	Photocell activated	One or more photocells do not enable movement or have caused a movement inversion during travel; check to see if there are any obstructions.
3 short flashes 1 second pause 3 short flashes	Function activation "Obstacle detection" by force limiter	During the movement, the motors encountered excessive resistance; identify the cause and if necessary increase the level of force of the motors.
4 short flashes 1 second pause 4 short flashes	STOP input activation	At the start of the manoeuvre or during the movement, the STOP input was activated; identify the cause.
5 short flashes 1 second pause 5 short flashes	Error on internal parameters in control unit	Wait at least 30 seconds, then try giving a command and if necessary turn off the power supply. If the condition persists, there may be a malfunction and the electronic board must be replaced.
6 short flashes 1 second pause 6 short flashes	Maximum limit of consecutive manoeuvres or manoeuvres per hour exceeded.	Wait a few minutes until the manoeuvre limiting device falls to below the maximum limit.
7 short flashes 1 second pause 7 short flashes	Electric circuits fault	Wait at least 30 seconds, then try sending a command and if necessary turn off the power supply. If the condition persists, there may be a malfunction and the electronic board must be replaced.
8 short flashes 1 second pause 8 short flashes	A command is already present that disables execution of other commands	Check the type of command that is always present; for example, it could be a command from a timer on the "open" input.
9 short flashes 1 second pause 9 short flashes	The automation has been blocked by a "Block automation" command	Release the automation by giving the "Automation release" command.
10 short flashes 1 second pause 10 short flashes	"Obstacle detection" by encoder function activated	During the movement, the motors have been blocked by higher friction; identify the cause.

TABLE 11 - Signals given by LEDs on control unit (fig. 7)

LED	Problem	Solution
BLUEBUS Always off	Fault	Check that the control unit is powered. Check that the fuses have not blown: if they have, check the cause of the fault and replace with others with the same value
Always on	Serious fault	A serious fault has occurred: try disconnecting electrical power from the control unit. If the problem persists it will be necessary to replace the electronic board
1 flash per second	Everything normal	Control unit works correctly
2 quick flashes	Input status variation	Normal if one of the inputs (PP, STOP, OPEN, CLOSE) changes: photocells activated or a command given via a transmitter
Series of flashes separated by one second pause	Various	Refer to Table 10
STOP Always off	Activation of the devices connected to the STOP input	Check the devices connected to the STOP input
Always on	Everything normal	STOP input active
S.S. Always off	Everything normal	S.S. input not active
Always on	S.S. input activation	Normal if the device connected to the S.S. input is active
OPEN Always off	Everything normal	OPEN input not active
Always on	OPEN input activation	Normal if the device connected to the OPEN input is active
CLOSE Always off	Everything normal	CLOSE input not active
Always on	CLOSE input activation	Normal if the device connected to the CLOSE input is active
L1 - L2 Slow flashing	Change in number of devices connected to Bluebus or device self-learning not performed	The device self-learning process must be performed (see paragraph 3.5)
L3 - L4 Slow flashing	Change in self-learning of the motor types or the positions of the mechanical stops	Self-learning of the mechanical stop positions has not been performed

TABLE 12 - Fault log

01. Press and hold down the "Set" key for approx. 3 seconds;	
02. Release the key when LED "L1" starts flashing;	
03. Press keys "◀" or "▶" to move from the flashing LED to L8 LED ("input LED") for the "Fault log" parameter;	
04. Press and hold the "Set" key through to completion of point 06;	
05. Wait approx. 3 seconds until the LEDs representing the levels corresponding to the manoeuvres with faults illuminate. The LED L1 indicates the result of the most recent manoeuvre while L8 indicates the eighth-to-last manoeuvre. If the LED is on this means that a fault has occurred; if the LED is off, everything is normal;	
06. Press keys "◀" and "▶" to select the required manoeuvre: the corresponding LED performs a number of flashes equal to those normally performed by the flashing light;	
07. Release the "Set" key.	

