

CE



control unit



Mindy A500

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 uwagi dla instalatora

Aanwijzingen en aanbevelingen voor de installateur

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Nice

Mindy A500

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Introduction:

This manual has been especially written for use by technical personnel qualified to carry out installation. No information given in this manual can be considered as being of interest to end users! This manual is enclosed with control unit A500 and may not be used for different products!

Important notice:

The A500 control unit has been designed to control an electromechanical actuator for automating gates or doors. Any other use is considered improper and is consequently forbidden by current laws.


 May we remind you that the automation system you are about to install is classified as “building a machine” and therefore enters the field of application of European directive 89/392 EEC (machine directive).


This directive includes the following prescriptions:


- Only trained and qualified personnel should install the equipment
- The installer must first perform the “risk analysis” of the machine
- The equipment must be correctly and professionally installed in compliance with all relevant standards.
- After installation, the machine owner must be issued with the “declaration of conformity”.

This product may only be installed and serviced by qualified personnel, therefore, in compliance with current laws, standards or directives.

When designing and producing its products, Nice observes all applicable standards (please see the attached declaration of conformity) but it is of paramount importance that installers continue to strictly observe the same standards when installing the system.

 Unqualified personnel or those who are unaware of the standards applicable to the “automatic gates and doors” category may not install systems under any circumstances

 Whoever ignores such standards will be held responsible for any damage caused by the system!

 Do not install the unit before you have read all the instructions thoroughly!

Particular warnings concerning the suitable use of this product in relation to the 73/23/EEC “Low Voltage” Directive and subsequent modification 93/68/EEC:

- This product responds to the provisions foreseen by the “Low Voltage” Directive if used in the configurations foreseen in this instructions manual and in combination with the articles present in the Nice S.p.a. product catalogue. If the product is not used in configurations or is used with other products that have not been foreseen, the requirements may not be guaranteed; the use of the product is prohibited in these situation until the correspondence with the requirements foreseen by the directive have been verified by installers.

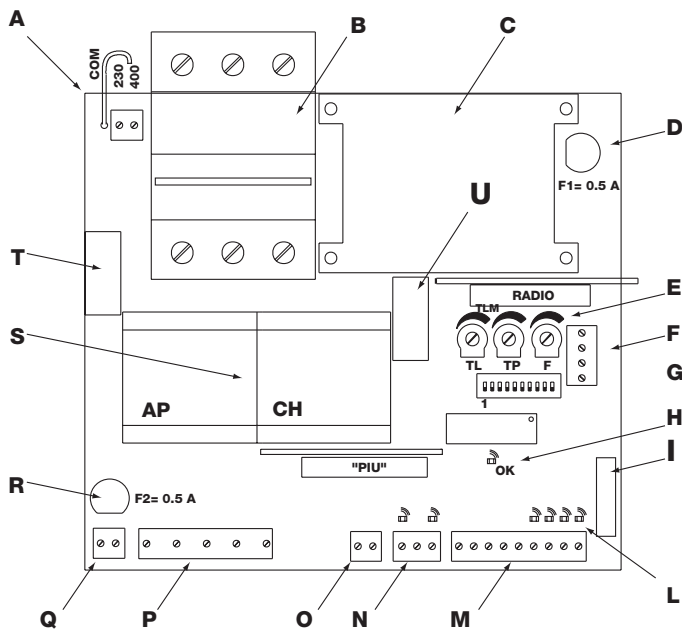
Particular warnings concerning the suitable use of this product in relation to the 89/336/EEC “Electromagnetic Compatibility” Directive and subsequent modifications 92/31/EEC and 93/68/EEC:

- This product has been subjected to tests regarding the electromagnetic compatibility in the most critical of use conditions, in the configurations foreseen in this instructions manual and in combination with articles present in the Nice S.p.a. product catalogue. The electromagnetic compatibility may not be guaranteed if used in configurations or with other products that have not been foreseen the use of the product is prohibited in these situations until the correspondence to the requirements foreseen by the directive have been verified by those performing the installation.

1) Description of the product:

This unit controls an alternate current three-phase or single-phase motor at 230V or 400V for automatic doors and gates. It features obstacle detectors (anti-crush devices) and a braking system which reduces inertia during the stopping phase. It also features a series of functions that can be selected by dip-switches (mini-switches) and adjustments performed by trimmers.

The control unit features input status LED's located near such inputs, while another LED near the microprocessor indicates that the internal logic works correctly.



- A** Mains power switch 230 / 400 V
- B** Overload cut-out
- C** Power supply transformer
- D** Control unit power fuse (500mA)
- E** Adjustment trimmer
- F** Radio terminal board
- G** Function selection dip-switch
- H** OK LED
- I** Connector for Door controls
- L** Input status LED's
- M** Input/output control terminal board
- N** Limit switch input terminal board
- O** Phototest output terminal board
- P** Motor power output
- Q** Flashing light output
- R** Flashing light fuse (500mA)
- S** Motor manoeuvre remote control switches
- T** Flashing light activation relay
- U** Brake activation relay

1

2) Installation:

Before starting to install the unit, check the sturdiness and mechanical consistency of the gate and make sure safety stops and minimum distances are respected. Carry out a careful and thorough "risk analysis" of the automatic system, evaluate the safety devices to be installed with particular care and always fit an emergency stop device.

