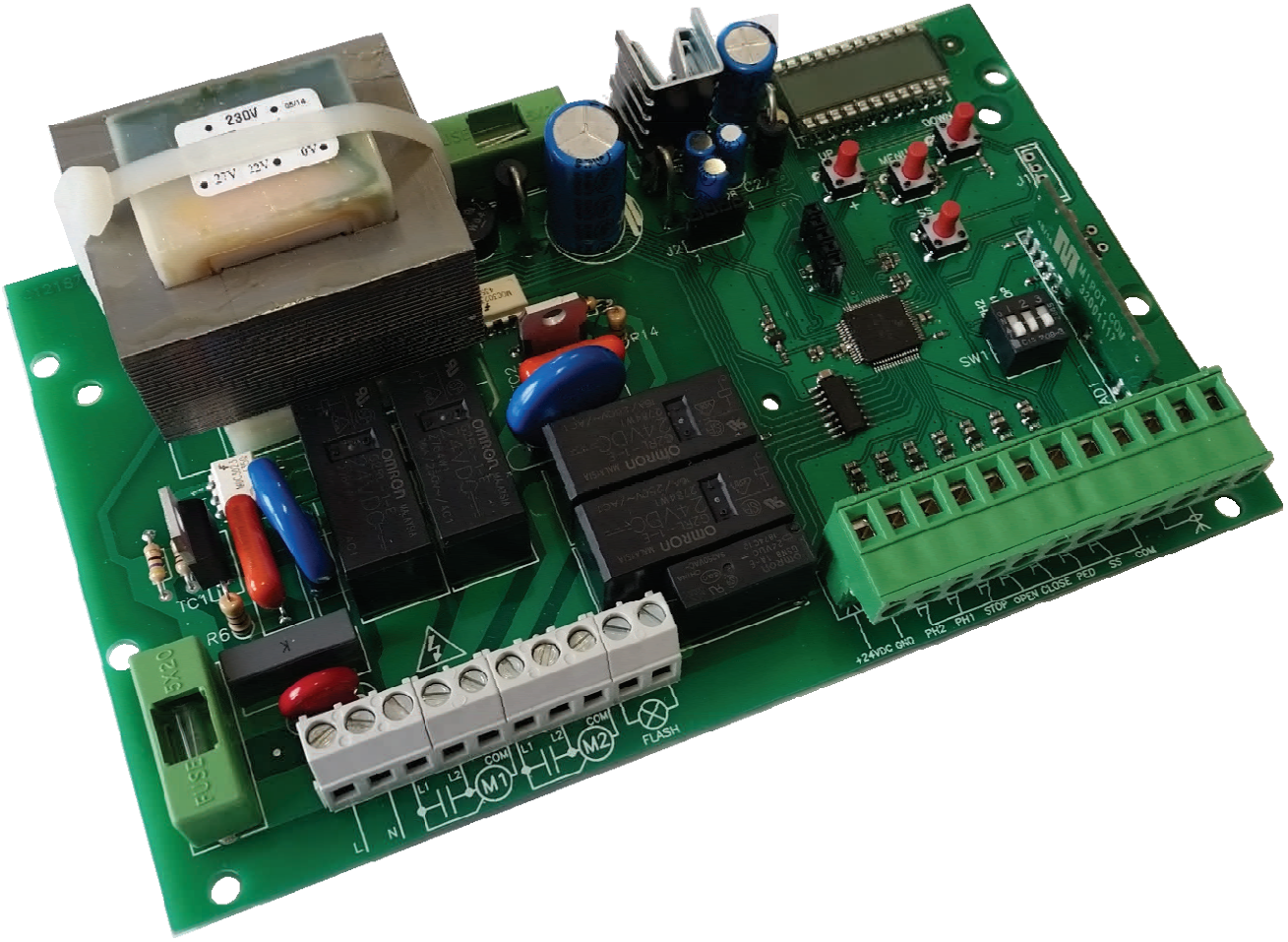
Compatible from firmware version BIOS2ECOv02

