CE

CONTROL UNIT BIOS1 HR
Programmable Control board for sliding gates
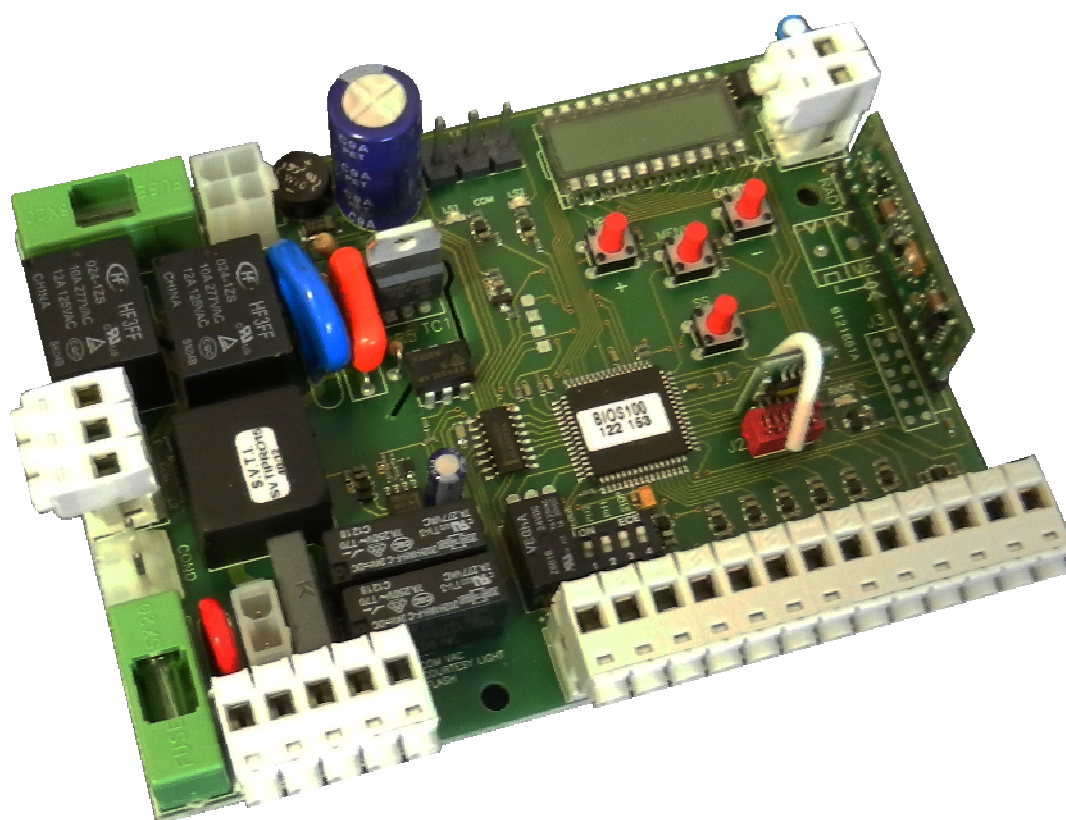
Manual for installation

AM ALLMATIC

1. Introduzione

The control unit BIOS1 HR is particularly indicated for the installation of 1 230 Vac motor with maximum power absorbed of 700W. The control unit equipped with a display that allows a precise regulation of the thrust and sensitivity. The control unit can memorize up to 8000 transmitters with the external memory, with the step by step, pedestrian, open and close functions. It is supplied with inputs for interior and exterior photocell, possibility to connect the buttons for step by step, pedestrian, open, close and stop. The outputs include a 230 Vac flashing light, courtesy light/zone light/open gate light, 24 Vdc accessories power supply.
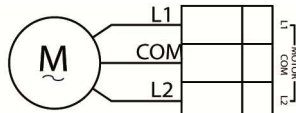
⚠ **ATTENTION: DO NOT INSTALL THE CONTROL UNIT WITHOUT READING THE INSTRUCTIONS FIRST !!!**
THE INSTALLATION SHOULD BE PERFORMED ONLY BY QUALIFIED PERSONNEL.