Make absolutely sure that the mechanical stops are of the right shape and strong enough to stop the motor in all conditions; they must be able to absorb all the kinetic energy accumulated during movement without deforming in the slightest.

⚠ Do not install the motor without the "Mechanical travel stops"

Besides the standards referring to electrical installations in general, automatic machines, doors and gates, we also supply some specific notes that will make the whole system even safer and more reliable:

- The power line leading to the unit must always be protected by a circuit breaker or three 5A-fuses; a differential switch is recommended but not essential if there is already one up-line from the system.

- Power the unit using a 5 x 1.5 mm² cable (3 phases + neutral + earth); should the distance between the unit and the earth connection exceed 30 m, install an earth plate near the unit.

- Use wires with a minimum cross section of 0.25 mm² to connect low voltage safety circuits.

Use shielded wire if the length exceeds 30 m and connect the earth braid only on the unit side.

- Only use cables (various individually insulated wires plus an additional general insulation); never use single wires even if they are protected inside ducts.

- It is absolutely forbidden to connect cables in buried boxes even if they are completely watertight.

Make sure you have all the necessary materials suitable for this use. The unit must be installed correctly in order to guarantee an adequate level of safety and protection against atmospheric agents. Please bear in mind that the unit contains particularly delicate live parts and electronic components.

The unit is supplied in a container which, if appropriately installed, will guarantee a protection level of IP55 (in compliance with CEI 70-1 and IEC 529) which means it is also suitable for outdoor installation.

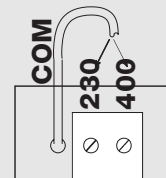
However, several simple but important rules must be followed:

- Install the unit on a permanent surface, perfectly flat and adequately protected against knocks, making sure that the unit bottom is at least 40 cm from the ground.

- Install cable or pipe leads only at the bottom of the unit; for no reason whatsoever must the side and top walls be perforated. The cables must only enter the unit from the bottom!

2.1) Input voltage selection:

The power unit can either work with three-phase or single-phase power supply (see wiring diagrams) with voltages of 400V or 230V. Select the input voltage by fitting in a jumper between the "COM" terminal and the "230" terminal or the "400" terminal as shown in figure.



2.2) Wiring diagram:

Under no circumstances, while wiring or plugging in the various cards, **may the unit be electrically powered**, to safeguard the operator and avoid damaging the components.

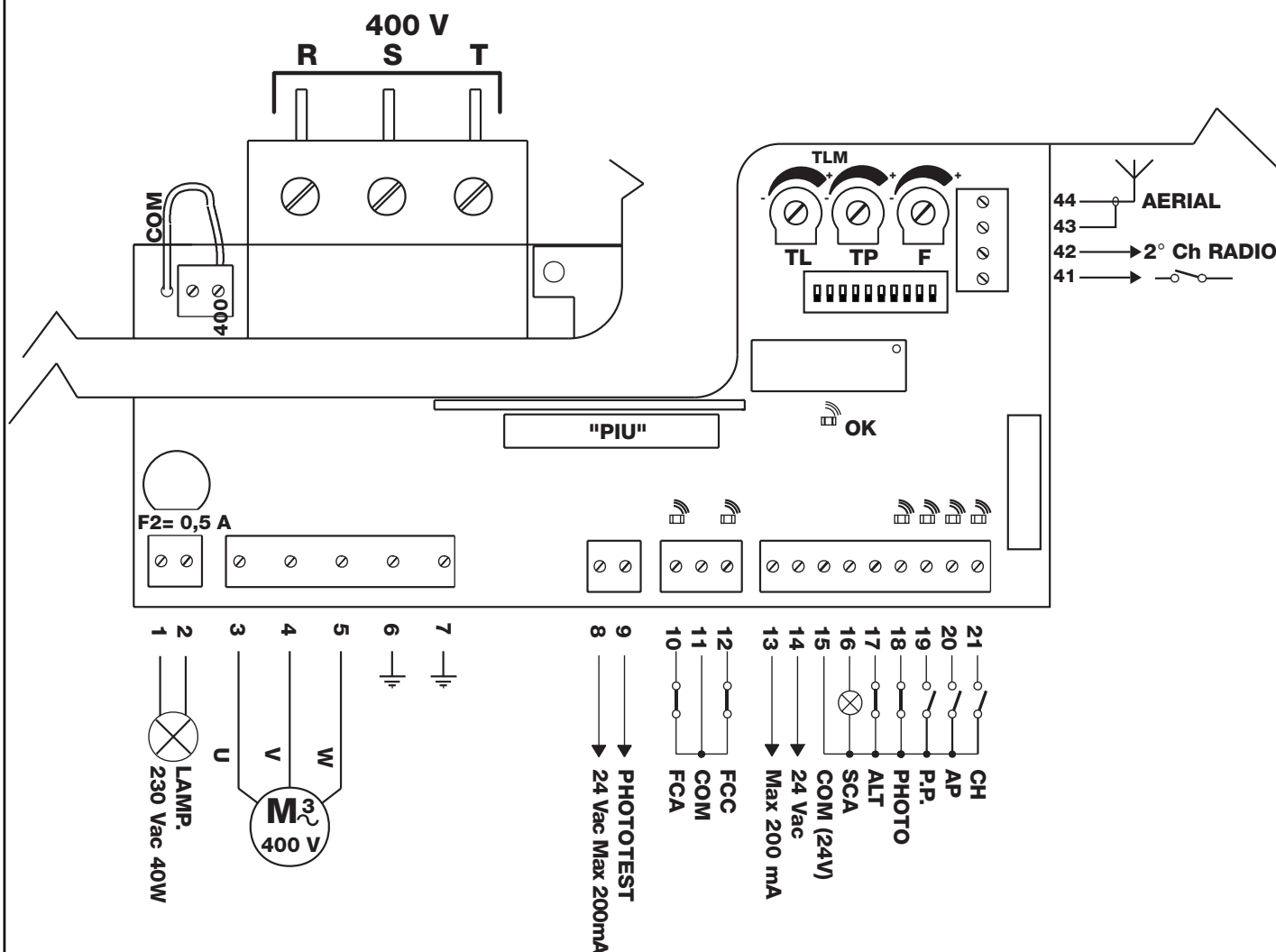
Please also bear in mind that if the inputs of the NC (Normally Closed) contacts are not used they should be jumpered with the "common" terminal; if there is more than one contact, then they should be connected in SERIES. If the inputs of the NO (Normally Open) contacts are not used they should be left free and if there is more than one contact then they should be connected in PARALLEL. The contacts must be of the mechanical type and potential-free; no connections are allowed, such as those defined as "PNP", "NPN", "Open Collector" etc..

