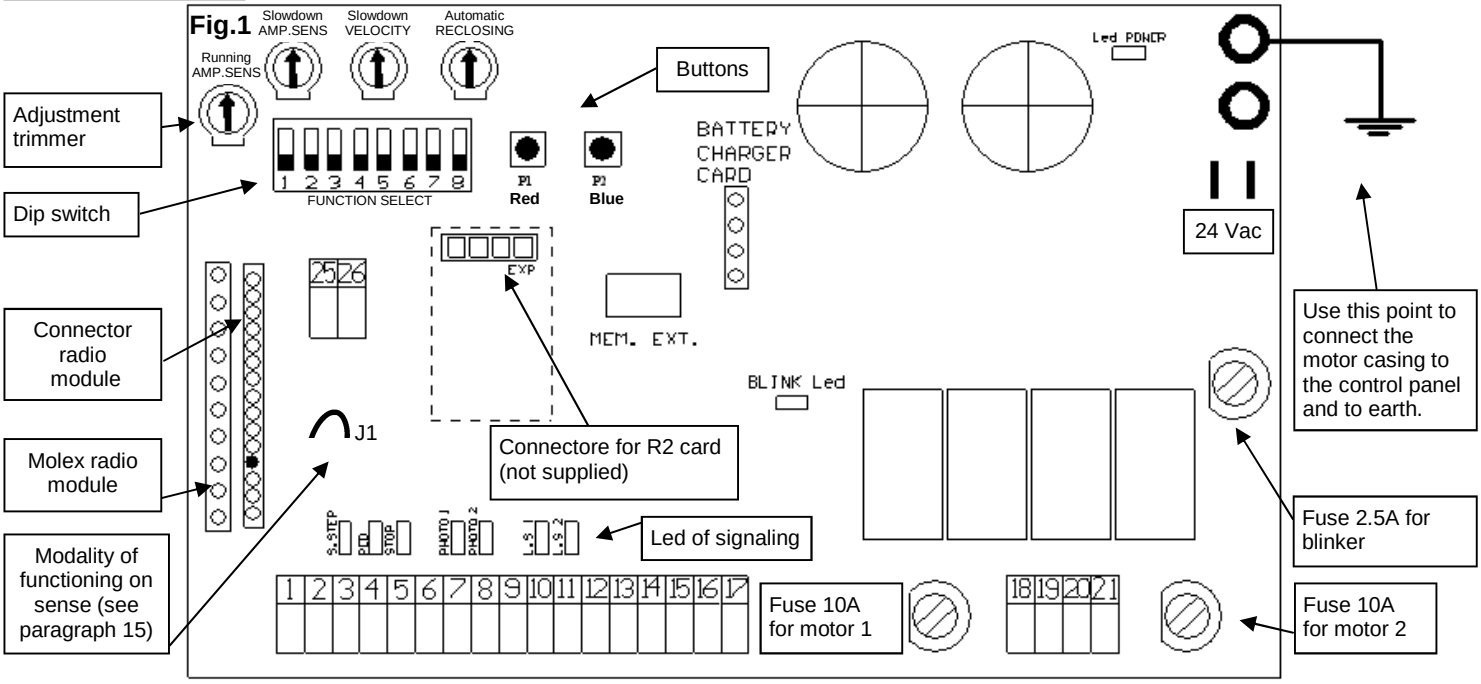
CONTROL UNIT AS24 FOR UNDERGROUND MOTORS
Control unit for 1-2 motors 24Vcc

1. Introduction

The control unit AS24 is particularly indicated for the installation of 1 or 2 wing gates with motors with direct current 24V and a maximum absorption of 7A.The control unit allows a precise regulation of the thrust of the gates, of the velocity and sensibility on slowing phase. It is also possible to adjust the delay in closure of the second wing during the learning phase. The control unit can memorize up to 30 transmitters and up to 8000 transmitters with the external memory, with the step by step and pedestrian functions. It is supplied with inputs for interior and exterior photocell, limit switch in opening and possibility to connect the buttons for step by step, pedestrian and stop. The outputs include a 24Vac flashing light, the possibility to connect a 2° auxiliary radio channel (by using a molex receiver) and an expansion card with more functions.
The use of buffer batteries is expected where it would be necessary to assure the service in case of lack of power.