Be sure that the limit switches are connected and correctly adjusted
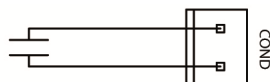
2. Configuration
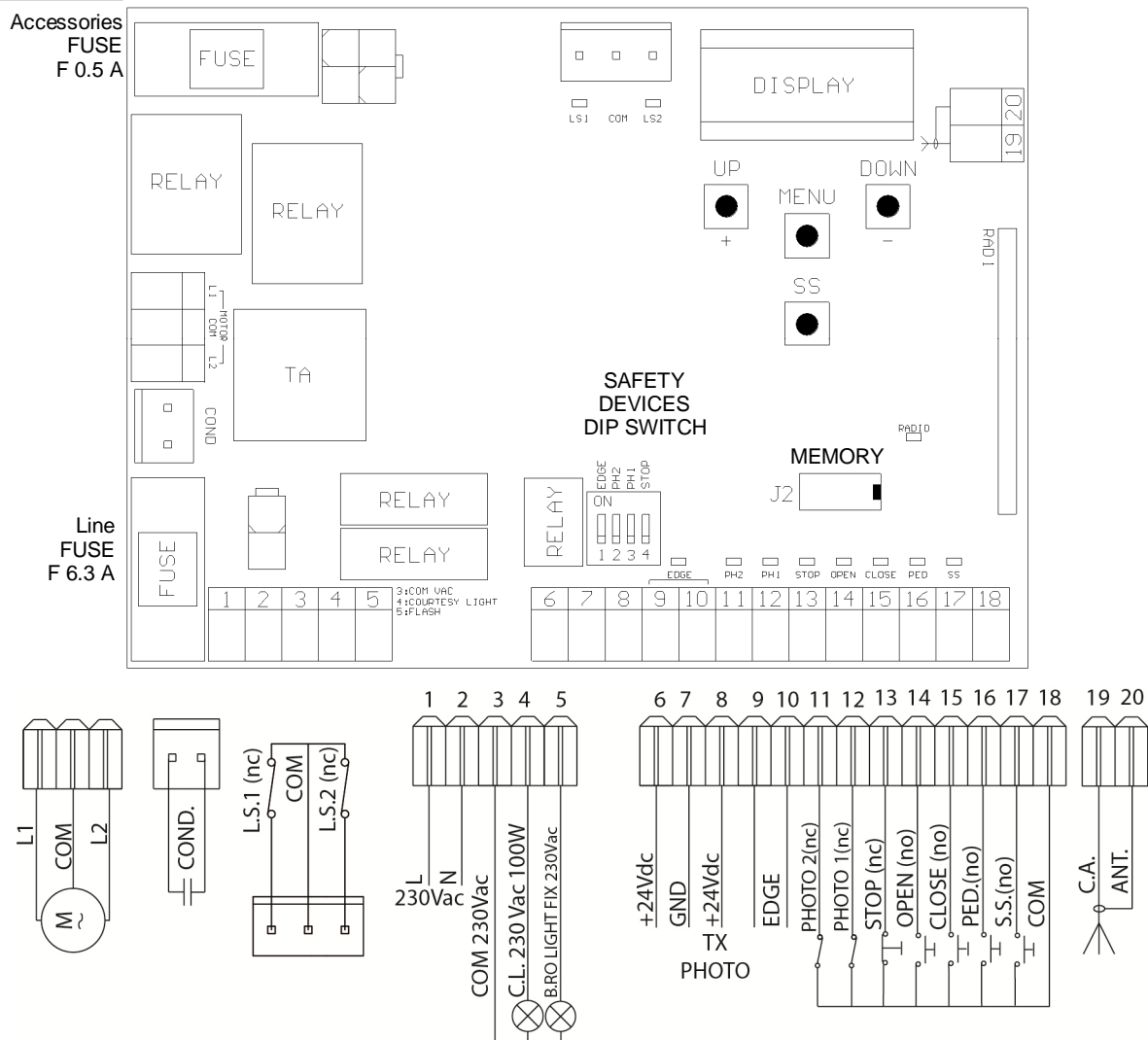
3. Connections

MOTOR OUTPUT
Connect the **common** of the motor to the clamp motor COM of the control unit.
Connect the **phase 1** of the motor to the clamp motor L1 of the control unit.
Connect the **phase 2** of the motor to the clamp L2 of the control unit.

