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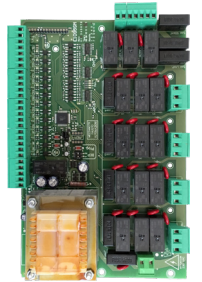
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# MANUAL CONTROL BOARD BRAIN 4 SER



Customer:

Timbre&Signature

Installing Company:

Timbre&Signature

**CAREFULLY READ THE MANUAL BEFORE USE**



## SUMMARY

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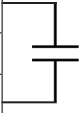
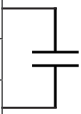
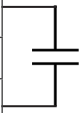
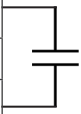


## CONNECTIONS OF THE CONTROL BOARD

		INPUT	CLAMP	CONTACT
STOP	ST	GENERAL STOP	53	NC
COM	C	COMMON	54	
CH G	DW_G	GENERAL CLOSE	55	NA
AP G	UP_G	GENERAL OPEN	56	NA
T	T	GROUND CABLE	57	—
LED	LED	OUTPUT LED (58 +, 59 -)	58 - 59	
24VAC	24VAC	OUTPUT 24V AC	60 - 61	
B. P.	B. P.	MICROPROCESSOR POWER SUPPLY 220Vac	62-63	
Fn		<b>BOLLARD 1</b>		
FAP1	B1	LIMIT SWITCH OPEN M1 (Fn OPEN)	48	NC
FC1	T1	LIMIT SWITCH CLOSE M1 (Fn CLOSE)	49	NC
COM	C	COMMON +15 VCC	50	
CH1	U1	ASCENT BUTTON	51	
AP1	D1	DESCENT BUTTON	52	
Fn		<b>BOLLARD 2</b>		
FAP2	B2	LIMIT SWITCH OPEN M2 (Fn OPEN)	43	NC
FCH2	T2	LIMIT SWITCH CLOSE M2 (Fn CLOSE)	44	NC
COM	C	COMMON +15 VCC	45	
CH2	U2	ASCENT BUTTON	46	
AP2	D2	DESCENT BUTTON	47	
Fn		<b>BOLLARD 3</b>		
FAP3	B3	LIMIT SWITCH OPEN M3 (Fn OPEN)	38	NC
FCH3	T3	LIMIT SWITCH CLOSE M3 (Fn CLOSE)	39	NC
COM	C	COMMON +15 VCC	40	
CH3	U3	ASCENT BUTTON	41	
AP3	D3	DESCENT BUTTON	42	
Fn		<b>BOLLARD 4</b>		
FAP4	B4	LIMIT SWITCH OPEN M4 (Fn OPEN)	33	NC
FCH4	T4	LIMIT SWITCH CLOSE M4 (Fn CLOSE)	34	NC
COM	C	COMMON +15 VCC	35	
CH4	U4	ASCENT BUTTON	36	
AP4	D4	DESCENT BUTTON	37	
		<b>SAFETY DEVICES</b>		
SIC1	S1	SAFETY1 (coil, photocell, sensitive head 2fn)	32	NC
COM	C	COMMON +15 VCC	31	NC
SIC2	S2	SAFETY2 (sensitive head 1fn)	30	NC



**WARNING:** Limit switch not used must be left open (NO)

OUTPUT	CLAMP	NOTE
POWER SUPPLY MOTOR AND ELECTRICAL VALVE	1	220V o 24Vdc
	2	
OUTPUT / INPUT RS485	25	NEGATIVE GROUND
	26	A - NEGATIVE
	27	B- POSITIVE +12V
AUXILIARY ANTENNA OUTPUT	28	INTERNAL CONDUCTOR
	29	EXTERNAL CONDUCTOR
TRAFFIC LIGHT 2 LIGHTS (red/green) MAX300W	19	GREEN LIGHT
	20	COMMON (neutral)
	21	RED LIGHT
ELECTRICAL VALVE MAX n°4 (MAX=300W)	15	230Vac MAX300W
	16	
FLASHING (optional)	17	230Vac
	18	
<b>MOTOR1*</b>		
OPEN	3	
COMMON	4	
CLOSE	5	
<b>MOTOR2*</b>		
OPEN	6	
COMMON	7	
CLOSE	8	
<b>MOTOR3*</b>		
OPEN	9	
COMMON	10	
CLOSE	11	
<b>MOTOR4*</b>		
OPEN	12	
COMMON	13	
CLOSE	14	

NOTES	mA (interruption)	FUSES
FUSE FOR MOTORS	5000	F1 , F2 , F3 , F4
FUSE FOR POWER SUPPLY	315	F5
FUSE FOR ACCESORY 24Vac + LED 30Vdc	2500	F6
FUSE FOR ENTRY + SPOOL RELAY (12 Vcc IN-OUT)	2500	F7
FUSE FOR ELECTRICAL VALVE	2500	Fuse ELECT.VALVE