2. Configuration

Fig.1



3. Electrical connections

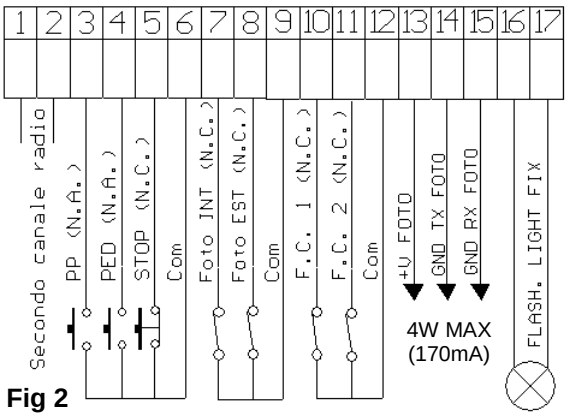
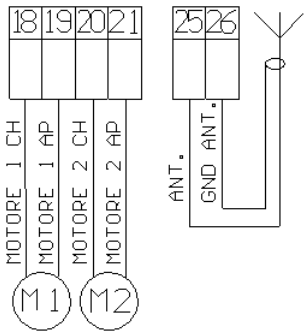


Fig 2



Any normally closed contact must be bridged to the common if it is not used.

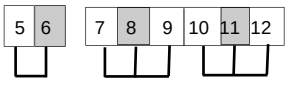


Table of contents:

PP : Step by step button.
PED : Pedestrian button or clock input.
Stop: Stop.
Com : Common.
Foto INT: Inside photocell .
Foto EST: Outside photocell.
F.C.1: Limit switch 1.
F.C.2: Limit switch 2.
Ant.: Antenna
GND ANT.: Braiding antenna

Examples of maximum load for Vdc accessories (4W):

- 3 couples of FTALL photocells.
- 2 couples of FTALL photocells and 1 R.CO.O receiver (safety edge system).
- 2 couples of FTALL photocells and 1 B.RO X40 DISPLAY receiver.
- 1 couples of FTALL photocells and 1 B.RO X40 DISPLAY receiver and 1 R.CO.O receiver.

CHOOSING MOTORS

For wing gates, connect the wing which beats to MOTOR 1 output, an electro-lock may be added. MOTOR 1 is always activated as first during opening phase and as second in closing phase.

EARTH CONNECTION

In order to obtain correct operation of the accessories (photo devices in particular) connected to the control panel, it is very important that the entire system (automation + motors + control panel) has a single mass reference. You must therefore connect the metallic automation structure, the motor casing and the control panel to each other with the terminal earthed. For the connection on the control panel see figure 1

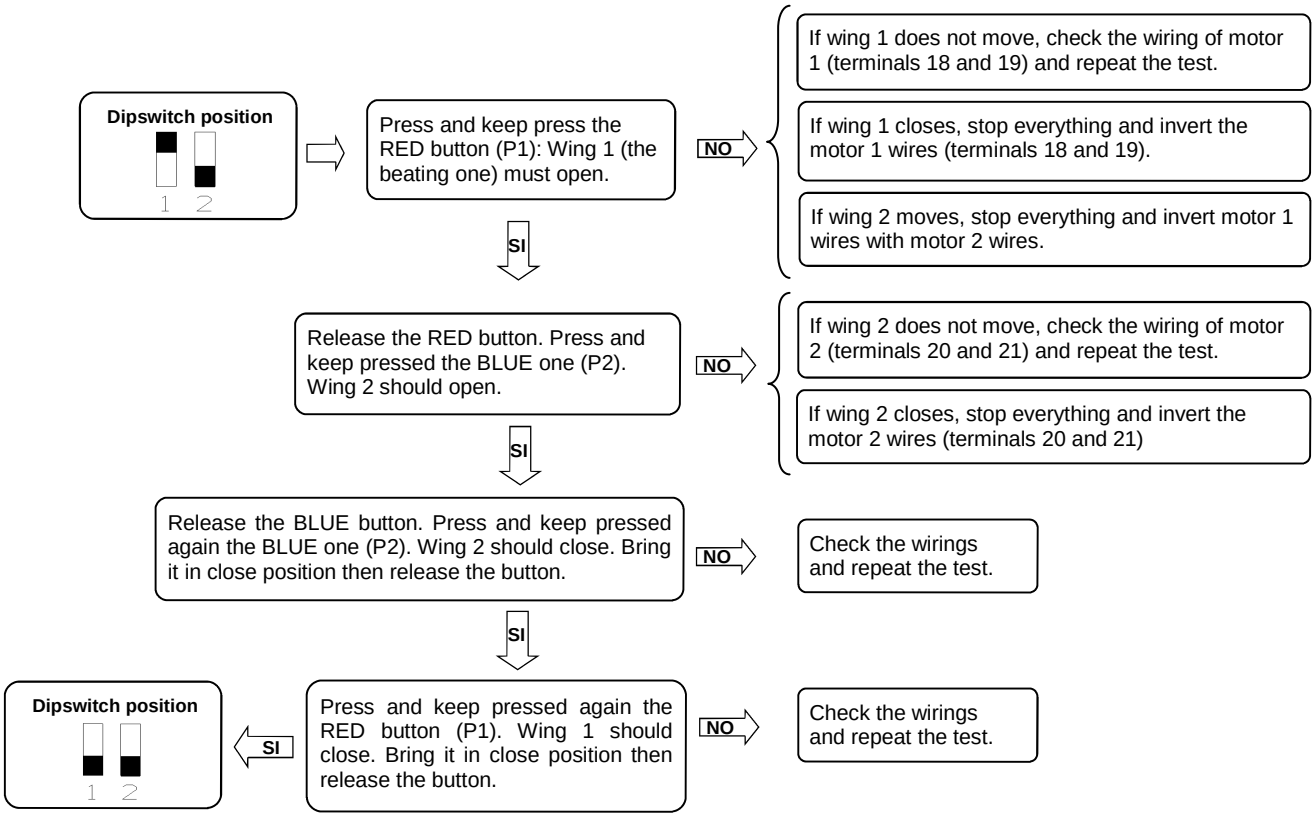
For a correct functioning of the system, it is absolutely indispensable the use of mechanical stops in opening and closing.