⚠ Motor condensers 230 Vac
!Risk of electric shock!
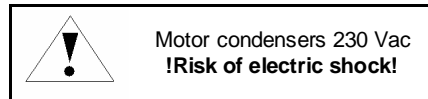
CAPACITOR
Connect the capacitor to the clamps COND of the control unit.
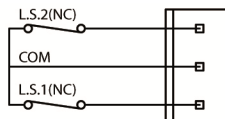
LIMIT SWITCHES
Connect the **NORMALLY CLOSED** contact of the limit switches to the control unit

During the learning of the stroke phase the control unit recognize itself the opening and closing limit switch.

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.
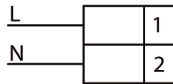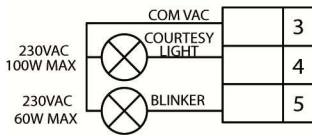
L	1
N	2

COURTESY LIGHT OUTPUT
Connect the courtesy light to the clamps 3 and 4, 230Vac 100W MAX.

FLASHING LIGHT OUTPUT
Connect the flashing light to the clamps 3 and 5.

It is possible to light up the action area of the automatism during each motion.
The functioning of the auxiliary light is controlled in the advanced menu *FLY*.

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

COM VAC — 3
230VAC 100W MAX — COURTESY LIGHT — 4
230VAC 60W MAX — BLINKER — 5
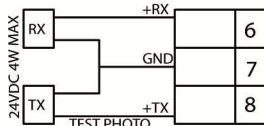
PHOTOCELLS POWER SUPPLY
Connect the **clamp 6** of the control unit to the **clamp +** of the power supply of the photocells receiver.
Connect the **clamp 7** of the control unit to the power supply **clamp -** of the photocells receiver and of the transmitter.
Connect the **clamp 8** of the control unit to the power supply **clamp** of the trasnmitter of the photocells.

The photocells test is activated in the advanced menu *tPh*.
ATTENTION: the control unit gives a voltage of 24 Vdc and can supply a maximum power of 4W.

For the safety edge test connect the test device of the safety edge on the power supply pins of the TX (test activated wiht low logic signal 0Vdc).
Please refer to the manual of the safety edge.

24VDC 4W MAX
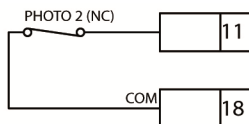RX — +RX — 6
— GND — 7
TX — +TX — 8
TEST PHOTO
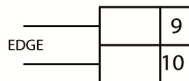
SAFETY EDGE INPUT
Connect the safety edge contacts to the clamps 9 and 10 of the control unit.

Select the type of security edge used (mechanical or 8K2) through the menu *Edñ*, select the type of functioning through the menu *iEd*.
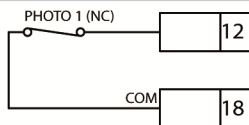If not used set the DIP switch EDGE ON.

EDGE — 9 / 10

OPENING PHOTOCELL INPUT
Connect the **NORMALLY CLOSED** contact of the photocell (PHOTO 2) between the clamps 11 and 18 of the control unit.

The functioning of the opening photocell is controlled in the advanced menu *Ph2*.
If not used set the DIP switch PH2 ON.

PHOTO 2 (NC) — 11
COM — 18

CLOSING PHOTOCELL INPUT
Connect the **NORMALLY CLOSED** contact of the photocell (PHOTO 1) between the clamps 12 and 18 of the control unit.

The functioning of the closing photocell is controlled in the advanced menu *SPh*.
If not used set the DIP switch PH1 ON.