CONTROL UNIT BIOS2 ECO

Programmable Control board for wings gates



Manual for installation

CE

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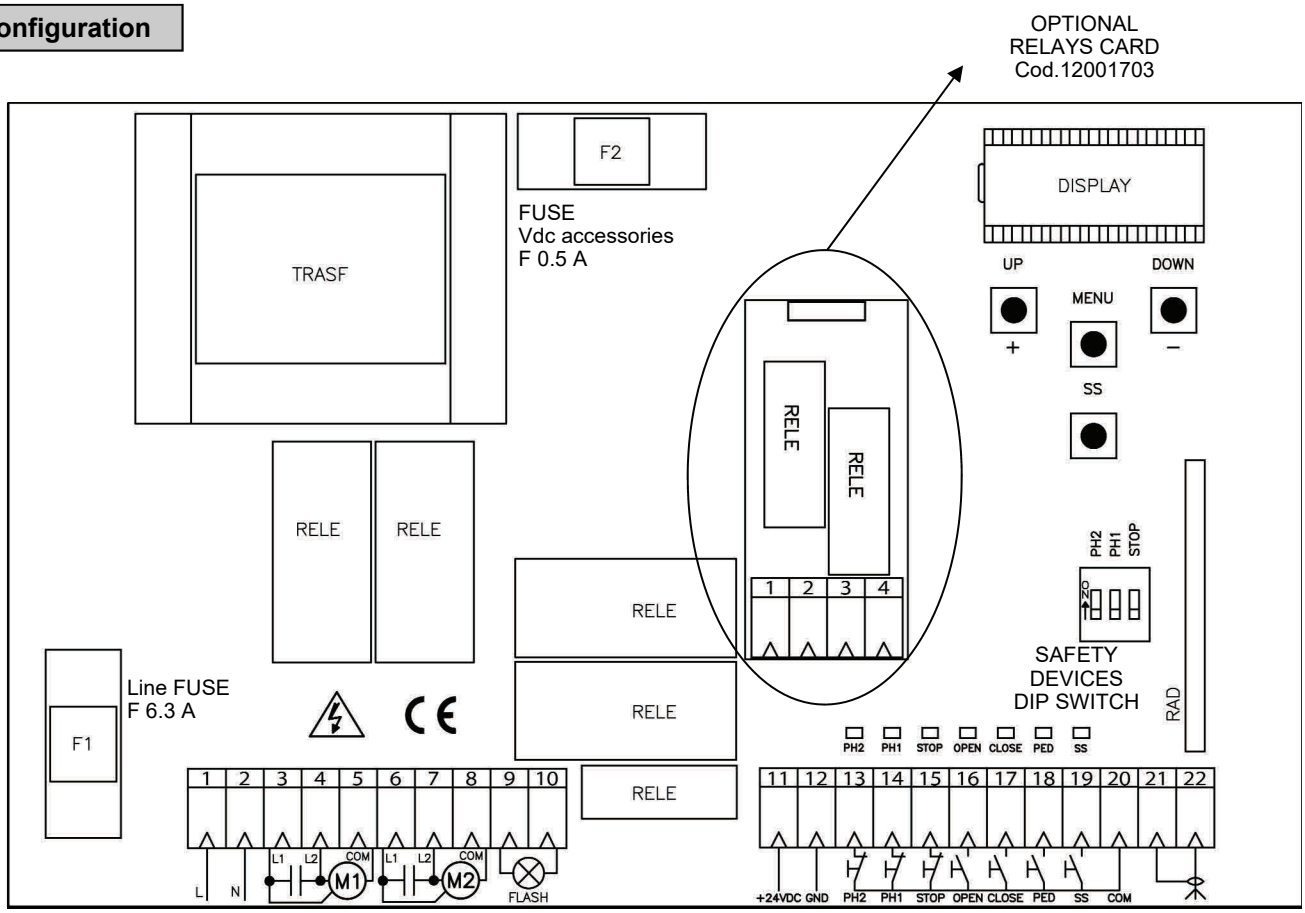
1. Introduction

The control unit BIOS2 ECO is particularly indicated for the installation of 1 or 2 wing gates with 230 Vac motors with maximum power absorbed of 700W.The control unit equipped with a display that allows a precise regulation of the thrust of the gate. It is also possible to adjust the delay in closure of the second wing in the base settings menu. The control unit can memorize up to 1000 transmitters with the external memory, with the step by step, partial opening, open and close functions. It is supplied with inputs for internal and external photocells, possibility to connect the buttons for step by step, partial opening, open, close and stop. The outputs include a 230 Vac flashing light, electrical lock and courtesy light/open gate light by the expansion card R2 (not supplied) with dry contacts 230 Vac 5A max/30 Vdc 5A max, 24 Vdc accessories power supply.

ATTENTION: DO NOT INSTALL THE CONTROL UNIT WITHOUT READING THE INSTRUCTIONS FIRST !!!
THE INSTALLATION SHOULD BE PERFORMED ONLY BY QUALIFIED PERSONNEL.

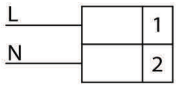
For a correct functioning of the system, it is absolutely indispensable the use of mechanical stops in opening and closing.