WARNING: Before carrying out any activation and/or setting up, carefully read the following paragraphs which describe the programming and the main setting up of the automation. During the programming, carefully follow the order and the instructions shown. Do not enter into the working range of the system whilst it is moving or being programmed. Before carrying out any modification wait for the complete stop of the system. Do not allow unauthorized and/or unqualified people to intervene or to enter into the system's working range.

4. Preliminary checks

Before connecting the control panel to the power supply, check all wirings which have been carried out. In particular check that there are no damaged wires, short-circuits between wires and that all accessories are connected to the terminal board in the points shown on the diagram on the previous page. Once the power supply is connected check that:

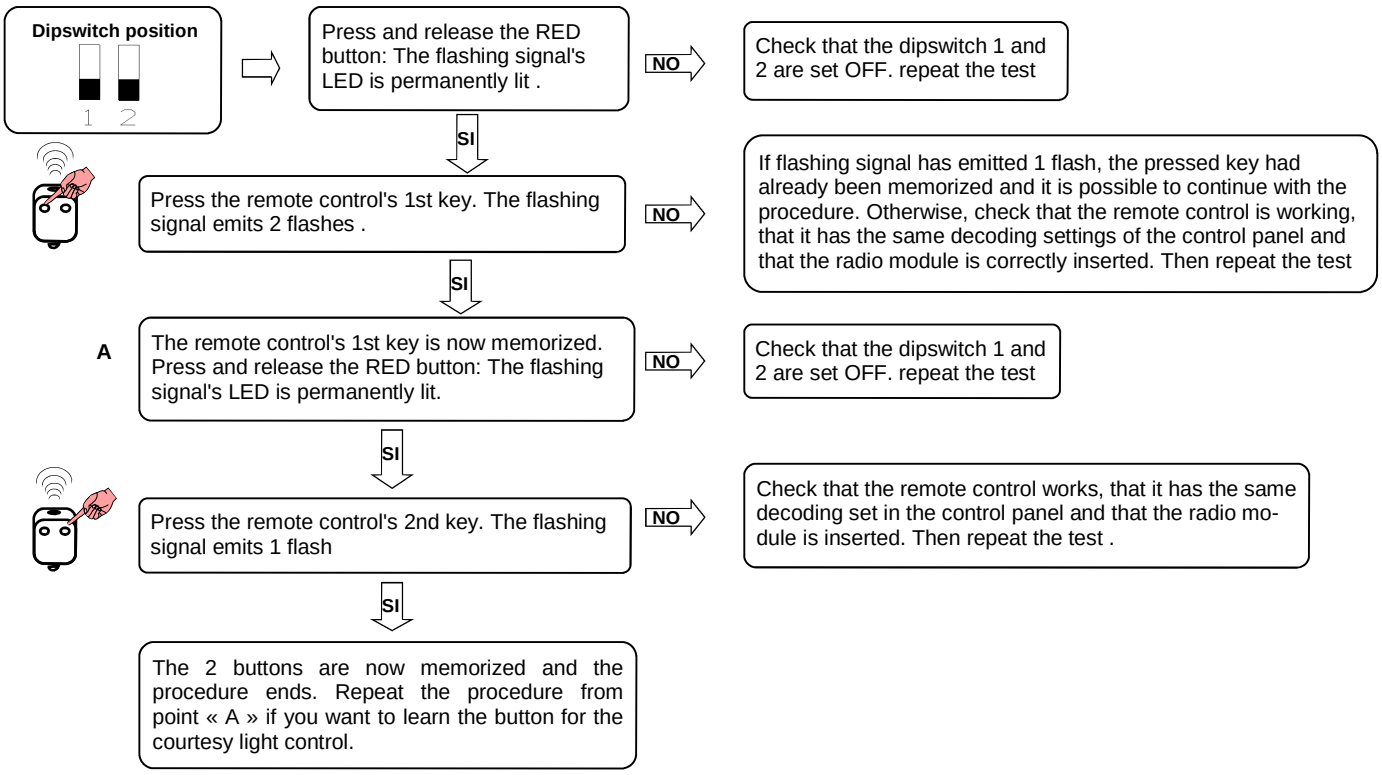
1. The POWER LED is constantly lit.
2. The normally closed inputs must have the corresponding LED lit. The LED must turn off when the input contact is opened.
3. Check that the radio module is inserted and working.
4. Set the dipswitch 1 on ON
5. Check the motor connection by following the procedure as described below