PHOTO 1 (NC) — 12
COM — 18
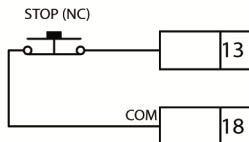
STOP INPUT
Connect the **NORMALLY CLOSED** contact of the STOP between the clamps 13 and 18 of the control unit.

If not used set the DIP switch STOP ON.

STOP (NC) — 13
COM — 18
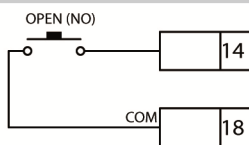
OPEN INPUT
Connect the button OPEN between the clamps 14 and 18 of the control unit.

OPEN (NO) — 14
COM — 18
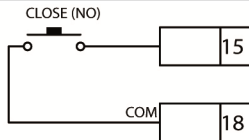
CLOSE INPUT
Connect the button CLOSE between the clamps 15 and 18 of the control unit.

CLOSE (NO) — 15
COM — 18
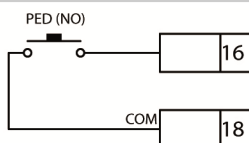
PEDESTRIAN INPUT
Connect the button PED between the clamps 16 and 18 of the control unit.

PED (NO) — 16
COM — 18
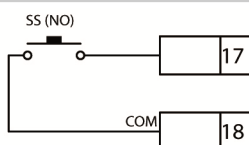
STEP BY STEP INPUT
Connect the button SS between the clamps 17 and 18 of the control unit.

SS (NO) — 17
COM — 18
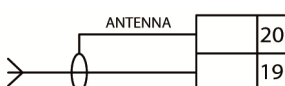
ANTENNA
Connect the signal cable of the antenna to the clamp 19 and the ground of the antenna to the clamp 20 of the control unit.

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.

ANTENNA — 20 / 19

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4. Remote control learning

4.1 Learning of one transmitter

The control unit is compatible only with HR Rolling Code transmitters

The 1st memorized key performs the STEP by STEP function (opening and closing of the gate), the 2nd key performs the pedestrian 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 *rAd* 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*   `don`

If you want 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 4.1 or 4.2).
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 stroke

5.1 Easy settings of the stroke (parameter $LSi \neq P$)

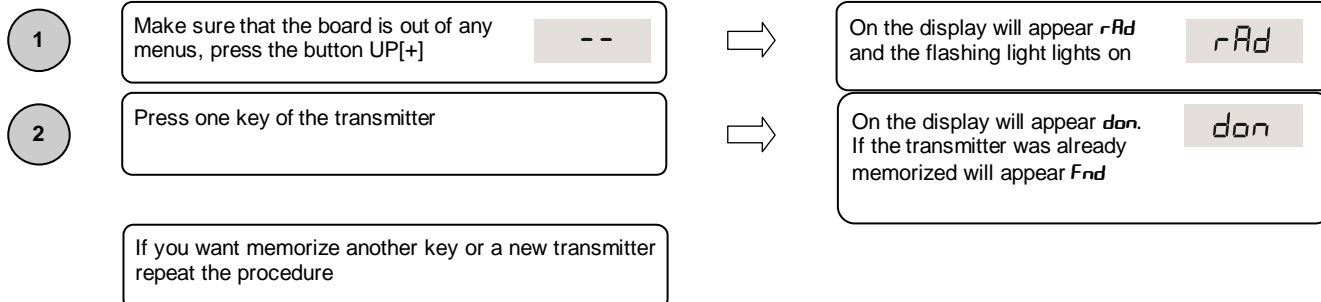**Be sure that the limit switches are connected and correctly adjusted**

1 Unlock the gate and move it to the middle of the stroke

2 Press and keep pressed the buttons UP[+] e MENU for at least 5 seconds.   ⟹   The gate moves in **opening**. If the gate 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 gate reaches the opening limit switch it stops by itself   ⟹   The gate moves in closing   `LCL`

4 When the gate reaches the closing limit switch it stops by itself   ⟹   The gate moves in opening   `LOP`

5 When the gate reaches the opening limit switch it stops by itself   ⟹   The gate closes with the settings of slowing down 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.