2. Configuration



3. Connections

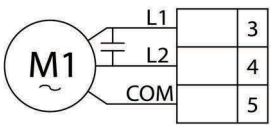
1



POWER SUPPLY
Connect the power supply cable between clamp 1 and 2 of the control unit

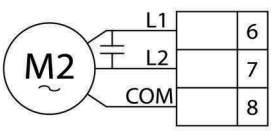
Power supply 230 Vac 50 Hz
Do not connect the card directly to the electric network. Put a device which can ensure the disconnection of each pole from the power supply of the control unit.

2



MOTOR 1 OUTPUT
Connect the **common** of the motor 1 to the clamp 5 of the control unit.
Connect the **phase 1** of the motor 1 to the clamp 3 of the control unit.
Connect the **phase 2** of the motor 1 to the clamp 4 of the control unit.

Connect to the MOTOR 1 output the wing which beats. Install an aventual electrical lock on this wing. MOTOR 1 is always activated first during opening phase and in second during closing phase.

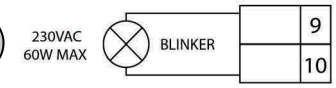


MOTOR 2 OUTPUT
Connect the **common** of the motor 2 to the clamp 8 of the control unit.
Connect the **phase 1** of the motor 2 to the clamp 6 of the control unit.
Connect the **phase 2** of the motor 2 to the clamp 7 of the control unit.

Motor condensers 230 Vac
!!Risk of electric shock!!

In the event of use of not Allmatic motors, insert a fuse in series to the common of the motor (see paragraph 9)

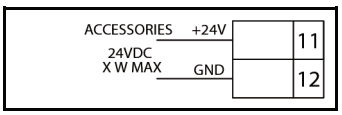
3



FLASHING LIGHT OUTPUT
Connect the flashing light to the clamps 9 and 10.

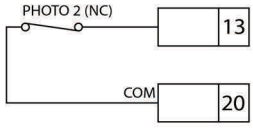
Use a flashing light without self flashing card
230Vac 60W MAX

4



ACCESSORIES OUTPUTS
Accessories output 24Vdc, to the clamps 11 e and 12 of the control unit 6 W max.

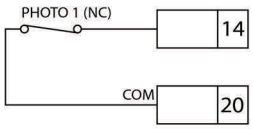
5



OPENING PHOTOCELL INPUT
Connect the **NORMALLY CLOSED** contact of the photocell (PHOTO) between the clamps 13 and 20 of the control unit.
If not used set the DIP switch PH2 ON.

Functioning:
- Closing: Stops the movement and waits until the beam is freed, then moves in opening
- Opening: stops the movement and waits until the beam is freed, then moves in opening.

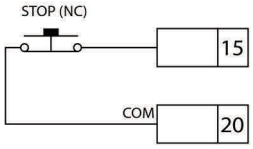
6



CLOSING PHOTOCELL INPUT
Connect the **NORMALLY CLOSED** contact of the photocell (PHOTO) between the clamps 14 and 20 of the control unit.
If not used set the DIP switch PH1 ON.

Functioning:
- Closing: immediate inversion of movement.
- Opening: no intervention during the movement.

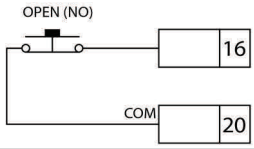
7



STOP INPUT
Connect the contact **NORMALLY CLOSED** of the STOP between the clamps 15 and 20 of the control unit.

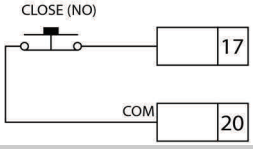
If not used set the DIP switch STOP ON.

8



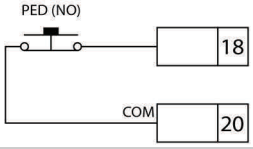
OPEN INPUT
Connect the button OPEN between the clamps 16 and 20 of the control unit.

9



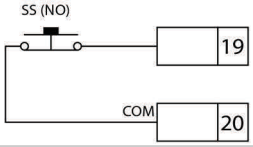
CLOSE INPUT
Connect the button CLOSE between the clamps 17 and 20 of the control unit.

10



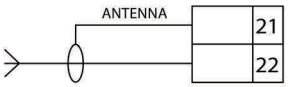
PARTIAL OPENING INPUT
Connect the button PED between the clamps 18 and 20 of the control unit.

11



STEP BY STEP INPUT
Connect the button SS between the clamps 19 and 20 of the control unit.

