

CE



Control unit



mindy A02

Instructions and warnings for the fitter

Istruzioni ed avvertenze per l'installatore

Instructions et recommandations pour l'installateur

Anweisungen und Hinweise für den Installateur

Instrucciones y advertencias para el instalador

Instrukcje i ostrzeżenia do instalacji

Aanwijzingen en aanbevelingen voor installatie en gebruik

COMPANY
WITH QUALITY SYSTEM
CERTIFIED BY DNV
=ISO 9001/2000=



Warnings:

The MINDY A02 control unit has been designed for the control of a single-phase asynchronous motor used for the automation of shutters, overhead garage doors, gates, rolling shutters or awnings.

Any other use is improper and prohibited. The motors must be equipped

with electromechanical limit switches designed to limit their movement. Keep in mind that these automation systems must be installed by qualified personnel in compliance with current laws and regulations.

1) Product description

The Mindy A02 control unit enables the control of single-phase asynchronous motors powered by the electrical mains, with "COMMON" "OPEN" "CLOSE" type connections. It is designed for the automation of shutters, overhead garage doors, gates, rolling shutters or awnings. The control unit incorporates a radio receiver operating at a frequency of 433.92 MHz, which is compatible with the following types of transmitters:

Table "A1"		
Coding	TX Line	Transmitters
FLO	FLO	FLO1, FLO2, FLO4
	VERY	VERY VE
	NICE WAY	WM080G, WM240C (code C)
FLOR	FLOR	FLO1R, FLO2R, FLO4R
	VERY	VERY VR
	ERGO	ERGO1, ERGO4, ERGO6
	PLANO	PLANO1, PLANO4, PLANO6, PLANOTIME
	NICE WAY	TUTTA LA LINEA; WM080G, WM240C (code A or B)
SMILO	SMILO	SM2, SM4
	NICE WAY	WM080G, WM240C (code D)

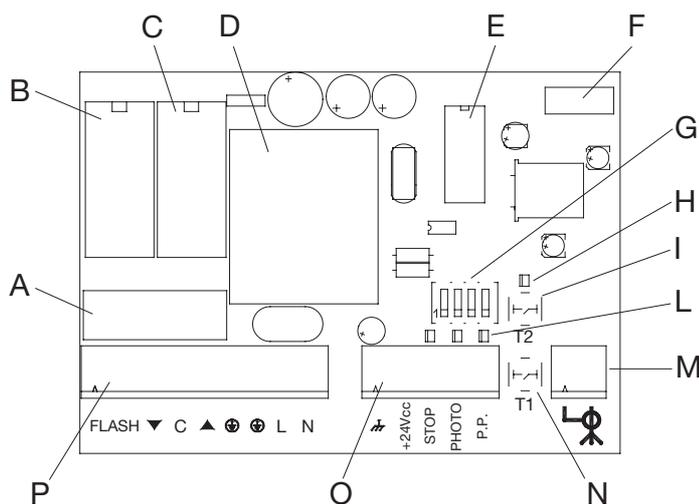
As the type of coding is different, the first transmitter memorized also determines the type of transmitters that may be memorized later, see "code" in table A1.

Up to 254 transmitters can be memorized.

The management of the radio transmitters is made easier by the SMU, TTP or TTI programming units.

After each command, the motor is powered for the set "working time" and programmed during the installation stage. The limit switch incorporated in the motor stops the movement when the desired position is reached. The "pause time" can be programmed after which automatic closure occurs.

The control unit is equipped with a number of inputs used to activate commands such as "step-by-step", "open", "close", as well as signals for the triggering of safety devices such as photocells or stop commands. The control unit can be connected to TTBUS systems.