Before making connections, check that the selection corresponds to the available input voltage.

Any errors during the selection can seriously damage the components of the control unit!

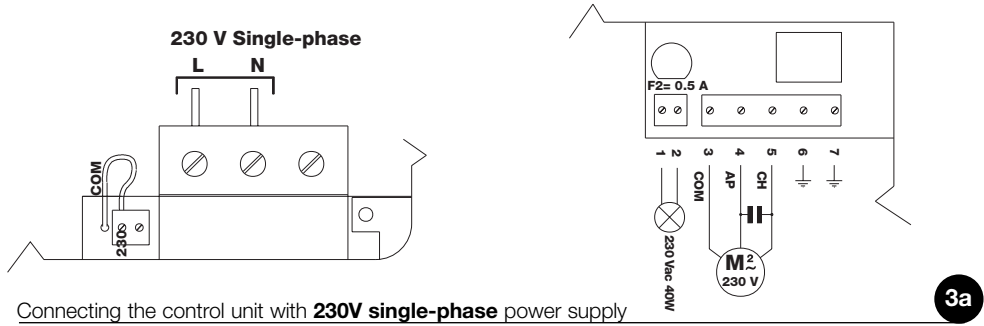
The drawing in figure shows the connections of the control unit with three-phase 400V power supply.

To connect the control unit with 230 Volt single-phase or three-phase power inputs, please refer to the drawings in figure 3a-3b.



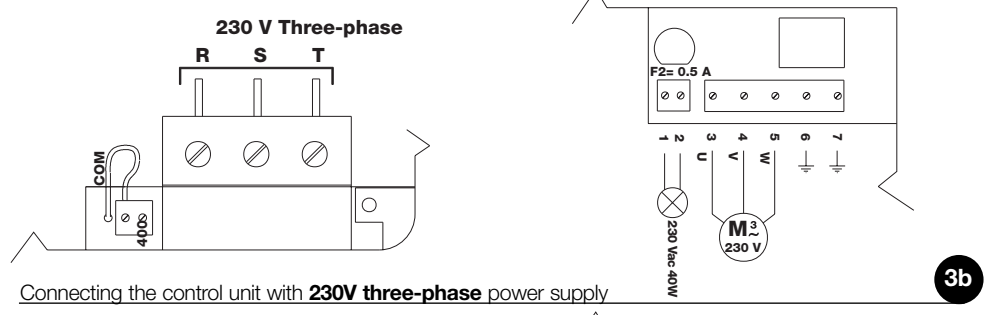
N.B.:

Only qualified and expert personnel may carry out installation and subsequent maintenance operations following the rules of good workmanship and in compliance with EEC directive 89/392 (Machine Directive) and, in particular, EN 60204 (Electrical wiring of machines).