12

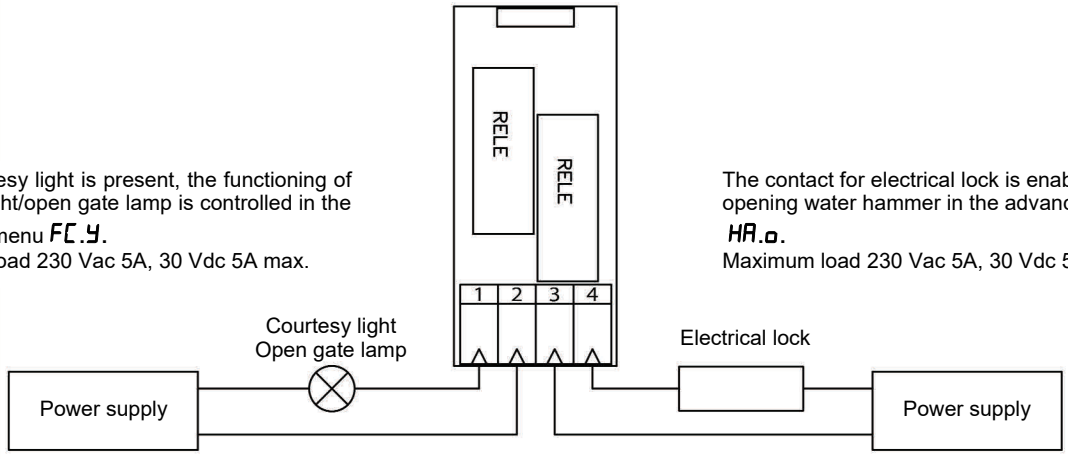


ANTENNA
Connect the signal cable of the antenna to the clamp 22 and the ground of the antenna to the clamp 21 of the control unit.

The presence of the metallic parts or humidity in the walls could have negative influences on the range of the system. We suggest therefore to not place the receiving antenna and/or transmitters near big metallic objects, near the floor or on the ground.

13 **CONNECTION OF RELAY CARD R2 (optional)**

If the courtesy light is present, the functioning of courtesy light/open gate lamp is controlled in the advanced menu **FC.y.**
Maximum load 230 Vac 5A, 30 Vdc 5A max.



The contact for electrical lock is enabled with the opening water hammer in the advanced menu **HA.o.**
Maximum load 230 Vac 5A, 30 Vdc 5A max.

4. Remote control learning

4.1 Learning of one transmitter

The 1st memorized key performs the STEP by STEP function (opening and closing of the gate), the 2nd key performs the partial opening, the 3rd key performs the OPEN function, 4th key performs the CLOSE function.
The control unit exits from the learning phase if no new key or trasnmitter command is given in 10 seconds.

1. Make sure that the board is out of any menus, press the button UP[+] `--` ⇨ On the display will appear and the flashing light lights on `rAd`
2. Press one key of the transmitter ⇨ On the display will appear `don`. If the transmitter was already memorized will appear `Fnd`. After 2 seconds the display will show the memory location of the memorized transmitter, for example `235`

If you want to memorize another key or a new transmitter repeat the procedure

4.2 Learning with the hidden key of an already memorized transmitter

With the hidden key of a transmitter it is possible to enter the learning phase in order to memorize new keys or new transmitters.
With the automation still, with the aid of a clip press the hidden button of an already memorized transmitter, the flashing light lights on, now it is possible to memorize new keys or transmitters.

4.3 Cancellation of one transmitter

Enter the learning phase with the UP[+] button or with the hidden key of a memorized transmitter (see 5.1 or 5.2).
Press in the same time the hidden key and 1st key of the transmitter that you want to cancel.
The flashing light bilnks 4 times and on the display will appear `CLr`

5. Setting the wing stroke

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

5.1 Easy settings of the wings stroke (parameter `LSI ≠P`)

Connect to the MOTOR 1 output the wing which beats.Install an aventual electrical lock on this wing. MOTOR 1 is always activated first during opening phase and in second during closing phase. In this procedure it is necessary to provide the limits positions of the wings with a step by step command (SS).

1. Unlock the motors, move the wings in the middle of the stroke and relock the motors.
2. Press and keep pressed the buttons UP[+] e MENU for at least 5 seconds. ⇨ The **wing 1** moves in **opening**. If the wing moves in closing press the DOWN[-] button to stop and reverse the direction of movement and give a step by step command (SS) to resume the procedure `LOP`
3. When the wing 1 reaches the opening mechanical stop give a step by step command (SS) ⇨ The wing 1 stops and the **wing 2** moves in **opening**. If the wing moves in closing press the DOWN[-] button to stop and reverse the direction of movement and give a step by step command (SS) to resume the procedure `LOP`
4. When the wing 2 reaches the opening mechanical stop give a step by step command (SS) ⇨ Wing 2 stops, after 2 seconds the wing 2 moves in closing `LCL`
5. When the wing 2 reaches the closing mechanical stop give a step by step command (SS) ⇨ Wing 2 stops, after 2 seconds the wing 1 moves in closing `LCL`
6. When the wing 1 reaches the closing mechanical stop give a step by step command (SS) ⇨ Wing 1 stops, after 2 seconds the wing 1 moves in opening `LOP`
7. When the wing 1 reaches the the opening mechanical stop give a step by step command (SS) ⇨ Wing 1 stops, after 2 seconds the wing 2 moves in opening `LOP`
8. When the wing 2 reaches the the opening mechanical stop give a step by step command (SS) ⇨ Wing 2 stops, after 2 seconds the gate closes with the settings of delay between the wings and slowing downs set in the menu. When the gate is closed the learning phase is ended. `LCL`