7 FURTHER DETAILS

The following optional accessories are available for the control unit MC824H: SMXI, OXI family receivers, Oview programmer, the Solemyo solar energy panel and the PS324 buffer battery.

7.1 - Connecting a radio receiver

The control unit has a connector for connecting radio receivers (optional accessories) belonging to the SMXI and OXI families. To connect a receiver, disconnect power from the control unit and proceed as shown in **fig. 8**, **Table 13** and **Table 14** show the commands corresponding to the outputs on the control unit.

Table 13

SMXI / SMXIS or OXI / OXIFM / OXIT / OXITFM in mode I or Mode II

Output no. 1	"S.S." (Step by Step) command
Output no. 2	"Partial opening 1" command
Output no. 3	"Open" command
Output no. 4	"Close" command

Table 14

OXI / OXIFM / OXIT / OXITFM in extended mode II

No.	Command	Description
1	Step by step	"S.S." (Step by Step) command
2	Partial opening 1	"Partial opening 1" command
3	Open	"Open" command
4	Close	"Close" command
5	Stop	Stops manoeuvre
6	Apartment block Step by Step	Apartment block control
7	Step by Step high priority	Gives command even when automation is blocked or commands are in progress
8	Partial open 2	Partial open (Opening of leaf M2 to 1/2 of normal opening)
9	Partial open 3	Partial open (Opening of two leaves to 1/2 of normal opening)
10	Open and block automation	It causes an opening manoeuvre, after which the automation is blocked; the control unit accepts no further commands with the exception of "Step by step high priority", "Release" automation and (from Oview only) the commands "Release and close" and "Release and open"
11	Close and block automation	It causes a closure manoeuvre, after which the automation is blocked; the control unit accepts no further commands with the exception of "Step by step high priority", "Release" automation and (from Oview only) the commands "Release and close" and "Release and open"
12	Block automation	It causes the manoeuvre to stop and the automation to block; the control unit accepts no further commands with the exception of "Step by step high priority", "Release" automation and (from Oview only) the commands "Release and close" and "Release and open".
13	Release automation	It causes the automation to be released and normal operation to resume
14	Courtesy light timer on	The Courtesy light comes on with timed turning off
15	Courtesy light on-off	The Courtesy light turns on and off in step-by-step mode

7.2 - Connecting Oview programming unit

Connector BusT4 on the control unit enables connection of the programming unit Oview which enables complete and rapid management of installation, maintenance and troubleshooting of any malfunctions of the whole automation system. To gain access to the connector, proceed as shown in **fig. 9** and connect the connector to its seat. The Oview can be connected simultaneously to a number of control units (up to 5 without any particular precautions, up to 60 following the relevant warnings) and can remain connected to the control unit during normal operation of the automation. In this case a specific "user" menu enables commands to be sent directly to the control unit. It is also possible to update the firmware. If an OXI family radio receiver is present in the control unit, Oview enables access to the parameters of the transmitters memorised in this receiver.

Further information is available in the instruction manual and the "Opera system book" manual.

7.3 - Connecting the Solemyo solar energy system

To connect the solar energy system see **fig. 10**.

IMPORTANT! – When the automation is powered by the "Solemyo" system, it MUST NOT BE POWERED at the same time from the electrical mains.

For other information, refer to the relevant instruction manual.

7.4 - Connecting model PS324 buffer battery

To connect the buffer battery, see **fig. 10**. For other information, refer to the relevant instruction manual.

8 PRODUCT MAINTENANCE

Regular maintenance is needed to keep the level of safety constant and to ensure the maximum durability of the entire automation.

Maintenance must be performed in strict accordance with the safety provisions set out in this manual and with the requirements of applicable laws and standards.

Important – During maintenance and cleaning the control unit must be disconnected from the electrical power supply.

For devices other than the MC824H follow the instructions given in the relevant maintenance programmes.

For the MC824H scheduled maintenance must be performed no more than 6 months or 20,000 manoeuvres after previous maintenance.