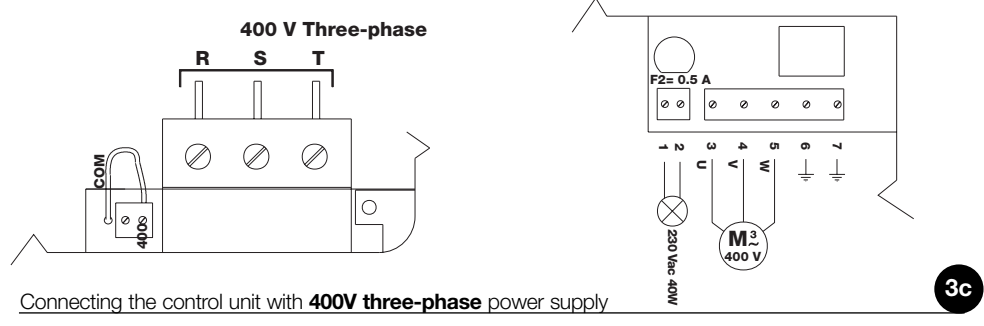
Connecting the control unit with **230V single-phase** power supply

3a



Connecting the control unit with **230V three-phase** power supply

3b



Connecting the control unit with **400V three-phase** power supply

3c

2.3) Descriptions of connections:

All the connections are made by means of special terminals located on the lower side of the electronic card. Only the power input line should enter the upper part, directly connected to the overload cut-out terminals.

To connect the earth circuit to the control unit and motor, use terminals 6-7 wherever possible.

If the control unit is powered by a single-phase system just two wires must be connected to the first two terminals to the left of the overload cut-out (the third terminal being unused). Connect the single-phase motor and relative condenser as shown in figure 3a.

Take care when selecting 400V or 230V input voltage.

A brief description of the possible connections of the control unit outputs follows.

1-2	:	Flashing light	= Connection to 220 Vac max. 40W flashing light
3-4-5	:	Motor	= Line to motor 230Vac / 400Vac
6-7	:	Earth	= Control unit and motor earth connection
8-9	:	Phototest	= 24 Vac output to power photoelectric cell transmitters (Max. 200mA)
10	:	Open limit switch	= OPEN limit switch input
11	:	Common	= Common for limit switch inputs
12	:	Close limit switch	= CLOSE limit switch input
13-14	:	24 Vac	= 24 Vac output to accessories Max. 200mA (400mA if phototest is not used)
15	:	Common	= Common for all inputs
16	:	Gate open indicator	= Max. 24 Vac output for gate open indicator 2W
17	:	Stop	= Input with STOP function (Emergency, shutdown or extreme safety)
18	:	Photocell	= Input for safety devices (photoelectric cells, pneumatic edges)
19	:	Step-by-step	= Input for cyclic functioning (OPEN STOP CLOSE STOP)
20	:	Open	= Input for opening
21	:	Close	= Input for closing
41-42	:	2° Radio Ch	= Output for the second radio receiver channel, if any
43-44	:	Aerial	= Input for the radio receiver aerial

There are two additional slots on the unit card for optional cards:

RADIO	=Slot for NICE radio receivers
PIU	=Slot for "PIU" expansion card with extra functions

We recommend waiting until installation is complete before plugging in the optional RADIO or PIU cards. The optional cards are not essential for system operation and, if used, they make troubleshooting more complicated.

2.4) Notes about connections:

Most connections are simple; many of them are direct connections to a single user point or contact but others are a little more complicated. A particular description should be made of the "Phototest" output; this is the best possible solution in terms of reliability as regards safety devices and puts the control unit and safety photocells in "category 2" according to UNI EN 954-1 standard (ed. 12/1998).

Before every manoeuvre is begun, the relative safety devices are checked and only if everything is in order will the manoeuvre start. Should the test be unsuccessful (photocells blinded by the sun, short circuited cables, etc.) the failure is identified and the manoeuvre is not carried out.

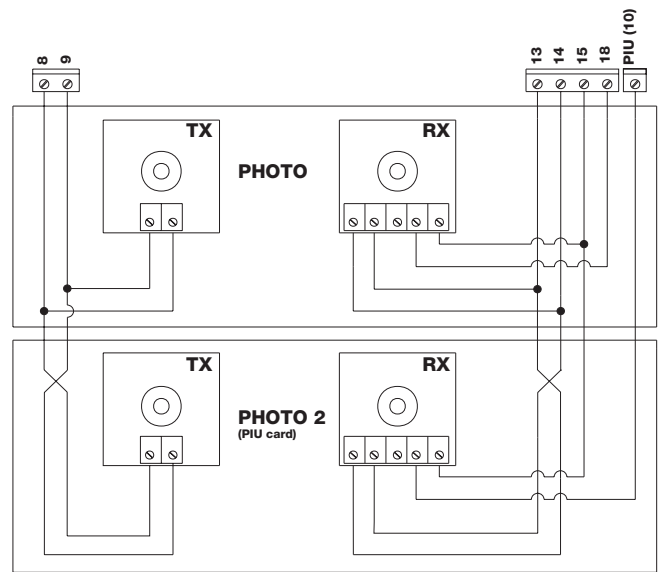
This can only be achieved by using a certain configuration in the safety device connections that require the photocell transmitter power input to be connected to terminals 8-9 while the receiver power input should be derived from the accessories output (terminals 13-14).