DIAGNOSIS LED	ACRONYM	LED	
<i>The LED diagnosis state has been realized at the first ignition of 1 column of the bollards totally lowered. The other bollards haven't been connected to the control board (so their inputs are disconnected)</i>			
It lights when there is electrical network	ON	ON	
<b>LED for control board programming</b>	OK	OFF	
It flashes after the first minute of ignition (the control board is in safety lock)	OK	OFF	
It lights up when the bollards are lowered	AP	OFF	
It lights up when the bollards are raised	CH	OFF	
It lights up when the engine M1 is on	Mot. 1	OFF	
It lights up when the engine M2 is on	Mot. 2	OFF	
It lights up when the engine M3 is on	Mot. 3	OFF	
It lights up when the engine M4 is on	Mot. 4	OFF	
It lights up when the flashing light output is on	LAMP.	OFF	
It lights up when the electrical valve output is on	ELET.V	OFF	
It lights up when the traffic light is GREEN	SEMAF.	ON	
It lights up (described in point 2h) HEAD LIGHTS	LED EXT.	OFF	
It lights up with the pushed button / clock	Ing. CH	OFF	
It lights up with pushed button / access controls	Ing. AP	OFF	
It turns itself off with stop button pushed (stop button with self-holding)	Ing. ST	ON	
When bollard M1 is completely lowered	FA1 OFF	FC1	ON
When bollard M1 is completely raised	FC1 OFF	FA1	ON
When bollard M2 is completely lowered	FA2 OFF	FC2	ON
When bollard M2 is completely raised	FC2 OFF	FA2	ON
When bollard M3 is completely lowered	FA3 OFF	FC3	ON
When bollard M3 is completely raised	FC3 OFF	FA3	ON
When bollard M4 is completely lowered	FA4 OFF	FC4	ON
When bollard M4 is completely raised	FC4 OFF	FA4	ON
It turns itself off with detected coil / sensitive head (see 2.c)		S1	ON
It turns itself off with sensitive head pushed (see 2.c)		S2	ON



**WARNING:**

The grounding cable must be necessarily connected with the predisposed control board clamp: clamp number 57. The current laws obligate this connection to avoid inopportune starting or missing stops in case of breakdowns (both on input side and output side).

EVERY BOLLARD HAS LABELLED CABLES FOR THE ELECTRICAL CONNECTION WITH THE CONTROL BOARD.

## 2.0 TECHNICAL NOTES

### 2.A) INPUTS AP / CH

The contact to insert in these two inputs are free of tension (N.A.), AP input makes the bollard go down, CH input raises the bollard.

#### **INPUT AP**

It is possible to connect in parallel to this input the following devices:

- N.A. Button
- Emergency vehicles sound recognizer (sirens, police, ambulance, etc.)
- Access control: telepass, number plates reader, magnetic coil, etc.

#### **INPUT CH**

It is possible to connect in parallel to this input the following devices:

- N.A. Button
- Clock contact (optional hardware) (activate the programming)

### 2.B) SAFETY INPUT (S1)

It has been designed for the input of any safety device (also if they are connected in series). This entry allows the reversal of the running direction (only if the bollard is closing the passage).

Connectable devices to this input:

- Magnetic detector with single/double coil
  - Active modulated infrared photocells
  - Precalibrated pressure switch
  - Positive opening limit switch installed under the sensitive head
  - Any devices that respects the current laws
- PLEASE NOTE: bypass the input if not used.

### SAFETY INPUT (S2)

It has been designed just for specific inputs.

This input guarantees redundancy and safety: using positive limit switches a positive opening of the spools of the relay of the single bollard is ensured. (as in current law).

Connectable devices to this input:

- n°2 positive opening limit switches installed under the sensitive head.

PLEASE NOTE: bypass the input if not used

### 2.C) OUTPUTS

Specific circuit for the ignition of an engine to improve the performances of the bollard (prevention against malfunctions, route defusing, ex. glued contacts).

### 2.D) TRAFFIC LIGHTS (SEMAF.)

It has been projected to ensure a safe passage of the vehicle in the passage protected by the bollard. The green light will appear when the passage will be free from any obstacle.

### 2.E) ELECTRICAL VALVE (ELET.V)

It has been projected to guarantee the passage even in case of power failure. The electrical valve will make the bollard go down up to the ground level. In the version for the MINISTRY OF TRANSPORT the electrical valve is compulsory. The electrical valve is a valve controlled by electricity NA (Normally Open) so that when the diagnostic led is on, it means that the electrical valve is active so the valve is closed.