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

Be sure that the limit switches are connected and correctly adjusted
In this procedure is necessary to provide the positions of beginning of slowing down with a step by step command (SS).

1 — Unlock the gate and move it to the middle of the stroke

2 — Press and keep pressed the buttons UP[+] e MENU for at least 5 seconds.

⟹ The gate moves in **opening**.
If the gate 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 gate reaches the opening limit switch it stops by itself

⟹ The gate moves in closing

`LCL`

4 — When the gate reaches the position of beginning of slowing down give a step by step command (SS)

⟹ The gate begins the slowing down

5 — When the gate reaches the closing limit switch it stops by itself

⟹ The gate moves in opening

`LOP`

6 — When the gate reaches the position of beginning of slowing down give a step by step command (SS)

⟹ The gate begins the slowing down

7 — When the gate reaches the opening limit switch it stops by itself

⟹ The gate closes with the settings of slowing down set in this learning. When the gate is closed the learning phase is ended.
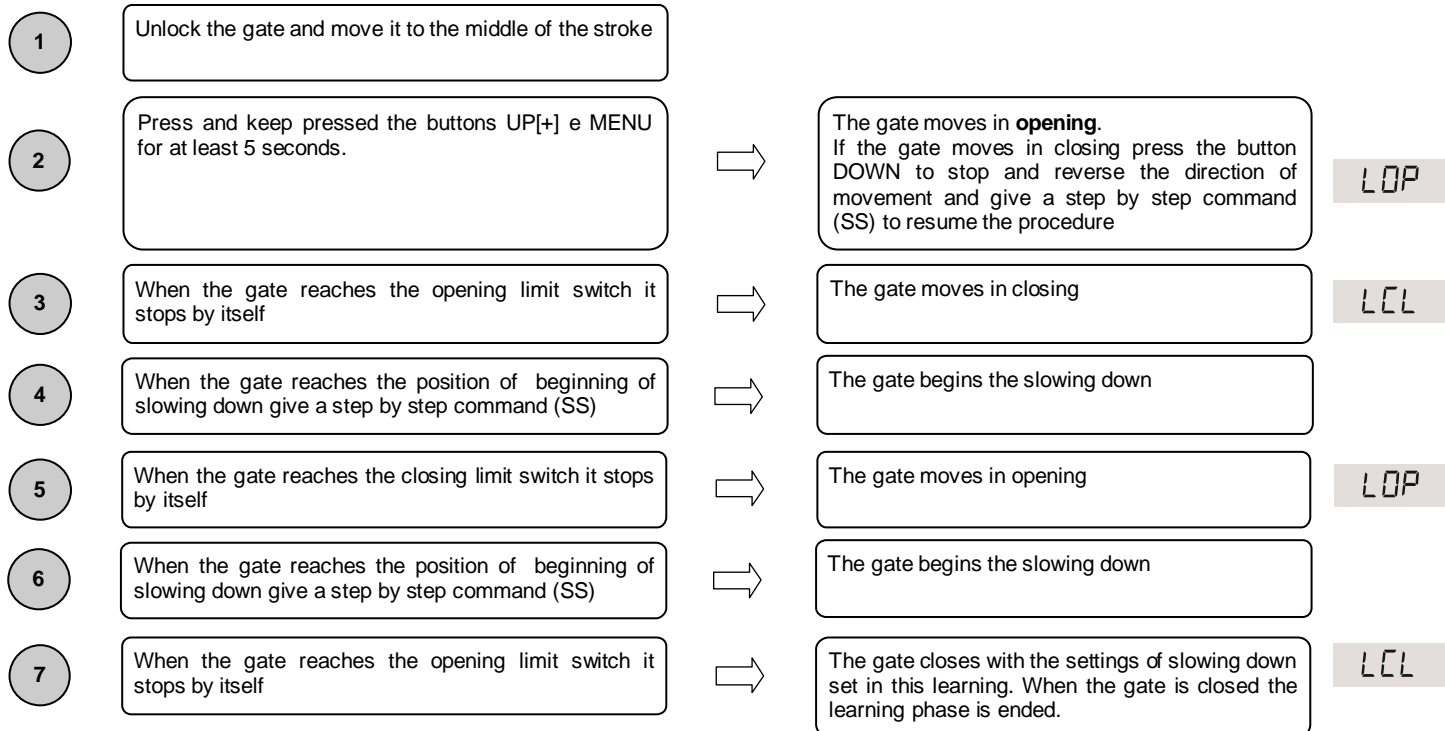
`LCL`