To perform maintenance, proceed as follows:

01. Disconnect all electric power sources, including any buffer batteries;
02. Check all materials making up the control unit for wear, with particular attention to erosion or oxidation of parts; replace parts that are not in optimal condition;
03. Reconnect the power supply and perform the checks described in chapter 4.1 - Testing.

PRODUCT DISPOSAL

This product is an integral part of the automation system it controls and must be disposed of along with it.

As in the case of installation, likewise at the end of product lifetime the disassembly and scrapping operations must be performed by qualified personnel.

This product is made of various types of material, some of which can be recycled while others must be scrapped. Seek information on the recycling and disposal methods envisaged by the local regulations in your area for this product category.

Important! – Some parts of the product may contain polluting or hazardous substances which, if released to the environment, may cause serious damage to the environment or to human health.

As indicated by the symbol alongside, disposal of this product with domestic waste is strictly prohibited. Separate the waste into categories for disposal, according to the methods established by current legislation in your area, or return the product to the retailer when purchasing a new version.

Important! – Local legislation may impose heavy fines in the event of illegal disposal of this product.



Disposal of buffer battery (if present)

Important! – Even if discharged, the batteries may contain pollutant substances and therefore must NEVER be disposed of in normal waste collection points.

Dispose of according to separate waste collection methods as envisaged by current local standards.

TECHNICAL CHARACTERISTICS OF THE PRODUCT

WARNINGS: • All technical characteristics stated refer to an ambient temperature of 20°C (±5°C). • Nice S.p.a reserves the right to modify the product at any time while maintaining the same functionalities and intended use.

MC824H power supply	230 Vac (+10% -15%) 50/60 Hz
MC824H/V1 power supply	120 Vac (+10% -15%) 50/60 Hz
Nominal power absorbed from mains	200 W
Power absorbed by control unit battery connector with "standby-All" operation (including a receiver with SM type connector)	below 100 mW
Flashing light output [*]	1 "LUCYB" type flashing light (12 V, 21 W lamp)
Electric lock output [*]	1 max. 12 Vac max. 15 VA electric lock
Gate open light output [*]	one 24 V max. 4 W lamp (output voltage may vary between -30% and +50%, output may also control small relays)
BLUEBUS output	1 output with maximum load 15 Bluebus units (maximum 6 pairs of MOFB or MOFOB photocells + 2 pairs of MOFB or MOFOB photocells assigned as Opening devices + max. 4 MOMB or MOTB control devices)
STOP Input	For normally closed, normally open or 8,2 kΩ constant resistance contacts in self-learning mode (a change from the memorised state prompts the "STOP" command)
PP Input	for normally open contacts (closure of the contact prompts the Step by Step command)
OPEN Input	for normally open contacts (closure of the contact prompts the OPEN command)
CLOSE Input	for normally open contacts (closure of the contact prompts the CLOSE command)
Radio connector	SM connector for SMXI, OXI and OXIFM family receivers
Radio AERIAL input	50 Ω for RG58 or similar type cable
Programmable functions	8 ON-OFF type functions and 8 adjustable functions
Functions in self-learning mode	<ul style="list-style-type: none"> • Self-learning of devices connected to the BlueBus output • Self-learning of type of device connected to "STOP" terminal (NO, NC or 8,2 kΩ resistance contact) • Self-learning of leaf travel and automatic calculation of deceleration and partial opening points (vary according to installation)
Operating temperature	from - 20 °C a + 50 °C
Use in particularly acid, saline or potentially explosive atmospheres	NO
Protection rating	IP 54 with enclosure intact
Dimensions (mm)	310 x 232 x H 122
Weight (kg)	4,1

[*] The Flashing Light, Electric Lock and Gate Open Warning light outputs can be programmed with other functions (see "TABLE 5 - 1st level functions"; or via Oview programmer, see chapter 7.2). The electrical characteristics of the output vary according to programming:

flashing light: 12Vdc, 21 Wmax lamp

electric lock: 12Vac 15 Vmax

other outputs (all types): 1 lamp or relay 24Vdc (-30 and +50%), 4 Wmax