Warning: in case of intervention of a safety device, the learning is stopped and will appear on the display the written `L--`
Press Step by Step key to start again the learning from the 2nd point.

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

5.2 Advanced settings of the wings stroke (parameter LSI = P)

Connect to the MOTOR 1 output the wing which beats. Install an aventual electrical lock on this wing. MOTOR 1 is always activated first during opening phase and in second during closing phase. In this procedure it is necessary to provide also the positions where the slowing downs begin with a step by step command (SS).

1	Unlock the motors, move the wings in the middle of the stroke and relock the motors.			
2	Press and keep pressed the buttons UP[+] e MENU for at least 5 seconds.	⇨	The **wing 1** moves in **opening**. If the wing moves in closing press the button DOWN to stop and reverse the direction of movement and give a step by step command (SS) to resume the procedure	LOP
3	When the wing 1 reaches the opening mechanical stop give a step by step command (SS)	⇨	The wing 1 stops and the **wing 2** moves in **opening**. If the wing moves in closing press the button DOWN to stop and reverse the direction of movement and give a step by step command (SS) to resume the procedure	LOP
4	When the wing 2 reaches the opening mechanical stop give a step by step command (SS)	⇨	Wing 2 stops, after 2 seconds the wing 2 moves in closing	LCL
5	When the wing 2 reaches the desired position of beginning of slowing down give a step by step command (SS)	⇨	The wing 2 begins the slowing down	
6	When the wing 2 reaches the closing mechanical stop give a step by step command (SS)	⇨	Wing 2 stops, after 2 seconds the wing 1 moves in closing	LCL
7	When the wing 1 reaches the desired position of beginning of slowing down give a step by step command (SS)	⇨	The wing 1 begins the slowing down	
8	When the wing 1 reaches the closing mechanical stop give a step by step command (SS)	⇨	Wing 1 stops, after 2 seconds the wing 1 moves in opening	LOP
9	When the wing 1 reaches the desired position of beginning of slowing down give a step by step command (SS)	⇨	The wing 1 begins the slowing down	
10	When the wing 1 reaches the the opening mechanical stop give a step by step command (SS)	⇨	Wing 1 stops, after 2 seconds the wing 2 moves in opening	LOP
11	When the wing 2 reaches the desired position of beginning of slowing down give a step by step command (SS)	⇨	The wing 2 begins the slowing down	
12	When the wing 2 reaches the the opening mechanical stop give a step by step command (SS)	⇨	Wing 2 stops, the gate closes with the slowing downs set during the learning phase and the delay between the wings set in the menu. When the gate is closed the learning phase is ended.	LCL

Warning: in case of intervention of a safety device, the learning is stopped and will appear on the display the written L-- Press Step by Step key to start again the learning from the 2nd point.

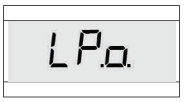
Compatible from firmware version BIOS2ECOv02

6. Menu

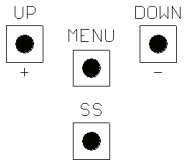
Ex. Base menu

Entering the menu:
To enter the base menu settings keep pressed the MENU button for at least one second
To enter the advanced menu settings keep pressed the MENU button for at least five seconds

Ex. Advanced menu



Navigation into the menu:
It is possible to move from an entry to another one using UP[+] e DOWN[-] buttons,
To change a parameter keep pressed the MENU button for at least 1 second until the parameter begins blinking, so release the key.
Use UP[+] and DOWN[-] buttons to change the parameter
At the end keep pressed MENU for al least 1 second until the parameter stops blinking to save the change.