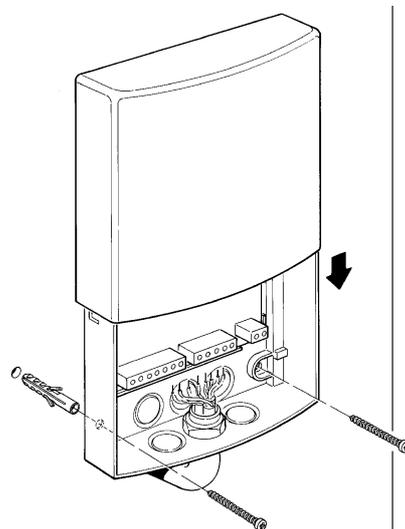


- A** Line fuse (5A)
- B** "close" relay
- C** "open" relay
- D** low voltage transformer
- E** microprocessor
- F** connector for SMU programmer
- G** programming dip-switch
- H** "radio" LED
- I** "radio" pushbutton
- L** "stop", "photo" and "step-by-step" inputs LED
- M** terminal for radio aerial
- N** "step by step" pushbutton
- O** low voltage input terminals
- P** line, motor and flashing light connection terminals

2) Installation

⚠ The electrical systems and the automations must be installed by qualified and experienced personnel in compliance with current legislation. Before you proceed to make any connections make sure that the mains power supply is disconnected.

To proceed with the installation, secure the container as shown in figure 1. When you drill a hole in the container for installation and wiring, take the necessary precautions to guarantee the required IP protection class. The wires must always be threaded from below.

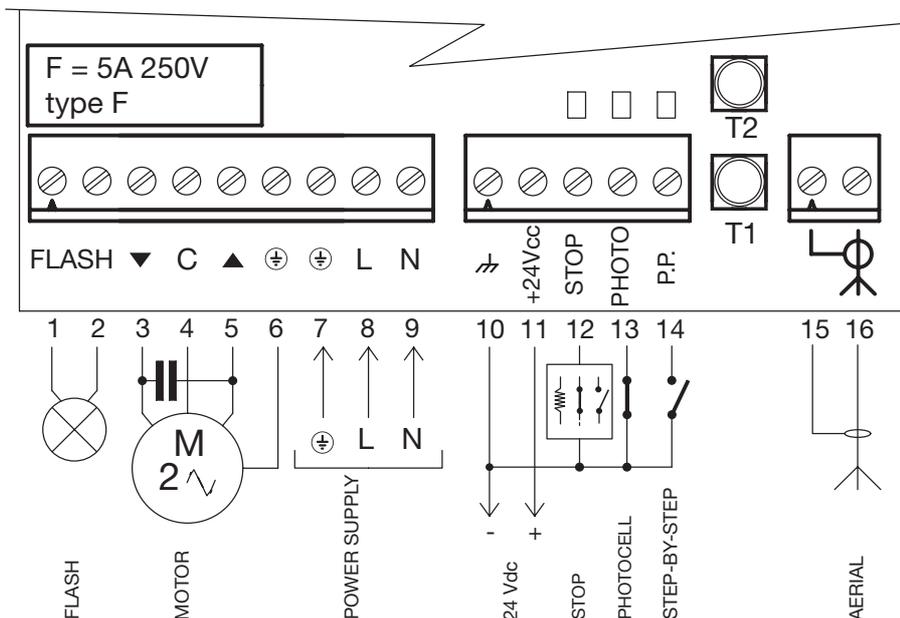


2.1) Electrical connections

⚠ Carefully follow all the connection instructions. If you have any doubts do not make experiments but consult the relevant technical specifications sheets which are also available on the web site www.niceforyou.com.

An incorrect connection may cause serious damage to the control unit. Do not connect multiple motors in parallel unless specifically required by the type of motor; if necessary, use the appropriate expansion cards.