PLEASE NOTE: During these movements the photocells, the radio and the buttons are NOT active.

5. Remote control learning

Memorize at least one 2-key remote control. In order to program the wing stroke use a 2-key remote control. During normal operation however, (i.e. not during programming) the 1st memorized key carries out the step by step function (opening and closing of the gate), the 2nd key carries out the pedestrian opening (complete opening of the 1st wing). The 3rd key operates the courtesy light.



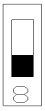
6. Setting the wing stroke

This procedure must ONLY be carried out by the installer and ONLY during the setting up of the system. If you do not utilize any transmitter, it is necessary to use the Red key (P1) and BLUE (P2) present on the card or with P.P and PED buttons. Then you must carry out the following procedure:

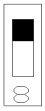
1. Close the door, see point 4, to move the wings manually.
2. Select if the control unit must work one wing (DIP 8 on ON) or 2 wings (DIP 8 on OFF).
3. Put the DIP 1 on OFF.
4. Put the DIP 2 on ON. The flashing light blinks slowly.

WARNING: during the learning of the strokes, the phase shift of the wings is also set.

Setting of the wings number



2 wings door



1 wing door

Setting of the wings stroke

1 — **Dipswitch position** 

→ **The flashing light starts to blink lightly**

2 — **Press and release the 1° memorized key or press the RED key (P1)** → **The wing 1 begins to open.**

If you are using a single wing gate, pass to the point 4

3 — **Once the wing 1 reaches the desired phase shit, press and release the 2°memorized key or the BLUE key (P2)** → **The wing 2 begins to open.**

4 — **Once the gate reaches the position of completely open it re – closes automatically.** → **The gate re – closes.**

5 — **Once the gate reaches the position of completely closed the flashing light emits 4 blinking** → **The learning has had a successful conclusion.**

6 — **Dipswitch position** 

→ **The learning is ended.**
The control unit is ready to work regularly.

7. Adjusting threshold of the ampere sensor operating

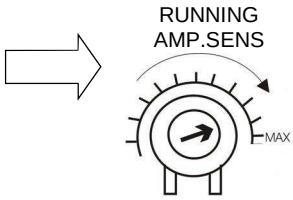
This procedure must ONLY be carried out by the installer and ONLY during the put in function of the system. For a correct programming, before carrying out the modifications, bring always back the door to the totally closed position.

With the wing in movement check, through a dynamometer, the pushing force at the edge of the wing.

The edge of the ampere sense is too low.

Repeat the measure of the torque

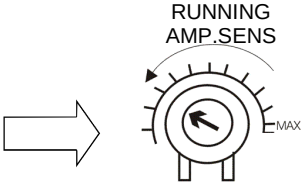
It is possible to turn the RUNNING AMP. SENSE trimmer in clockwise sense to increase the threshold of the ampere sensor.



The edge of the ampere sensor is too high.

Repeat the measure of the torque

It is possible to turn the RUNNING AMP.SENS. trimmer in anti – clockwise sense to lower the threshold of the ampere sensor.