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.

6. Menu

tCL

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

EL.F.

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.
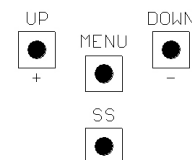Use UP[+] and DOWN[-] buttons to change the parameter
At the end keep pressed MENU for al least 1 second until the parameter stops blinking to save the change.

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

UP   MENU   DOWN
+   −

SS
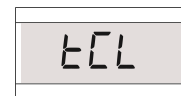
6.1 Base settings menu:

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
SEI	Obstacle sensitivity (0 = disabled 100 = maximum sensitivity)	0-100	0	%
tr9	Motor torque (running torque)	10-100	100	%
SSL	Slowing down mode 0 = normal 1 = fast with more torque	0-1	0	
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	
bLt	After black-out 0 = no action 1 = closing	0-1	0	
* SSt	Soft start 0 = disabled 1 = enabled	0-1	0	
* LSI	Amplitude of slowing down P = personalized during learning 0…100% = percentage of stroke	0-100	15	%

> ⚠ ***ATTENTION!**
> **It is not advisable the disabling of the slowing downs and, if possible, use the "soft start" function.**

6.2 Advanced menu:

MENU	DESCRIPTION	SELECTABLE VALUES min-max	DEFAULT	UNITS
ELF.	Electrical brake activation time 0 = disabled 1 - 100= enabled	0-100	0	x0.01 s
SPh.	Functioning of PHOTO1 moving from closed 0 = Check PHOTO1 1 = The gate opens also with PHOTO1 busy	0-1	1	
Ph2.	Functioning of PHOTO2 0 = Enabled in opening and closing OP/CL 1 = Enabled only in opening OP	0-1	0	
tPh.	Photocells test 0 = disabled 1 = enabled PHOTO1 2 = enabled PHOTO2 3 = enabled PHOTO1 and PHOTO2	0-3	0	
Edῑ.	Safety edge type 0 = contact (NC) 1 = resistive (8k2)	0-1	0	
iEd.	Operation mode of safety edge 0= working only in closing with inversion of movement 1 = stops the automation (both opening and closing) and free the obstacle (short inversion)	0-1	0	
tEd.	Safety edge test 0 = disabled 1 = enabled	0-1	0	
LPo.	Pedestrian opening	0-100	30	%
tPC.	Auto reclosing time from pedestrian opening (0 = disabled)	0-900	20	s
FPr.	Blinker output mode 0 = Fix 1 = Blinking	0-1	1	
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 = On if the gate is not closed + TCY time 2 = On if courtesy light timer (TCY) not expired 3 = Open gate light on/off 4 = Open gate light with proportional flashing	0-4	0	
tCY.	Courtesy light time	0-900	0	s
dEA.	Dead-man 0 = disabled 1 = enabled	0-1	0	
SEr.	Setting threshold of cycles for assistance request. Once limit is reached the next cycles will be done with fast blinking (only if FPr enabled) (0 = disabled)	0-100	0	x1000 cicli
SEF.	Continuous blinking for assistance request (done only with closed gate). 0 = disabled 1 = enabled	0-1	0	
dEF.	Restore defaul 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

<u>tCL</u> 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 $\boxed{-tC}$ with the blinking dash, that during the last 10 seconds will be replaced by the count down.