2.1.1) Wiring diagram



2.1.2) Description of the connections

Terminals	Function	Description
1-2	Flash	= 230V flashing light
3-4-5-6	Motor	= motor control output (close, common, open, earth)
7-8-9	Power supply	= mains power supply line (earth, phase, neutral)
10-11	24Vdc	= 24Vdc output (services) max 50mA
12	Stop	= safety device input (Stop/sensitive edge)
13	Photo	= photocell input
14	Step-by-step	= input for cyclic command (open-stop-close-stop) or TTBUS connection
15-16	Aerial	= radio receiver aerial input

2.1.3) Notes regarding connections

The control unit features two low voltage (24Vdc) supply terminals (10-11) for the services (photocell). Three additional terminals (12-13-14) are designated for the command and/or safety inputs; as for the latter, the 0 volt terminal (10) is the common one. Some of these inputs have functions that depend on the programmed settings.

STOP input

This input is designated for the connection of safety devices such as sensitive edges.

The input can be used with normally closed (NC) as well as normally open (NO) contacts or constant resistance contacts (8.2KΩ). To set dip-switches 3-4 based on the type of input used, refer to the "Programmable Functions" chapter.

Warning: the minimum resistance level required by law can only be guaranteed by the constant resistance input (dip-switch N°3=ON).

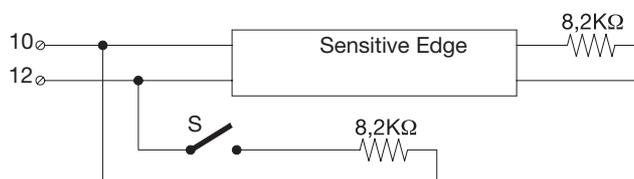
Normally the activation of the device connected to the Stop input causes the stop of the movement with a short inversion. To deactivate this inversion caused by the activation of the safety device, when the sensitive edge touches the ground for example, a contact "S" can be used in series with a 8.2KΩ resistance connected in parallel with the sensitive edge (see figure 2).

Contact "S" is positioned such that the last 30-40 cm of the closing movement close before the sensitive edge activates.

When contact "S" is closed and the sensitive edge is activated by the floor, the automation blocks without inversion keeping the door completely closed. Only the opening operation can be performed from this situation.

The Stop input status is signalled by the "stop" led as illustrated in the following table.

LED "STOP"	STOP input status
ON	Active (allows manoeuvre)
OFF	Inactive (blocks manoeuvre)
50%ON+50%OFF	Inversion deactivated
20%ON+80%OFF	Not active with the inversion deactivated (allows opening only)



STEP-BY-STEP input

Each command on this input activates the open - stop - close - stop sequence. In this mode, if the command is maintained for over 3 seconds (but less than 10), an opening manoeuvre will always be activated; if it is maintained for over 10 seconds, a closing manoeuvre will always be activated. This function can be useful to “synchronise” multiple control units, commanded in parallel, in the same direction regardless of their current status.

The step-by-step input is also the TTBUS communication input.

The “TTBUS” is a bus that has been developed for the management of control units for awnings, rolling shutters and preset motors.

This Bus enables separate control of up to 100 control units by connecting them in parallel using only 2 wires.

Further information is contained in the instructions for the remote controls via “TTBUS”.

PHOTO input

This input is designated for the connection of photocells with NC contacts.

Only the opening manoeuvre can be performed if consent is not given, if consent is not given during closure, an inversion is performed.

3) Testing

Once the connections have been made the system can then be tested.

⚠ The automation system must be tested by qualified and experienced personnel who must establish what tests should be conducted based on the risks involved.

Testing is the most important part of the whole automation process. Each single component, for example the motor, safety devices, photocells, etc... may require a specific test; please follow the procedures described in the operating instructions for each component.

Particular care must be given to the installation of the motor that must have electromechanical limit switches that limit the movement between the set positions. The motor limit switches must be regulated before testing.

The behaviour of the control unit is also connected to the programming that has been performed.

Proceed as follows for the testing of the system.

In order to perform the manoeuvres, the STOP and PHOTO inputs must give their consent, which is signalled when the related led lights.