When movement is required, it is first checked that all the receivers involved in the movement give their consent, then the phototest output is turned off after which it is checked that all the receivers signal the fact by removing their consent; the phototest output is finally reactivated and the consent of all the receivers is verified once more.

Synchronism should always be activated on the two transmitters by cutting the jumpers; this is the only way of ensuring that the two pairs of photoelectric cells do not interfere with one another.

Check the instructions in the photocell manual regarding synchronised functioning.

If a PHOTO input is not used (e.g.: PHOTO2) and the phototest function is required, jumper the unused input with phototest output terminal n°9.



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3) Testing:

Once the motor and various accessories have been connected you can now check all the connections and test the installation.

⚠ ATTENTION: the following operations entail working on live circuits; most of these run on extra-low safety voltage so they are not dangerous but some are powered by mains voltage which means they are HIGHLY DANGEROUS! Pay the greatest of attention to what you are doing and NEVER WORK ALONE!

Work on the control unit should be started in the "manual mode" and with all the functions deactivated (dip-switches OFF); in all cases, when working in the manual mode and the control key is released, the motor will stop immediately. Also check that all the adjustment trimmers are at a minimum (turned fully anti-clockwise); only the "FORCE" trimmer can be positioned on maximum.

- A) Unlock the gate and take it halfway the run and then lock it; now it is free to move in either the opening or closing direction.
- B) Make sure you have selected the correct input voltage on the terminal board to the left of the overload cut-out.
- C) Power the unit and check that voltage between terminals 13-14 and 8-9 is 24 Vac.

As soon as the unit is powered the indicator lights (LED's) on the active inputs should turn on and shortly after the "OK" LED should start flashing regularly. If none of these events occur, turn power off immediately and check the connections more carefully.

The "OK" LED in the centre of the card has the job of signalling the state of the internal logic: regular flashing at 1 second intervals means that the internal microprocessor is active and waiting for commands. When the microprocessor recognises a variation in the state of an input (whether it is a command or function dip-switch input) it generates a rapid double flash even if the variation does not have any immediate effect. Extremely rapid flashing for 3 seconds means that the control unit has just been powered or is performing internal

testing, lastly, irregular flashing means that the test has been unsuccessful and that a fault has occurred.

- D) Now check that the NC-contact inputs LED's are on (all safety devices active) and that the NO-contact inputs LED's are off (no command present); if this is not the case, check the connections of the various devices and make sure they are in good working order.
 - E) Check that all the safety devices of the unit are in proper working order (emergency stop, photocells, pneumatic edges, etc.); each time they cut in, the relative STOP or PHOTO LED should turn off.
 - F) Check the limit switches are connected properly; move the gate and check that once the required point is reached the relative limit switch cuts in and switches off the relative LED on the control unit.
 - G) Now make sure that movement is in the right direction, that is, check that the movement set on the unit corresponds to that of the wings. This check is of paramount importance. If the direction is wrong, in some cases (in the semiautomatic mode, for instance) the gate might appear to be working properly. In fact, the OPEN cycle is similar to the CLOSE cycle but with one basic difference. The safety devices are ignored in the closing manoeuvre, which is normally the most dangerous, and they will trigger in the opening manoeuvre causing the gate to close up against the obstacle with disastrous results!
- To see whether the direction of rotation is correct, give a short pulse to the Step-by-Step input; the first manoeuvre the unit will carry out after being powered is always an OPEN one, so simply verify that the gate starts opening; if this movement is incorrect, proceed as follows:
- 1 - Turn the power off

2 – For the three-phase motor, exchange 2 of the 3 motor connections. For the single-phase motor, exchange the “OPEN” and “CLOSE” motor connections.

Once this has been done, check if the direction of rotation is now correct by repeating the procedure described in point “G”.

- H) Perform a complete movement of the actuator; we recommend to always work in the manual mode with all functions deactivated. Use the command inputs to move the gate until it reaches the open point; if everything works normally, continue with the closing manoeuvre and move the gate until it reaches the stop point.
- I) Carry out several open and close manoeuvres in order to evaluate any defects in the mechanical structure of the

L) automation system and pinpoint any specific points of friction. Test the PHOTOCELL safety devices triggering; they have no effect in the opening manoeuvre but they will stop movement during the closing manoeuvre. If the PIU card is plugged in, test the PHOTOCELL 2 input: it has no effect in the closing manoeuvre but it will stop movement during the opening manoeuvre. The devices connected to the STOP input work during both the opening and closing manoeuvres and stop movement in each case.

4) Adjustments:

The control unit can be adjusted in 3 ways by means of adjustment trimmers to act on the following parameters:

Working time (TL):

Adjusts the maximum duration of the opening or closing manoeuvre.

Pause time (TP):

In the “automatic” mode, this adjusts the delay between the end of the opening manoeuvre and the beginning of the closing manoeuvre.

Force (F):

Adjusts the trigger threshold of the overload protection.