### 2.F) FLASHING LIGHT (LAMP.)

Use a flasher provided with flashing board. The output of the board is 230 Vdc continuous. The flashing board will let flash the flashing light

When the flashing light is active:

- "Advance warning time" before the starting up of the engines M1, M2, M3, M4
- When the engines are on
- "Waiting time of traffic lights"
- Little flashes followed by a long pause when the bollard is in automatic reclosing.

### 2.G) EXIT 24VAC

It is used for the power supply of the auxiliary devices (ex. Photocells).

## 2.H) LED LIGHTS SENSITIVE HEAD 24F

It has been projected to supply power to 4 flashing/fixed bright heads according to the movement of the bollard:

- Fixed light when the bollard is up
- Light off when the bollard is down (traffic light time)
- Quick flashing light when the bollard is raising up
- Slow flashing light when the bollard is going down
- Fixed light when the bollard stops

## 2.I) M.E.R.

MECHANICAL ELECTRONIC REDUNDANCY. The control board is provided with a redundancy system that ensures the proper functioning of the bollard even in presence of a breakdown.

Thanks to this system it is possible to check the whole control board to detect any breakdown of a component or a malfunction of an accessory of the system, so that if the automation is provided of an electrical valve allowing the bollard to go down until the ground, it guarantees absolute security.

## 2.J) INSTALLATION

- The control board must be installed in a protected and dry place with its own protection box.
- Install a circuit breaker of type 0,03A, high sensitivity to the supply of the control board.
- Make sure the supply of the control board is 230Vac  $\pm 10\%$  50Hz.
- For the control board, electrical motor, flashing light, traffic lights, electrical valve; use cables with wire not less than 1,5mm<sup>2</sup> up to 50m of distance; for limit switches and accessories of command and safety use cables with wires of 1mm<sup>2</sup>. For distances of more than 50 meters use the appropriate wires with the suitable section for the installation. Note: for applications such as lights, cameras etc. use static relays.
- The installation should be made by competent staff and in compliance with the legislation in force.
- Before starting the installation verify the integrity of the control board.
- The installation, the electrical connections and the regulations must be done "by the book".
- Packaging Materials (cardboard, plastic, polystyrene, etc.) should not be dispersed into the environment.
- Do not install the control board in environment exposed to danger or disturbed by electro-magnetic fields. The presence of gas or flammable smokes is a great danger for safety.
- Provide on the supply network a protection for extra tensions, a switch/ disconnecting switch and/or differential suitable with the product and with the current law.
- The constructor declines every responsibility if other devices and/or components incompatible with the product for integrity are installed, safety and functioning of the product.
- For reparation or substitution only original spare parts must be used.
- The installer must give all the information related to the functioning, maintenance and use of the single parts and of the system in its entirety following the Directive Machine (see laws EN 12635, EN 12453 and EN 12445).

## 3.0 PROGRAMMING - FUNCTIONING

### 3.A1) RESET OF THE CONTROL BOARD

This function allows to go back to the basic programming;

Working time 8 seconds

Traffic lights waiting time 10 seconds

Limit switch delayed

Automatic reclosing excluded

Basic radio code: button 1 of a TX type 53200 with DIP 1,3,5,7,9 in ON and DIP 2,4,6,8,10 in OFF

RESET PROCEDURE:

- 1) Press and hold button A (LED 1 and EXT LEDs are on steady)
- 2) After about 3 seconds, LED 1 starts flashing
- 3) Release button A, LED 1 continues to flash
- 4) Open the contact at the STOP input (if present, press the stop button) for at least 5 seconds. Led 1 starts flashing quickly.
- 5) Close the contact at the STOP input again
- 6) When led 1 stops flashing and turns off, the reset has been completed

### 3.A2) SELF NOTICE OF THE LIMIT SWITCHES INPUTS

When the control board is on, the microprocessor checks the limit switches inputs.

If during the starting up of the control board the limit switches of the engines 2,3,4 are not on the inputs, the microprocessor excludes automatically the inputs and the engines 2,3,4 will not be moved from the control board.

Note: Thanks to this mechanism it isn't necessary to bridge the inputs of the limit switches that are not used.



### **3.B) RADIO CODES PROGRAMMING**

#### PROCEDURE:

1. Press button A once (LED 1 and EXT LEDs are steady on)
2. Send the radio code to be memorized keeping a distance of at least 50cm from the control unit.
3. If the code has been memorized, LED 1 flashes once.
4. If other codes are to be memorized, repeat from point 3.
5. To exit radio code programming, press button A twice, (LED 1 turns off.)

### **3.C) RADIO FUNCTION MATCH**

If no input is active during the sending of the code to be memorized (point 3), the command is matched with the "Only Open" function for all the four pistons.

To match the Start function (OPEN/CLOSE) with radio command for all the four pistons, push the AP and CH buttons simultaneously

To link the radio command to piston 1 only, press the AP button while sending the code.

To link the radio command to piston 2 only, press the CH button while sending the code.