1 Rotation direction control

Since in some cases the behaviour of the safety devices depends on the manoeuvre direction, the correct connection of the motor must be ensured.

- Turn the power off to the control unit and then on again after a few seconds.
- Give a command with the T1 button or Step-by-Step input (terminal 14).
- Check that the automation moves in an opening direction, if a closing movement occurs, turn off the power supply to the control unit and invert the wires of the motor connected to terminals 3 and 5.

2 Manoeuvre duration control

- Give an opening command and check that the power to the motor is turned off (“open” relay = OFF) a few seconds after the manoeuvre has been completed.
- If the working times of the control unit are unsatisfactory they must be programmed as described in chapter 4.1 “Programming of working time”
- From a completely open position, give a closure command and check that the power to the motor is turned off (“close” relay = OFF) a few seconds after the manoeuvre has been completed.

3 Inputs operation control

Check that a command on the Step-by-Step input (terminal 14) performs the following sequence: open-stop-close-stop (if dip-switch 1 and 2 = OFF).

4 Photocells operation control (if connected)

- Give a closure command and check that when the beam of the photocell is broken the control unit inverts the manoeuvre to opening.
- Give an open command and check that when the beam of the photocell is broken the control unit continues with the opening operation.

5 Safety devices operation control (if connected) on the STOP input

Give a closure command and check that, during the manoeuvre, the activation of a device connected to input 12 (STOP):

- causes the immediate stop of the movement with a short inversion
- Give an opening command and check that, during the manoeuvre, the activation of a device connected to input 12 (STOP):
- causes the immediate stop of the movement with a short inversion

6 Inversion exclusion control (if contact “S” is present):

- give a closure command and activate the inversion exclusion contact “S”. At this point activate the device connected to the Stop input and check that the manoeuvre stops instantly and no inversion is performed.

7 Impact force control (if required)

Perform the “impact force” test as required by the EN 12445 standard.

4) Programming

The control unit allows you to program some parameters and select some of the functions that are described below.

GB

4.1) Programming of the working time

The "Operating Time" is the maximum time in which the control unit controls the motor until it reaches the Up or Down limit switch; the factory setting or after the memory has been cancelled is approximately 120 seconds. The operating time can be modified from a minimum of 5 to a maximum of 120 seconds if required. The programming procedure is performed in "self-recognition", being the measurement of the time necessary to perform a complete manoeuvre.

The most demanding manoeuvre for the motor must be measured (which is obviously slower), this is normally re-winding and starting with the motor in correspondence with a limit switch. The operating time should ideally be programmed with a few extra seconds to that of the time actually necessary for the manoeuvre.

To proceed with the programming process, follow the steps in the table below.

Table "A3"	Programming of the working time	Example
1.	Press and hold down the T1 key on the control unit to start the motor	
2.	After holding down the T1 key for 5 seconds, start to memorize the time of the manoeuvre	 5s
3.	When the T1 key is released the motor will stop and the new working time will be memorized (Warning: wait for at least 4 seconds before starting a manoeuvre)	

Note: If you wish to modify the working time, repeat the above procedure starting from step 1 up until point 3 if the automatic closure is not required, or continue up to point 5 in table A4 if the automatic closure is required

4.2) Programming of the automatic closure pause time

A "pause time" can be programmed from a minimum of 1 to a maximum of 120 seconds. After opening, closure is automatically actuated at the end of the "pause time".

Table "A4"	Programming of the automatic closure pause time	Example
	Program the working time up to point 3 as described above (Table A3)	
4.	Push and hold T1 within 2 second after the manoeuvre has stopped, at this point the memorisation of the "pause time" commences.	 2s
5.	When the T1 key is released the control unit memorises the "pause time" and starts the motor in the opposite direction.	

Note: the pause time must be cancelled in order to eliminate the automatic closure, programming the "pause time" up until point 3.

4.3) Programmable functions

The control unit has 4 dip-switches that allow altering certain functions to make the system more appropriate for particular needs.