To adjust the working time TL, select the “Semiautomatic” operating mode by moving dip-switch N°1 to ON and adjust the TL trimmer to halfway along the travel distance. Then run a complete opening cycle followed by a complete closing cycle and readjust the TL trimmer in order to leave enough time for the whole manoeuvre plus a margin of about 2 to 3 seconds.

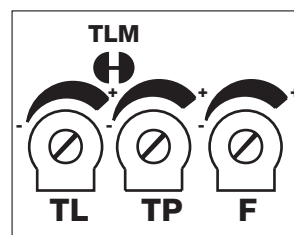
If the trimmer is at maximum and there still is not enough time, cut the TLM jumper on the printed circuit between the TL and the TP trimmers in order to provide more working time.

To adjust the pause time TP, select the “Automatic” operating mode by moving dip-switch N°2 to ON and adjust the TP trimmer as required. Then carry out an opening manoeuvre and check the time taken for the gate to close automatically.

Take great care when adjusting the FORCE (F) trimmer as this may affect the level of safety of the automatic system. Trial by error is required to adjust this parameter, measuring the force required to

allow the system to work. Please follow the instructions shown in the next chapter.

Adjustment is not linear in the whole range of the trimmer but is concentrated in one area; adjustment may have no effect in the first part of the trimmer while further on a considerable variation may be obtained by turning it slightly. The reason for this lack of linearity is due to the need to ensure the trimmer works with a wide range of single-phase and three-phase motors.



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5) Obstacle detection system:

This control unit is fitted with an obstacle detection system based on methods for controlling motor stress depending on the level of absorbed power. This technique is commonly known as “overload cut-out” and inverts or stops the manoeuvre depending on the programmed operating mode.

In the control unit, the control system can work in two ways, “normal” or “intelligent”; these are selected by dip-switch N° 8 (please see chapter on “Programmable functions”).

In the “normal” mode, the function is activated when the power absorbed by the motor reaches the threshold value set up with the force trimmer. This level is fixed and has the disadvantage that any increases in absorbed power due to variations in voltage, temperature, etc., can give rise to apparently unjustified manoeuvres. The “intelligent” mode was developed to overcome this limit. This function adjusts the cut-in threshold set up with the trimmer by means of an intelligent feature which is able to tell the difference

between slow variations caused by the above reasons and rapid variations caused by an obstacle.

N.B.: In both systems, the overload cut-out triggering due to obstacle detection is inactive during the initial movement phase and for a duration of 1.5 seconds.

Force and other adjustments must comply with recent European standards, prEN 12453: safety when using powered doors – requirements and classifications; and prEN 12445: safety when using powered doors – test methods. These standards require measurements to be used in order to limit the forces in the movement of automatic doors.

6) Operating modes:

In the manual operating mode, the OPEN input enables the opening manoeuvre and the CLOSE input enables the closing manoeuvre. The STEP-BY-STEP input enables an alternating closing and opening manoeuvre.

Movement stops as soon as the command in input stops. If the limit switches trigger, or PHOTOCELL 2 (on the PIU card) fails to enable movement during an opening manoeuvre, movement will stop; during a closing manoeuvre, on the other hand, movement will also stop if PHOTOCELL does not enable movement. Both in the opening or closing phases, movement will be brought to an abrupt halt by means of STOP. When a movement is stopped, stop the command in input before a new command is given that starts a new movement. When one of the automatic functioning modes (semiautomatic, automatic or always closes) is operational, a command impulse on the OPEN input will begin an opening manoeuvre. An impulse to the STEP-BY-STEP input begins an alternating closing and opening manoeuvre. A second impulse on the STEP-BY-STEP input or on the same input that started movement will cause it to stop.

Both in the opening or closing phases, movement will be brought to an abrupt halt by means of STOP.

If, a command input is given a continuous signal instead of an impulse, a state of "priority" will be created in which the other command inputs are disabled (this is useful if you want to connect a timer or a Night-Day selector).

If an automatic functioning mode has been chosen, the opening manoeuvre will be followed by a pause and then by a closing manoeuvre. If PHOTOCELL triggers during the pause, the timer will be reset with a new pause time; if, on the other hand, there is a STOP during the pause, the closing function will be cancelled and the system will STOP.

Nothing will happen if PHOTOCELL triggers during an opening manoeuvre but if PHOTOCELL 2 (on the PIU card) triggers, this will invert the direction of movement; if PHOTOCELL triggers during a closing manoeuvre, this will invert the direction of movement followed by a pause and then by a closing manoeuvre.

7) Programming:

The unit features a set of microswitches used to operate various functions so as to make the system more suitable to user needs and safer in various conditions of use. All the functions can be activated by moving the relative dip-switch to the "On" position and deactivated by moving them to "Off".

ATTENTION: some of the programmable functions are connected with safety aspects; carefully evaluate the effects of a function and

see which function gives the highest possible level of safety.

When servicing a system, before modifying a programmable function, find out why certain decisions were made during installation and then make sure the level of safety will not be impaired by the modified programme.