8. Adjusting threshold of the ampere sensor in slowing down

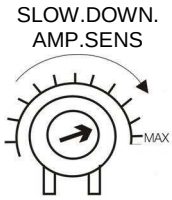
This procedure must ONLY be carried out by the installer and ONLY during the put in function of the system. For a correct programming, before carrying out any modification, bring always back the door to the totally closed position.

With the door in phase of slowing down check, through a dynamometer, the pushing force at the edge of the wing.

The edge of the ampere sense is too low

Repeat the measure of the torque

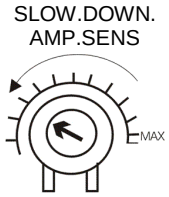
It is possible to turn the SLOW.DOWN.SENS. in clockwise sense to increase the ampere sense threshold.



The edge of the ampere sensor is too high

Repeat the measure of the torque

It is possible to turn the SLOW.DOWN.SENS. trimmer in anti – clockwise sense to lower the threshold of the ampere sensor.



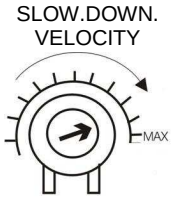
9. Adjusting of the motors velocity in slowing down

This procedure must ONLY be carried out by the installer and ONLY during the put in function of the system. For a correct programming, before carrying out any modification, bring always back the door to the totally closed position.

With the door in movement check the velocity of the door in slowing down phase.

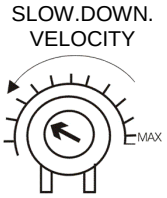
The velocity is too low

It is possible to turn the SLOW DOWN VELOCITY trimmer in clockwise sense to increase the velocity of the motors.



The velocity is too high

It is possible to turn the SLOW DOWN VELOCITY trimmer in anti clockwise sense to lower the velocity.



WARNING: it is indispensable to carry out, after adjusting the desired velocity in slowing down, a new programming of the strokes in the case in which the slowing down phase is personalized.

10. Adjusting the automatic reclosure time

This procedure must ONLY be carried out by the installer and ONLY during the setting up of the system. For a correct programming, before any modification, bring always the gate back to the totally closed position.

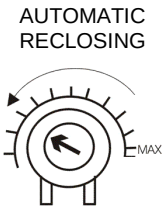
With gate closed give a step by step command and wait for complete opening.

The Automatic re-closure time is too short

Turn the trimmer A. RE-CLOSURE TIME in clockwise sense. In this way the automatic reclosure time increases.

The Automatic re-closure time is too long

Turn the trimmer A. RE-CLOSURE TIME in anti-clockwise sense. In this way the automatic reclosure time decreases.



Turn the trimmer A. RE-CLOSURE TIME completely in clockwise sense. In this way the automatic reclosure is disabled.

Turn the trimmer AUTOMATIC RECLOSING completely in anti-clockwise sense to enable the photocells automatic reclosing. If the photocells beam is not interrupted, the control unit re-closes itself after 2 min.

11. Personalization of pedestrian opening

This procedure must ONLY be carried out by the installer and ONLY during the put in function of the system. For a correct programming, before carrying out any modification, bring always back the door to the totally close position. If not personalized, pedestrian opening corresponds to the total opening of first wing. In order to personalize the pedestrian opening proceed as follows:

1. **Dipswitch position**  → **The flashing light starts to blink lightly**
2. **Press and release the 1°memorized key or press the RED key (P1)** → **The wing 1 starts to open.**
3. **When the wing gets the desired position, press and release again on the 1°memorized key or the RED key (P1).** → **The wing stops and after a few seconds the wing automatically closes.**
4. **Once the wing is closed, the flashing light emits 4 blinking.** → **The programming has had a successful conclusion.**
5. **Dipswitch position**  → **The learning has ended The control unit is ready to work regularly**

12. Personalization of the slowing down phase

This procedure must ONLY be carried out by the installer and ONLY during the put in function of the system. For a correct programming, before carrying out any modification, bring always back the door to the totally closed position. During the learning phase, it is possible to decide where the wing must begin the slowing down phase. In case of different slowing down between the 2 wings, make sure that the delay of the second wing is enough to grant the correct functioning of the automation.