Warning: Certain programmable functions are linked to safety features; evaluate them carefully also based on the required safety level.

Switch 1	Off	= STEP-BY-STEP input for "step-by-step" operation
	On	= STEP-BY-STEP input for "open" operation
Switch 2	Off	= Condominium function off
	On	= Condominium function on
Switch 3-4	Off Off	= STOP input with NO contact
	Off On	= input with NC contact
	On Off	= STOP input with 8.2K Ω constant resistance contact without inversion excluded
	On On	= STOP input with 8.2K Ω constant resistance contact with inversion excluded

4.4) Description of functions

Step-by-step input:

This input that normally performs the sequence “open-stop-close-stop”, can be programmed as “open” (dip-switch 1 ON), in this case the sequence becomes “open-stop-open-stop”.

With the step-by-step input programmed in this way and the “condominium” function on, the closure cannot be controlled, but can only occur in case of automatic closure or radio control closure

Condominium function:

With the condominium function on an open or step-by-step command cannot stop or invert the manoeuvre during an opening manoeuvre until the said manoeuvre has been completed.

An open or step-by-step command causes an inversion of the manoeuvre during a closing operation.

STOP input

This input can be programmed in different ways by means of dip-switch 3 and 4 depending on the type of safety device connected:

- NO contact (Normally Open)
- NC contact (Normally Closed)
- 8.2KΩ constant resistance contact without inversion excluded
- 8.2KΩ constant resistance contact with inversion excluded

4.5) Memorizing the transmitters

The control unit recognizes various types of transmitters (see table A1); as the coding system is different, the first transmitter memorized determines the type of those that may be memorized afterwards.

If you wish to change the type of transmitter, first you need to erase the memory (see table A7).

You can check what type of transmitters are memorized in the control unit to see what type of transmitters can be added. To do this, check how many times the “radio LED” flashes when the control unit is switched on.

Table “A5” Checking what type of transmitters are memorized

1 “radio led” flash	FLO type transmitters memorized
2 “radio led” flashes	FLOR type transmitters memorized
3 “radio led” flashes	SMILO type transmitters memorized
5 “radio led” flashes	Empty memory (no memorized transmitter)

The transmitters can be memorised by means of the T2 key on the control unit (required for the first transmitters) or by remote memorisation if a previously introduced transmitter is available.

The transmitters can be memorised in two modes:

mode I

In this mode, the function of the transmitter keys is fixed: key 1 commands the opening manoeuvre, key 2 commands a stop, key 3 commands the closing manoeuvre, and key 4 commands a stop. A single memorization stage is carried out for each transmitter; during this stage it does not matter which key is pressed, and only one space is occupied in the memory.

mode II

In this mode each transmitter key can be associated with one of the four commands available: “step-by-step”, “open”, “close”, “stop”. In this case each transmitter command to be activated must be memorized by pressing the desired key. Only one command can be associated with a key, whereas the same command can be activated using different keys. One space for each memorized key is occupied in the memory.

Table “A6”

Example	Memorization mode II		
	A02 N°1	A02 N°2	A02 N°3
Key 1	Open		
Key 2	Close		
Key 3		Step-by-step	
Key 4			Step-by-step

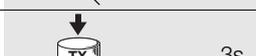
To proceed with the memorization of the transmitters refer to the following tables.

Table “A7” Memorization mode II

		Example
1.	Press and hold down key T2 for at least 3 seconds	
2.	When the “radio LED” lights up, release the key	
3.	Within 10 seconds, press any key on the transmitter to be memorized and hold it down for at least 3 seconds	

Note: If the memorization procedure has been successful the “radio LED” will flash three times. If additional transmitters need to be memorized, repeat step 3 within the next 10 seconds otherwise the memorisation phase will end.