A quick pressure of the menu key is enough to leave a menu

6.1 Base settings menu:

MENU	DESCRIPTION	SELECTABLE VALUES min-max	DEFAULT	UNITS
tCL	Auto reclosing time (0 = disabled)	0-900	20	s
ttr	Auto reclosing time after transit(0 = disabled)	0-30	0	s
tr9	Motor torque (running torque)	10-100	100	%
SSL	Slowing down mode 0 = normal 1 = fast with more torque	0-1	1	
SbS	Step by step configuration 0 = normal (OP-ST-CL-ST-OP-ST…) 1 = alternated STOP (OP-ST-CL-OP-ST-CL…) 2 = alternated (OP-CL-OP-CL…) 3 = condominium – timer 4 = condominium with immediate auto reclosing	0-4	0	
SSt	Soft start 0 = disabled 1 = enabled	0-1	0	
dLY	Second wing delay	0-300	2	s
LSI	Amplitude of slowing down (0 = disabled) P = personalized during learning 0…100% = percentage of stroke	0-100	15	%
ASL	Anti slip	0-300	0	s
nMt	Number of motors 1 = 1 motor 2 = 2 motors	1-2	2	

6.2 Advanced menu:

MENU	DESCRIPTION	SELECTABLE VALUES min-max	DEFAULT	UNITS
LPo.	Partial opening	0-100	30	%
tPr.	Pre-flashing time (0 = disabled)	0-10	0	s
FCY.	Courtesy ligth settings 0 = At the end of movement for a TCY time 1 = Open gate light on/off	0-1	0	
tCY.	Courtesy light time	0-900	180	s
dEA.	Dead-man 0 = disabled 1 = enabled	0-1	0	
HAo.	Water-hammer and elecrtical lock in opening phase (0 = disabled)	0-100	0	x100 ms
HAc.	Water-hammer in closing phase (0 = disabled)	0-100	0	x100 ms
nPr.	Time of pressure in closed for hydraulic motors (0 = disabled)	0-480	0	minuti
tr5.	Viewing of the memory location for a single transmitter	0-999		
trC.	Cancellation of a single transmitter	0-999		
dEF.	Restore default settings, enter to modify the parameter and then keep pressed the MENU button, a count down appears that ends with don on the display			
trF.	Cancelling all transmitters, enter to modify the parameter and then keep pressed the MENU button, a count down appears that ends with don on the display			

6.3 Menu description:

6.3.1 Base settings menu

tCL Auto reclosing time
Active when the gate is in the completely open position, the gate automatically closes after tCL seconds. In this phase the display shows -tC with the blinking dash, that during the last 10 seconds will be replaced by the count down.

tEr Auto reclosing time after transit
If in the opening phase or in the completely open position the beam of the photocells is obscured and freed, the gate automatically closes after tEr seconds when the completely open position is reached, In this phase the display shows -tC with the blinking dash, that during the last 10 seconds will be replaced by the count down.

trq Motor torque
Adjust the motor torque to ensure a correct functioning of the gate, it is possible to adjust the percentage of torque between 10% to 100%. After the adjustement of this parameter it is recommended to perform a complete movimentation (opening and closing) to ensure a correct functioning of the gate.

SSL Slowing down mode
The control unit has 2 different type of slowing downs : standard or with higher torque and speed, for heavier gates.

Sbs Step by step configuration (SS)

- Sbs = 0 Normal (OP-ST-CL-ST-OP-ST…)
  Typical functioning of Step by Step. During the movement a SS command stops the gate.
- Sbs = 1 Alternated STOP (OP-ST-CL-OP-ST-CL…)
  Alternated functioning with STOP during the opening. During the opening phase a SS command stops the gate.
- Sbs = 2 Alternated (OP-CL-OP-CL…)
  The user cannot stop the gate during the movement with a SS command.
  A SS command during the movement inverts the movement.
- Sbs = 3 Condominium – timer
  A SS command only opens the gate. When the gate is completely open, if the command persist the control unit will wait until the opening of the contact before beginning the contdown of the automatic reclosing (if enabled), onother SS command in this phase will restart the contdown of the automatic reclosing.
- Sbs = 4 Condominium with immediate auto reclosing

SSt Soft start
The movement begins with reduced torque, used in light gates.

dLy Second wing delay
This is the setting of the delay of the second wing to ensure a correct overlapping of the wings; the delay is the same in opening and closing. If 0 is set the control unit will remove completely the delay. **Warning overlapping of the wings.**

LSI Amplitude of slowing down
With this parameter it is possible to adjust the amplitude of the slowing down and eventually disable it (LSI =0). If you need more precise or different slowing down between opening and closing it is possible to set the parameter LSI on P (personalized) and perform an advanced learning of strokes (5.2) providing also the beginning of slowing downs during the learning.

ASL Antislip
This parameter is used if the motor slips, the control unit adds ASL seconds to movimentation to ensure a complete movements of the wings also in the worst condition.

nMt Number of motors
This parameter is used to set the number of motors, the learning operations and the functionality will be modified depending on this parameter.