1. **Dipswitch position**  → **The flashing light starts to blink lightly**
2. **Press and release the 1°memorized key or press the RED key (P1)** → **The wing 1 begins to open.**

<u>If you are using 1 wing gate, pass to the point 4</u>

3. **Once the wing 1 reaches the desired phase shit, press the 2° memorized key or the BLUE key (P2)** → **The wing 2 begins to open.**
4. **Once the wing 1 reaches the starting position of slowing down, press and release again the 1° memorized key or the RED key (P1).** → **The wing 1 pass to the slowing down in opening.**
5. **Once the wing 2 reaches the starting position of slowing down, press and release again the 2° memorized key or the BLUE key (P2).** → **The wing 2 pass to the slowing down in opening.**
6. **Once the gate reaches the position of completely open it re – closes automatically.** → **The gate re – closes.**
7. **Once the wing 2 reaches the starting position of slowing down, press and release again the 2° memorized key or the BLUE key (P2).** → **The wing 2 pass to the slowing down in closing.**
8. **Once the wing 1 reaches the starting position of slowing down, press and release again the 1° memorized key or the RED key (P1).** → **The wing 1 pass to the slowing down in closing.**

PLEASE NOTE: if no slowing down zone are defined, the control unit will load the factory settings

9. **Once the gate reaches the position of completely closed the flashing light emits 4 blinking** → **The learning has had a successful conclusion.**
10. **Dipswitch position**  → **The learning is ended. The control unit is ready to work regularly.**

PLEASE NOTE : it is indispensable to carry out a new programming of the torques , after having set the desired torque on slowing down, in case the slowing down phase is personalized.

13. Advanced functions

Through the 8-position dip switch, it is possible to personalize further the automation functions. As standard the control panel leaves the factory with all the main functions already set, however, it is always possible to modify them by following the table:

Dip No.	function	Dip OFF	Dip ON
1	modality of functioning	Automatic	Manual
2	learning of the courses	disabled	enabled
3	Pre-flashing	Not active	Active
4	Condominium function	Not active	Active
5	electrical lock + water hammer	Not active	Active
6	Photocell check	disabled	enabled
7	time set	Not active	Active
8	number of wings	2 wings functioning	1 wing functioning

13.1 Modality of functioning

Setting the dip n°1 on ON and the dip n°2 on OFF, the manual functioning is enabled. This functioning allows the displacement of the wing with the red and blue keys present on the card (see section 4)

13.2 Strokes learning

Setting the dip n°1 on OFF and the dip n°2 on ON, t he learning of the strokes is enabled. This functioning allows to learn the courses and the phase shift of the wings (see section 6).
Setting the dip n°1 on ON and the dip n°2 on ON, the pedestrian opening is enabled. This functioning allows to learn the opening of the first wing when the pedestrian opening key is pressed (see section 11).

13.3 Pre – flashing

Setting the dip nr.3 on ON the pre – flashing is enabled. This function means that before any movement there will be a brief flashing in order to indicate the movement is about to begin. Remember to turn the control unit off and then on again after modifying the dip switch's configuration.

13.4 Condominium function

Every command sent via radio or with the step by step buttons and/or pedestrian buttons will only open the door. Reclosure is entrusted to the automatic reclosure function, which **must be activated** since all closure command are ignored. In case the condominium function is active and the automatic reclosure is deactivated by means of the respective regulation trimmer (turned completely in clockwise sense), the control panel puts itself in state of signalled alarm, with door closed, through fast blinkings of the flashing light. Set dip n° 4 on ON to activate the condominium function.

13.5 Water hammer and electrical lock

If the automation is equipped with an electro lock it is advisable that, with the gate closed, the motor acts in closure for a short time before starting the opening phase. This functions allows you to un-lock the electro lock even in harsh weather conditions (e.g. ice). In order to activate the water hammer set dip no. 5 to ON.

13.6 Photocells check

This control unit is equipped with a function which allows you to carry out a check of the photocells operation before any turning on of the motor. In this way there is the possibility of increasing the safety of the system in case of photo device damaging (for example output relay stuck) or of an unwanted short – circuit on the photocell input. In case of breakdown, the control panel will signal it through a single flashing when a key is pressed and no movement will take place. This check is carried out after the control panel has received an order to move, but therefore powering the motor. Set dip n°6 on ON to activate the photo cell check.

13.7 Clock function

Setting the dip n°7 on ON the timing function is a ctivated. The pedestrian input becomes timing input where it is possible to connect a timer for the programming opening of the gate. The contact is interpreted as request of opening and of permanence on the opening state until the contact remains closed. When the contact opens, the gate automatically closes.

13.8 Wings number setting

The control unit AS24 can work with 1 or 2 wing gates. This setting is carried out putting the dip n°8 on OFF if you want a 2 wing functioning and on ON if you want a single wing functioning. This setting **MUST** be carried out before the learning of the strokes.