Table “A8” Memorization mode II

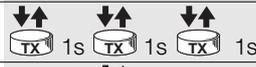
		Example
1.	Press and release the T2 key as many times as the number corresponding to the desired function: 1 = “step-by-step” 2 = “open” 3 = “close” 4 = “stop”	
2.	Make sure that the “radio LED” flashes as many times as the number corresponding to the desired function	
3.	Within 10 seconds press the transmitter key you wish to memorize and hold it down for at least 3 seconds	

Note: If the memorization procedure has been successful the “radio LED” will flash slowly three times. If additional transmitters need to be memorized, repeat step 3 within the next 10 seconds otherwise the memorisation phase will end.

4.6) Remote memorization

It is possible to enter a new transmitter in the memory of the control unit without using the T2 programming key directly. There must be a transmitter already memorized and operating. The new transmitter will “inherit” the characteristics of the previously memorized one. Therefore, if the first transmitter was memorized in mode I, the new one will also be memorized in mode I, and you can use any of the transmitter keys. If the first transmitter was memorized in mode II, the new one will also be memorized in mode II; in

this case you must pay attention to the keys you use on the 2 transmitters, since the key that you use on the new transmitter will perform the same function as the key pressed on the old transmitter. Holding the two transmitters, the NEW one to be memorized and the OLD one already memorized, stand within the operating range of the remote controls and carry out the steps described in table A9.

Table “A9”	Remote memorization	Example
1.	Press the key on the NEW transmitter for at least 5 seconds, then release it	
2.	Press the key on the OLD transmitter 3 times, slowly	
3.	Press the key on the NEW transmitter once, slowly, then release it	

Note: If there are other transmitters that need to be memorized, repeat all the steps described above for each new transmitter

Table “A10”	Erasing the memory of a single transmitter	Example
1.	Press and hold the T2 key until the radio led lights	
2.	with the led on and the key pushed, transmit with the TX you wish to erase	
3.	5 flashes signal the cancellation of the code Release the key during the 5 flashes If only 1 flash occurs, the transmitter is not in the control unit’s memory	

Note: if there are other transmitters to erase repeat the steps for each transmitter. If a transmitter is memorised in mode II, each memorised key must be erased.

4.7) Erasing the memory

You can erase the memorized transmitter codes or the entire memory by restoring the control unit’s factory settings. When all the transmitters have been erased, it is also possible to modify the type of transmitters that can be used. To erase all the data contained in the memory follow the procedure described below:

Table “A11”	Erasing the memory of all transmitters and/or memorised parameters	Example
1.	Press and hold down key T2 on the control unit	
2.	While holding down key T2, wait for the “radio LED” to light up, then wait until it goes off and then starts flashing	
3.	Release the key exactly at the third flash if you only wish to erase the transmitters, Release the key exactly at the fifth flash in order to erase the entire memory	

Note: During the erasing procedure the “radio LED” will flash rapidly: 5 flashes will signal that the procedure has been completed. The deletion of all the data from the memory will also modify any programmed settings (working time, TTBUS address,...) and restore the control unit to the factory settings.

5) Optional accessories

The Mindy A02 control unit features a connector for connection to the SMU programmer. The programmer can be used to enter, erase, search for and copy the transmitter codes. Other functions can be performed by the TTP and TT1 programming units through the TTBUS input. Refer to the SMU programmer instructions for detailed information on how to use it.

⚠ The SMU programmer only enables the management of the radio control codes. The “read” and “write” functions alone can read and copy the entire contents of the memory of the control unit, therefore also the parameters and configurations (working time, TTBUS address...). When using these commands make sure that they are performed on compatible products.

6) What to do if...

The manoeuvre does not start even by operating the T1 key on the card.

Make sure that the card is properly powered and that the fuse is not blown. Between terminals 8 and 9 there must be mains voltage and between terminals 10 and 11 you must read a continuous voltage of approx. 24 Vdc.

No manoeuvres can be commanded and the led related to the STOP input flashes rapidly.