6.3.2 Advanced menu

LP.o. Partial opening
Partial opening can be performed only starting from closed. The parameter sets the opening like a percentage of the total stroke of the first wing.

tP.r. Pre-flashing time
Pre-flashing before each movement in both directions, tP.r. seconds of pre-flashing

FC.y. Courtesy light settings
The control unit has 4 different functionings for courtesy light:

- FC.y. = 0 the light switches off at the end of a movement after tC.y. seconds
- FC.y. = 1 open gate light - the light switches off immediately when the gate reaches the closed position

tC.y. Courtesy light timer
Courtesy light activation timer

dE.A. Dead man
During dead man functioning mode the gate moves only with a permanent command.
The enabled commands are OPEN and CLOSE. SS and PED are disabled. During dead man functioning all the automatic movements are disabled, like short or total inversions. All safety devices are disabled except for STOP.

HA.o. Water-hammer and elecrtical lock in opening phase
This functioning is used with an electrical lock. The gate before opening closes shortly on the mechanical stop with the electrical lock activated, to ensure the correct declutching. The parameter is the time of pressure on the mechanical stop before opening, settable from 0.1s to 10 s.
The sequence done by the control unit before opening is the following:

- preventive activation of the electrical lock [1,5s]
- motor activation in closing with maximum torque. The duration of this phase is setted by the parameter HA.o.
- inversion of direction with another 2 seconds of activation of the electrical lock.

The control unit activate the electrical lock also if it moves from an intermediate position.

HA.c. Water-hammer in closing phase
This functioning is used with an electrical lock. When the gate reaches the closing mechanical stop the control unit perform a strong pressure, HA.c. seconds long, to ensure the locking of the electrical lock.

iP.r. Time of pressure in closed position for hydraulic motors
This function is used to keep high the pressure of hydraulic motors, done only with closed gate, the control unit performs 1 minute of closing every iP.r. minutes to keep high the pressure into the motors and the correct closed position.

tr.S. Viewing of the memory position for a single transmitter
With the item of the menu tr.S. it is possible to view the memory location in which a transmitter is memorized.
To perform the function, move to tr.S. and then confirm by pressing the button MENU. Keep pressed MENU button untill the display will show SEE then release the button.
At this point press a button of the memorized transmitter (it does not active any command). The display shows:

- the memory location for 2 seconds, if is memorized;
- the written not for 2 seconds, if is not memorized.

After 2 seconds the display returns to the screen SEE and it will be possible to perform this function with another transmitter.
To exit from the function, press MENU button. Otherwise after 15 seconds without transmission, the control unit exits from the function and shows the written toUt

tr.C. Cancellation of a single transmitter
With the item of the menu tr.C. it is possible to delete a single transmitter from the memory.
To perform the function, move to tr.C. and then confirm by pressing the button MENU. Keep pressed MENU button untill the display will show 0, then release the button. Select the memory location of the transmitter. Press and keep pressed MENU button untill the display will show CLr, then release the button.

To exit from the function, press MENU button. If the display shows the written Err, there are problems with the memory (for example empty position or disconnected memory).

dE.F. Restore default settings
With this parameter it is possible to restore the default settings of the control unit. The reset will restore all the parameters of the base and advanced menu, but doesn't modify the learnt strokes, the directions of motors and the transmitters.
Move to dE.F. then keep pressed MENU button until the display shows 0, release the button. Press again and keep pressed MENU button, the display will show a count down d80,d79,…,d01 ,don't release the button until the display showns don

tr.F. Erasing of all transmitters
With this parameter it is possible to erase all the transmitters learnt.
Move to tr.F. then keep pressed MENU button until the display shows 0, release the button. Press again and keep pressed MENU button, the display will show a count down d80,d79,…,d01 ,don't release the button until the display showns don