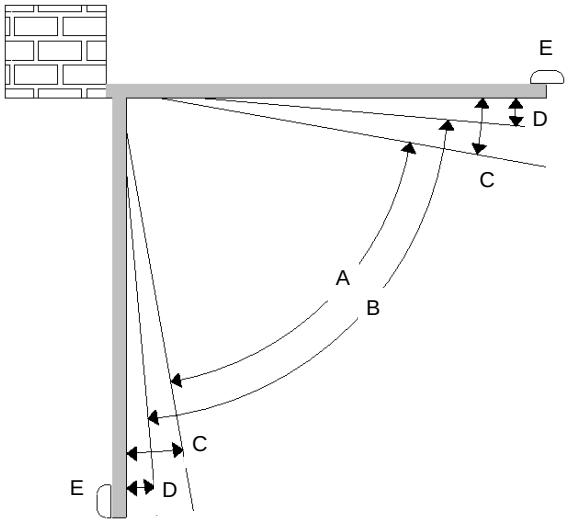
14. Modality of photocells intervention

The modality of photocells intervention is different:

- The internal photocells unlock the movement until the obstacle is removed, so they involve the complete opening of the gate.
- The external photocells do not intervene in opening, while they immediately invert the motion until the complete re opening in case of obstacle in closing.

15. Control unit operation mode

The modality of intervention of the current sensor is only one. In case of intervention of the sensor in opening, the gate carry out a short inversion. In case of intervention in closing , the immediate inversion is got with the total re opening of the gate.
In case the condominium function is selected, the happening of a sense in closing involves a short inversion in opening with a successive stop of the motion until the reception of an order.



A= Intervention zone of the amperometric sensor with movement inversion

B= Normal speed run zone

C= Intervention zone of the amperometric sensor with movement stop and setting of the reached position as total closing/opening position. In the version with encoder this area is not present.

D= Low speed run zone

E= Mechanical stops at opening and closing (**Absolutely necessary**)

WARNING: cutting the little bridge "J1" the inversion movement zone is cancelled (zone "A") and substituted with the setting of the position reached as total closing/opening position (zone "C").

15.1 Forced opening of the wings

In case of wing's overlap and consequent block of the automation, it is necessary to force the opening (re – synchronization). To do this, proceed as follows:

1. Press the first key of the transmitter for a time superior than 8 seconds
2. The control unit signals the imminent re – synchronization with a pre – flashing. **DO NOT release the key**
3. The two wings start to open contemporarily. **DO NOT release the key**
4. When the wings have reached an opening sufficient to not come into collision, release the key. The wings stop.
5. Press again the key of the transmitter. The wing 1 starts to close itself and once closed, the wing 2 also closes .
6. Once closed the gate, the operation of re – synchronization is ended and the wing is ready to work regularly.

NOTE: During the phase of re – synchronization, it is possible to close only 1 wing at a time. The functioning come back to be regular only when both wings are correctly closed.

WARNING: during the operation of re – synchronization the intervention of the anti – squashing security is interpreted as identification of the close position. In order to avoid the voluntary intervention, the sensitivity of the same results remarkably reduced respect to the conditions of normal functioning.

16. Selection of the decoding type and total deletion of the memory

In case it would be necessary to modify the decoding type (from rolling code to fix code or vice versa), or cancel all the learned transmitters, proceed as follows:

1. Cut off the power supply to the system
2. Press the **blue** key if you want to select the fix code decoding or press the **red** if you want to select the rolling code decoding
3. Keep them pressed while you give again tension
4. Keep them again pressed until the flashing light lights on 3 times
5. At this point release the key and wait until the flashing light lights off. The selection of the decoding and the total deletion of the memory have not been carried out.