<u>ttr</u> 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 ttr seconds when the completely open position is reached, In this phase the display shows $\boxed{-tC}$ with the blinking dash, that during the last 10 seconds will be replaced by the count down.

<u>SEI</u> Obstacle sensitivity
Adjust the obstacle sensitivity to ensure a correct functioning of the gate, it must stop if there is an obstacle but also it must ensure the complete movement in the worst conditions (exp. winter, hardening of motors, etc). After the adjeustement of this parameter it is recommended to perform a complete movimentation (opening and closing) before trying the obstacle detection. The intervention of the obstacle sensitivity stops the gate and makes a short inversion of the movement.

<u>trq</u> 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 adjeustement of this parameter it is recommended to perform a complete movimentation (opening and closing) to ensure a correct functioning of the gate.

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

<u>SbS</u> 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
  Like condominium – timer (previous point) but during the countdown a SS command will close the gate.

<u>bLt</u> After black-out
When the control unit turns on after a black-out,
- bLt = 0 No action – when the control unit turns on the gate doesn't move until the first command, the first movement is a slow opening.
- bLt = 1 Closing– turning on the control unit it will perform a slow closing.

* <u>SSt</u> Soft start
The movement begins with reduced torque, used in light gates.

* <u>LSI</u> 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.

> ⚠ ***ATTENTION!**
> **It is not advisable the disabling of the slowing downs and, if possible, use the "soft start" function.**

6.3.2 Menu avanzato

__*EL.F.* Electrical brake__
Short reverse movement with reduced torque to reduce the inertia of the gate. The operation is performed at each stop of the movement except for fast movement after the intervention of a safety devices.

__*SP.h.* Functioning of closing photocell PHOTO1 moving from closed position__
The closing photocell has the following functioning

- Closing: immediate inversion of movement
- Opening from an intermediate position: no intervention
- Opening from closed position:
    - ♦ *SP.h.* = 0 The gate doesn't move if PHOTO1 beam is cut
    - ♦ *SP.h.* = 1 The gate moves while PHOTO1 beam is cut

__*Ph.2.* Functioning of opening photocell PHOTO2__
The opening photocell has the following functioning

- Opening: stops the movement and waits until the beam is freed, then moves in opening.
- Closing:
    - ♦ *Ph.2.* = 0 Stops the movement and waits until the beam is freed, then moves in opening
    - ♦ *Ph.2.* = 1 No intervention

__*tP.h.* Photocells test__
Enabling this function, before each movement starting from still gate, the control unit performs a functional check of the photocells. The check will not be performed in case of fast movement after the intervention of a safety devices. Follow paragraph 3.6 for the connections of the photocells.

__*Ed.m.* Safety edge type__
The control unit can work with two different type of safety edge:

- *Ed.m.* = 0 Mechanical with normally closed contact
- *Ed.m.* = 1 Resistive 8k2

__*iE.d.* Operation mode of safety edge__
To allow the installation of the safety edges in both the directions of movements, it is possible to choose 2 different functioning:

- *iE.d.* = 0 Only in closing with total inversion of movement
- *iE.d.* = 1 Both directions of movements, stop and short inversion to free the obstacle

__*tE.d.* Safety edge test__
Enabling this function the control unit performs a functional check of the safety edge. This function is used if the edge connected to the control unit has an electronic self test (exp. radio edge R.CO.O). Connect the test contact of the edge to the power supply of the trasmitter of the photocells (paragraph 3.6) ad enable the self test with low voltage 0Vdc (for the compatibility follow the instruction of the manual of the safety edge).