7. Display and control unit state

7.1 Normal functioning:

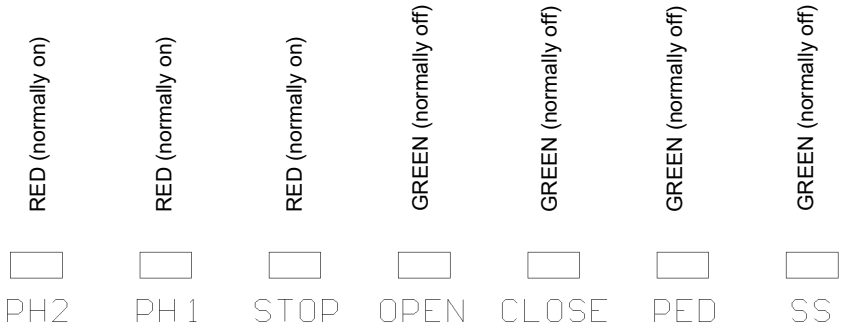
--	Standby - Gate closed
OP	Opening phase
CL	Closing phase
SO	Gate closed by user during opening
CL	Gate closed by user during closing
HA	Gate stopped by an external event (fotocellule, stop)
oP	Gate opened without automatic reclosing
PE	Gate opened in partial opening position without automatic reclosing
-tC	Gate opened waiting for auto reclosing, last 10 seconds the dash will be replaced by the countdown
-tP	Gate opened in partial opening position waiting for auto reclosing, last 10 seconds the dash will be replaced by the countdown
000.	During the normal functioning and out from any menu, the pression of the DOWN[-] button lets you see the number of cycles done, you will see units with dots on the bottom of display and thousand without dot, another pression of DOWN[-] or MENU button let you to leave the cycles visualization
000	
rAd	Visualized during the learning of transmitters
don	Visualized when memorized a new transmitter or at the and of a reset
Fnd	Visualized when memorized a key of a transmitter already memorized
CLr	Visualized when a trasmitter is erased
LOP	Visualized during the learnign of strokes to indicate that the control unit is opening the gate and waiting for the command of opening mechanical stop
LCL	Visualized during the learning of strokes to indicate that the control unit is clkosign the gate and waiting for the command of closing mechanical stop
L--	Visualized during the learning of strokes if there is an intervention of safety devices
SEE	Visualized when the control unit waits a transmitter signal, during the function of viewing of the memory location.
not	Visualized when the transmitter is not stored on the memory, during the function of viewing of the memory location.
toUt	Visualized when the control unit exits from the function of viewing of the memory location for inactivity.

7.2 Errors:

ELS	Limit switches error (both opening and closing electrical limit switches busy in the same time)
EPH	Malfunctioning of photocells
EmE	Memory error
FUL	Full memory
Err	Memory error during functions viewing memory location or cancellation of a single transmitter

The visualization of an error on the display persist until another command is given

7.3 Input LED and safety devices



8. Technical features

POWER SUPPLY AND CONSUMPTION

Power supply voltage	230 Vac - 50/60 Hz
Absorption from line (Standby) Standard configuration (2 couple of photocells, RX radio safety edge)	55 mA @ 230 Vac
Line fuse	F6.3A

MOTOR POWER SUPPLY

Number of motors	1 / 2
Motor power supply voltage	230 Vac - 50/60 Hz
Maximum power absorbed from motors	2 x 700W

ACCESSORIES POWER SUPPLY

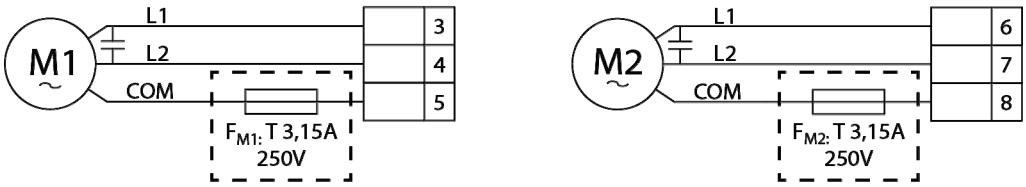
Accessories power supply voltage		24Vdc
Maximum current absorbed from accessories		250 mA
Maximum power absorbed from accessories		6 W
Accessories fuse		F0.5A
Uscita lampeggiante		230 Vac 60W max
Courtesy light output / open gate light	with R2 card (optional)	dry contact 230 Vac 5A, 30 Vdc 5A max
Electrical lock	with R2 card (optional)	dry contact 230 Vac 5A, 30 Vdc 5A max

FUNCTIONALITY

433 MHz radio receiver	Rolling code
Maximum transmitters	1000

9. Motors

The correct functioning is guaranteed only in the event of Allmatic motors.
For a greater safety, it is suggested to insert a fuse (T 3,15A) in series to the common of both the motors.
It is available a pre-wired kit (optional) that can be inserted as shown in the drawing below.



WARNING AND ADVICES

Avoid putting the connection cables of buttons, security devices and inputs close to those of the power supply of the control unit and of the motor. Some
parts of the control unit are subject to dangerous voltage. The control unit must be installed and programmed only by qualified professionals. Always use
a device that ensures the disconnection of all poles of the control unit's power supply.
This device can be:
- A switch (connected directly to the power supply terminals) with a contact's minimum distance of 3 mm for each pole.
- A device connected to the power network.
For connecting the card and the motors we recommend to use cables with double isolation as in compliance to the laws in force; the minimum cross section of the single conductor must not be less than 1,5 mm² and not more than 2.5mm².

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