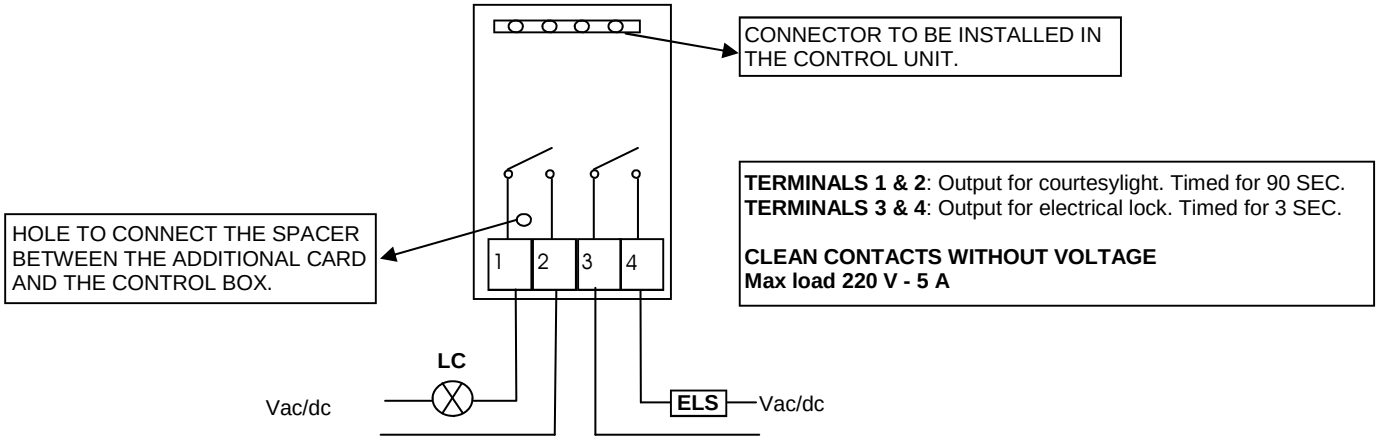
17. State of alarm of the control unit

If the flashing light blinks fastly or remains fixed, it means that the control unit is in state of alarm. Any command is ignored until the resolution of the problem.

Type of problem	Probable cause	Solution
Fast blinking of the flashing light	Condominium active + automatic reclosure deactivated	Enable the automatic re-closure by turning the trimmer in anti clockwise sense or deactivate the condominium function (dip 4 off).
Flashing light still and lit	Intervention of thermical protection of the control unit. Too high stream absorption. The value must not be higher than 7A for more than 3 sec.	Each command is ignored for 20 seconds. Check the motor status and their absorption.

18. Additional card (not supplied as standard)

The control unit AS24 has a connector (see diagram on page 1) where it is possible to insert an additional card in order to have the outputs for connection of the electric lock and the courtesy light. The lighting time of the courtesy light is fixed at 1 minute and 30 seconds. It lights for every operation of the user.



19. Second radio channel

In case in which you utilize a radio receiver with card, it is possible to provide the control unit with an output terminal for a second radio channel (with N.O. contact). Instead, if you want to utilize the radio module present on the card, the second radio channel is not available.

20. Problem solving

This paragraph intends to give some indications for solving the most common problems. Before proceeding, check that the LED present on the panel are correctly on or off, according to the following diagram:

LED STATUS						
Step by step	Pedestrian setting or clock	stop	External photocell	Internal photocell	Limit switch Wing 1	Limit switch Wing 2
off	off	on	on	on	on	on

If one of more LED are not in the correct status check the corresponding input. In case exclude the external accessories bridging the related inputs (photocell, stop, limit switch) with the common in case of normally closed contact.
Check the points in the following table:

Type of problem	possible cause	Solution
On activating the open command, the wings do not move.	Loss of electrical power.	Check the presence of electrical power and all the connections of the electrical network.
	Burned fuse	Replace the fuse with one with the same characteristics
On activating the open command, the wings move for a brief moment and then stop.	Incorrect encoder connection	Check encoder wiring
On activating the open command, the wings close.	Motor cables inverted	Check motor wiring, inverting them if necessary.
Impossible to programme remote controls.	The type of decoding set in the control panel does not correspond to the type of remote control used.	Check which decoding was set and select the one which corresponds to the remote controls in use.
It is impossible to enter in wing stroke programming mode.	The gate is not closed	Close (in manual) the gate. If the gate was closed, set the SW1 selector to manual mode, wait 1 second and put it back into automatic mode. Try again to enter into setting mode.
During the learning, a wing stop before to reach the total opening.	RUNNING AMP.SENS. Trimmer threshold too low	Increase the intervention value of the ampere sensor.
On learning phase, le wings arrive on total opening but the gate does not re-close.	RUNNING AMP.SENS. Trimmer threshold too high	Decrease the intervention value of the ampere sensor.

GUARANTEE - In compliance with legislation, the manufacturer's guarantee is valid from the date stamped on the product and is restricted to the repair or free replacement of the parts accepted by the manufacturer as being defective due to poor quality materials or manufacturing defects. The guarantee does not cover damage or defects caused by external agents, faulty maintenance, overloading, natural wear and tear, choice of incorrect product, assembly errors, or any other cause not imputable to the manufacturer. Products that have been misused will not be guaranteed or repaired. Printed specifications are only indicative. The manufacturer does not accept any responsibility for range reductions or malfunctions caused by environmental interference. The manufacturer's responsibility for damage caused to persons resulting from accidents of any nature caused by our defective products, are only those responsibilities that come under Italian law.