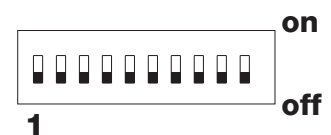
7.1) Programmable functions:

Use the FUNCTIONS dip-switch to select the various functioning modes and add the functions required according to this table:

Switches 1-2:	Off-Off	= "Manual" movement (Man Present)
	On -Off	= "Semiautomatic" movement
	Off-On	= "Automatic" movement (Automatic Closing)
	On -On	= "Automatic + always closes" movement
Switch 3:	On	= Condominium operating mode <Not available in the Manual mode>
Switch 4:	On	= Pre-flashing
Switch 5:	On	= Close again 5" after Photocell <only in the automatic mode>
Switch 6:	On	= "Photocell" also in opening
Switch 7:	On	= Phototest
Switch 8:	On	= Intelligent overload cut-out
Switch 9:	On	= Partial inversion following overload cut-out <disabled in the manual mode>
Switch 10:	On	= Brake

If a dip-switch is "Off" the function will not be activated, if it is "On" the function will be activated.

Some functions are only possible in specific conditions indicated in the notes between the symbols "<...>".



7.2) Description of functions:

Here is a brief description of the functions that can be added by moving the relative dip-switch to "ON".

Switches 1-2:	Off-Off	= "Manual" movement (man present)
	On -Off	= "Semiautomatic" movement
	Off-On	= "Automatic" movement (automatic closing)
	On -On	= "Automatic + Always Closes" movement

In the "Manual" functioning mode, the gate will only move as long as the relative control key is held down.

In the "Semiautomatic" functioning mode a command impulse will perform the whole movement until the Working Time limit expires or the mechanical stop is reached. In the "Automatic" functioning mode, an opening manoeuvre is followed by a pause and then an automatic closing manoeuvre.

The "Always Closes" function cuts in following a power failure; if the gate is open, a closing manoeuvre takes place, automatically preceded by 5 seconds' pre-flashing.

Switch 3:	On	= Condominium functioning mode (not available in the Manual mode)
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In the Condominium functioning mode, once an opening manoeuvre has started, it cannot be interrupted by other command pulses on STEP-BY-STEP or OPEN until the gate has finished opening.

During a closing manoeuvre, a new command pulse will stop the gate and reverse the direction of movement in order to open the gate.

Switch 4:	On	= Pre-flashing
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A command impulse activates the flashing lamp followed by movement 5 seconds later (2 seconds later in the manual mode).

Switch 5:	On	= Close again 5" after Photocell (only in the Automatic mode)
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This function allows the gate to be kept open only for the time required for transit; it will always close automatically 5 seconds after the last PHOTOCCELL activation, regardless of the programmed Pause Time.

Switch 6:	On	= "Photocell" also during the opening manoeuvre
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The "Photocell" safety device is normally just active during the closing manoeuvre; if dip-switch N°6 is turned "On" the safety device will also trigger during the opening manoeuvre.

In the Semiautomatic or Automatic modes, the opening movement will start again immediately after the last PHOTOCCELL activation.

Switch 7:	On	= Phototest
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This function tests the photoelectric cells before each movement begins, thereby increasing safety as regards the control unit + photocells assembly and putting it firmly into category 2 as per UNI EN 954-1 standard (ed. 12/1998).

In order to use this function, the photocells must be connected as shown in figure 4.

Switch 8:	On	= Intelligent overload cut-out
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This function allows the overload cut-out mode to be selected. If the switch is moved to "Off" the normal overload cut-out mode is activated, if it is moved to "On" the Intelligent overload cut-out mode is activated.

Switch 9:	On	= Partial inversion following overload cut-out <excluded in the manual mode>
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When the overload cut-out system triggers, the direction of movement is generally inverted, when the switch is moved to "On", movement is inverted for 1.5 seconds and then stops.

Switch 10:	On	= Brake
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This function reduces the inertia of the wing at the end of the manoeuvre. The motor is powered for 1 second, which guarantees rapid stop also in the case of automatic systems with elevated accumulated kinetic energy.