__*LP.o.* Pedestrian opening__
Pedestrian 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.C.* Auto reclosing time from pedestrian opening__
Active when the gate is in the pedestrian opening, the gate automatically closes after *tP.C.* seconds. In this phase the display shows with the blinking dash, that during the last 10 seconds will be replaced by the count down.

$$-tP$$

__*FP.r.* Flashing light output mode__
It is possible to choose 2 different functioning for the blinker output:

- *FP.r.* = 0 Fixed blinker output. It will be necessary to connect a self flashing blinker (B.RO LIGHT 230 Vac)
- *FP.r.* = 1 Flashing light blinker output. It will be necessary to connect a fix light blinker (B.RO LIGHT FIX 230 Vac)

__*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 the light switches off only with closed gate after *tC.Y.* seconds
- *FC.Y.* = 2 lighted on for *tC.Y.* seconds from the beginning of a movement, indipendently of the condition of the gate
-     (the light could switch off before the end of movement)
- *FC.Y.* = 3 open gate light - the light switches off immediately when the gate reaches the closed position
- *FC.Y.* = 4 open gate light with proportional blinking:
    - ♦ opening – slow blinking
    - ♦ closing – fast blinking
    - ♦ opened – light on
    - ♦ closed – light off
    - ♦ stopped – 2flash + long wait + 2flash + long wait +…

__*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.

_SE.r._ Setting threshold of cycles for assistance request

It is possible to set a number of cycles before the request of assistance. Once the limit is reached the next cycles will be done with fast blinking (only if _FPr_ enabled)

_SE.F._ Continuous flashing light for assistance request

Once limit _SE.r._ is reached the flashing light will blink also with the gate closed to show the request of assistance.

_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
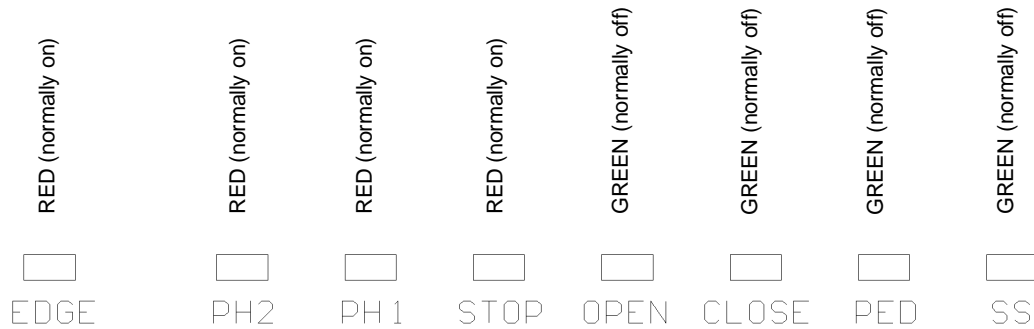
7.1 Normal functioning:

Display	Description
`– –`	Standby - Gate closed
`OP`	Opening phase
`CL`	Closing phase
`SO`	Gate closed by user during opening
`SC`	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 pedestrian 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 pedestrian position waiting for auto reclosing, last 10 seconds the dash will be replaced by the countdown
`00.0.` `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
`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

7.2 Errors:

Display	Description
`EFO`	Impact sensor intervention
`EEd`	Safety edge intervention
`ELS`	Limit switches error (both opening and closing electrical limit switches busy in the same time)
`EPH`	Malfunctioning of photocells
`Eth`	Thermical intervention to preserve the control unit
`EME`	Memory error
`FUL`	Full memory

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

7.3 Input LED and safety devices

RED (normally on)	RED (normally on)	RED (normally on)	RED (normally on)	GREEN (normally off)	GREEN (normally off)	GREEN (normally off)	GREEN (normally off)
▢	▢	▢	▢	▢	▢	▢	▢
EDGE	PH2	PH1	STOP	OPEN	CLOSE	PED	SS

8. Technical features

POWER SUPPLY AND CONSUMPTION

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

MOTOR POWER SUPPLY

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

ACCESSORIES POWER SUPPLY

Accessories power supply voltage	24 Vdc
Maximum current absorbed from accessories	170 mA
Maximum power absorbed from accessories	4 W
Accessories fuse	F 0.5 A
Blinker output	230 Vac 60W max
Courtesy light output / open gate light	230 Vac 100W max

FUNCTIONALITY

433 MHz radio receiver	Rolling code
Maximum transmitters	1000 (up to 8000)
Safety edge input	NC / 8k2