It is possible that a short circuit has occurred and/or an overload on the services output. The control unit has a fuse that automatically resets, try switching off the power, wait a few seconds and switch it on again.

The power supply voltages are correct, yet the manoeuvre will not start

The Stop and Photo inputs must give their consent to activate the manoeuvre: make sure that the LED corresponding to these inputs

are on. Make sure that dip-switches 3-4 correspond to the type of input used. If it is a 8.2k Ω input the voltage between terminals 10-12 must be between 6Vdc and 18Vdc

You are unable to memorize a new transmitter.

Make sure that the type of transmitter is compatible with those already stored in the memory. Switch the control unit off and then back on, and check the flashing of the "radio LED" to see what type of transmitters are already memorized.

The type of transmitter to be memorized is correct, but you are unable to memorize it

Make sure that the card's receiving circuit operates properly: use a functioning transmitter. If the control unit correctly receives a radio code which is not, however, stored in the memory, it signals this condition with a flash of the "radio LED". If you have already memorized the maximum number of transmitters (254), this event is signalled by 6 flashes.

7) Technical characteristics

Electronic control unit

Power supply:	230 Vac 50/60 Hz or 120Vac 50/60Hz depending on the version (see value on label)
Maximum motor power:	600W for 230 Vac version; 400W for 120 Vac version
Command signal voltage:	approx. 24Vdc
Services (terminals 8-9):	voltage 24Vdc \pm 30%; max current 50mA
Stop input:	configurable between NO, NC or 8.2k Ω +-25%
Working time:	programmable from 5 to 120 seconds
Pause time:	programmable from 1 to 120 seconds or excludable
Operating temperature:	-20 \div 50 $^{\circ}$ C
Dimensions / weight:	128 x 112 x 43mm 350gr
IP protection class:	44

Radio receiver

Frequency:	433.92 MHz
Coding:	FLO (fixed code), FLOR (rolling code) SMILO (rolling code)
Maximum number of transmitters that can be memorized:	254

Nice S.p.a reserves the right to modify its products at any time it deems necessary.

EC Declaration of conformity

EC Declaration of conformity with Directive 1999/5/EC

NOTES: The content of the present declaration corresponds to the latest available revision, before the printing of the present manual, - of the document registered at the head offices of Nice S.p.a.. The original text of this manual has been readapted for publishing reasons.

Number: **241/A02**; Revision: **0**

The undersigned, Lauro Buoro, in the role of Managing Director, declares under his sole responsibility, that the product:

Manufacturer's name: **NICE s.p.a.**

Address: **Via Pezza Alta 13, Z.I. Rustignè, 31046 Oderzo (TV) Italy**

Type: **Control unit for single 230V ac motor.**

Models: **A02** - Accessories: **Radio control series FLO, FLOR, Smilo**

Conform with the requirements of the following EC directive:

- 1999/5/EC; DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL of 9 March 1999 regarding radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity. According to the following harmonised standards: EN 300220-3 V1.1.1:2000,

The product also complies with the requirements of the following EC directives, as amended by Directive 93/68/EEC of the European Council of 22 July 1993:

- 73/23/EEC; DIRECTIVE 73/23/EEC OF THE EUROPEAN COUNCIL of 19 February 1973 regarding the approximation of member state legislation related to electrical material destined for use within specific voltage limits According to the following harmonised standards: EN 60335-1:1994; EN 50366:2003, EN 60335-2-95:2001 (as applicable), EN 60335-2-97:2000 (as applicable), EN 60335-2-103:2003 (as applicable), EN 60950-1:2001 (as applicable)
- 89/336/EEC; DIRECTIVE 89/336/EEC OF THE EUROPEAN COUNCIL of 3 May 1989, regarding the approximation of member state legislation related to electromagnetic compatibility According to the following standards: EN 301 489-1:2004; EN 301 489-3:2002

Oderzo, 2 January 2006


Lauro Buoro
(Managing director)