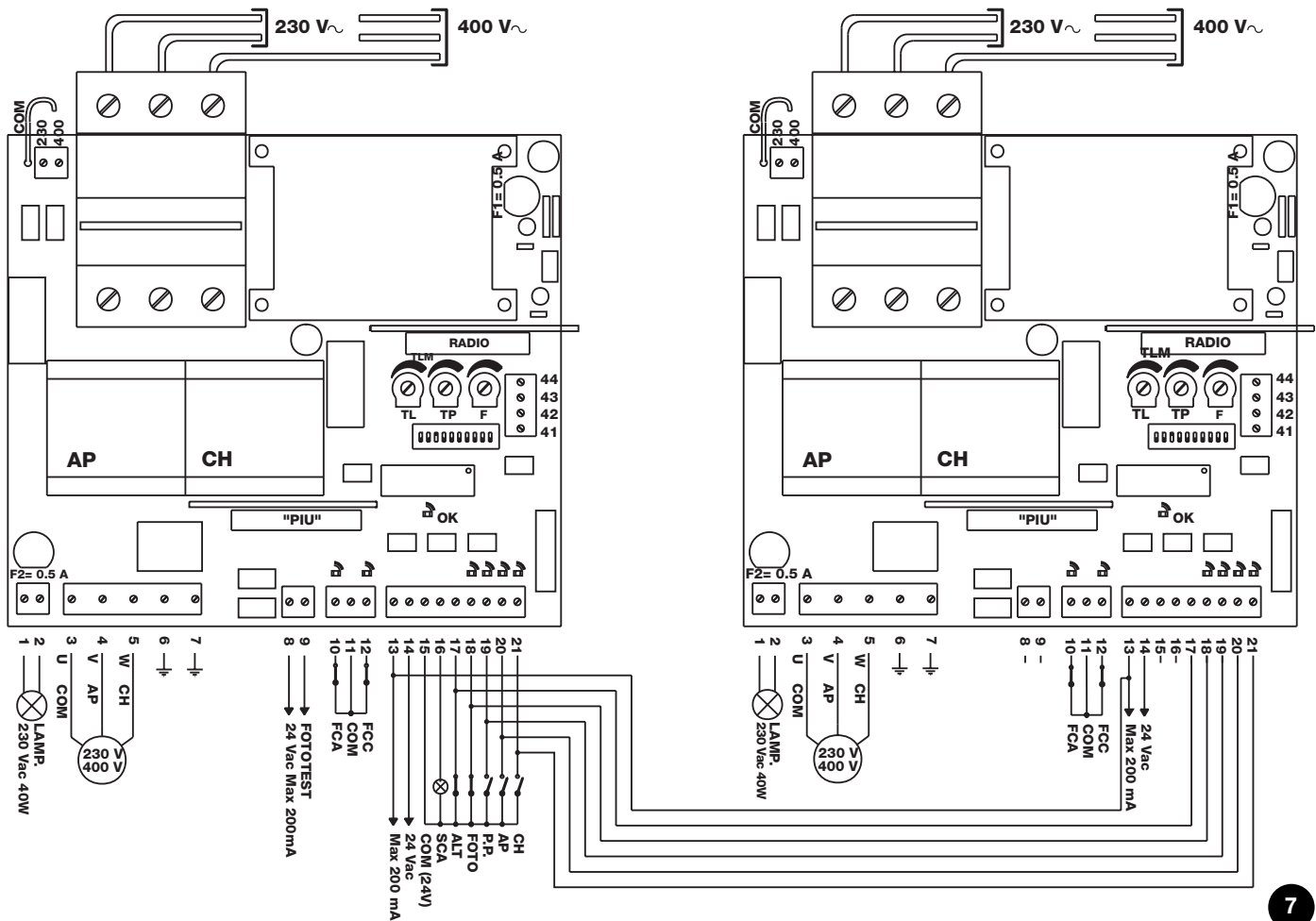
8) Using 2 central units on opposite wings:

Fit two central units as shown in the following figure in order to install an automatic system comprising 2 opposite wings.

Connect one motor and limit switch to each central unit and the flashing light and "gate open" light to either of the two or, if you prefer, one to each central unit.

If you are using the phototest function, connect it to the output of just one central unit. Connect the inputs in parallel. Connect the "common" terminal to one of the two central units.

Connect the 0Volt-terminals (13) of the two central units. Should the 2 central units go out of phase enable the "Condominium" operating mode (Dip-Switch 3) to resynchronise the two wings.



9) Optional accessories:

- "PIU" card

The control unit is already fitted with all the functions used in a normal installation; in order to allow the system to be used in special installations, an optional card called "PIU" has been produced which adds new functions such as traffic light signalling, courtesy light, electric locking, Photocell 2, partial opening, etc..

- "RADIO" card

The control unit features a connector for plugging in a radio card produced by Nice, which activates the STEP-BY-STEP input and allows the control unit to be remote-controlled with a transmitter.

10) Servicing:

The card, being electronic, needs no particular maintenance. However, make sure the device that controls the motor overload cut-out is in perfect working order and well adjusted at least twice a year; adjust with the trimmer if necessary.

Check the safety devices (photoelectric cells, pneumatic edges, etc.) and the flashing light are in perfect working order

10.1) Information on environmental protection measures:

This product is made from various kinds of material, some of which can be recycled.

Recycle or dispose of the product in compliance with current laws and by-laws.

10.2) Technical features of the control unit:

Mains power	: 400 Vac or 230 Vac \pm 10%, 50 or 60Hz
Max. current to motors	: 4A
Auxiliaries output	: 24Vac, max. current 200mA (400mA if Phototest is not used)
Phototest output	: 24Vac, max. current 200mA
Flashing light output	: For 230Vac flashing lights, max. power 40 W
Gate open Light output "SCA"	: For Light 24Vac, max. power 2 W
Working time	: Adjustable from <3 to>120 s, or from <90 to>210 s with TLM
Pause time	: Adjustable from <5 to>200 s
Operating Temperature	: -20 \div 70 °C