To combine the radio command with piston 3 only, open ONLY the SIC1 contact while sending the code.

To combine the radio command with piston 4 only, open ONLY the SIC2 contact while sending the code.

To combine the radio control only with the STOP function (for all pistons), activate the STOP input (open the contact) while sending the code.

### **3.D) CANCELLATION OF A SINGLE RADIO CODE**

#### PROCEDURE:

- 1) Push 2 times the A button (the led 1 is on, whereas the leds EXT flash)
- 2) Send the radio code to be cancelled
- 3) If the led OK flashes 3 times it means that the code has been cancelled, instead if it flashes 1 time slowly, it means that the radio code isn't present in memory
- 4) If there are other codes to be cancelled, repeat from point 3
- 5) Push 2 times the A button to exit from the radio codes cancellation (the led 1 and the external leds turn their selves off)

### **3.E) CANCELLATION OF A GROUP OF CODES**

It allows to delete all the same type codes with a single operation.

#### PROCEDURE:

- 1) Push 2 times the A button (the led OK is on, whereas the leds EXT flash)
- 2) Select the group to be cancelled:
  - AP+CH button (push simultaneously) -> canc. all the OPEN/CLOSE codes
  - AP button -> canc. all the codes for PISTON 1
  - CH button -> canc. all the codes for PISTON 2
  - SIC1 button -> canc. all the codes for PISTON 3
  - SIC2 button -> canc. all the codes for PISTON 4
  - STOP entry -> canc. all the STOP codes
- 3) The OK led quickly flashes during the cancellation
- 4) When led 1 turns off, the procedure is finished

### **3.F) AUTOMATIC RISE OF BOLLARDS TO THE REVIVAL OF POWER SUPPLY**

At the moment of the revival of power supply, the control board commands the automatic rise of all the pistons only if the time of automatic reclosing has been programmed.

Check the points 3.f1 and 3.f2 for the programming and the cancellation of automatic reclosing..

### **3.F1) PROGRAMMING TIME OF AUTOMATIC RECLOSING**

#### PROCEDURE:

- 1) Push and keep pushed the A button (the led 1 and EXT are on, fixed)
- 2) After about 3 seconds the led 1 starts to flash
- 3) Release the A button, the led 1 keeps flashing
- 4) Push and keep pushed the CH button for the time you wish to memorize
- 5) When the CH button is released the led 1 turns off and the procedure is finished

During normal operation, automatic reclosing can be excluded by sending a Start / Stop command during the pause or by activating the emergency stop.

ATTENTION!! By programming the automatic reclosing time, the automatic ascent on return of power supply is also ACTIVATED

### 3.G) CANCELLATION OF THE AUTOMATIC RECLOSING

#### PROCEDURE:

- 1) Push and keep pushing the A button (the led 1 and the leds EXT are on, fixed).
- 2) After about 3 seconds the led 1 starts to flash
- 3) Release the button A, the led 1 keeps flashing.
- 4) Open only the contact to the input SIC2
- 5) The 1 led flashes to signal that the cancel process is happening
- 6) When the 1 led turns off the procedure is finished

WARNING: Deleting the time of automatic reclosing, the automatic rise at the revival of power supply is also deactivated. (Check point 3.f).

### 3.H) PROGRAMMING OF THE TRAFFIC LIGHTS WAITING TIME

The waiting time of traffic light is the available time for a vehicle to cross and free the passage since when the traffic light is red until the bollard starts its climb.

Meanwhile, the leds incorporated in the head keep flashing (see image "A" at page 10, point 5.)

In order to define the waiting time, it is necessary to time how much a vehicles takes for crossing and freeing the passage. (see image "A" at page 10)

#### PROCEDURE:

- 1) Push and keep pushed the A button (the led 1 and the leds EXT are on, fixed)
- 2) After about 3 seconds the led 1 starts flashing.
- 3) Release the A button, the led 1 keeps on flashing.
- 4) Push and keep pushed the AP button for the time you wish to memorize.
- 5) When the AP button is released, the led 1 turns off and the procedure's finished

### 3.I) WORKING TIME OF THE PISTONS PROGRAMMING

#### PROCEDURE:

- 1) Push and keep pushed the A button (the led 1 and the led EXT are on, fixed)
- 2) After about 3 seconds the led 1 starts flashing
- 3) Release the A button, the led 1 keeps flashing
- 4) Only open the contact to input SIC1 for the time you wish to memorize
- 5) When the contact S1 is closed, the led 1 turns off and the procedure is finished

WARNING: Use the condenser 20 $\mu$ F for the connections of the engines

- To obtain a better starting of power use the following condensers: 20 $\mu$ F, 25 $\mu$ F.

### 3.L) CLOCK PROGRAMMING

To activate the clock logic, the DIP1 must in ON.

NB: When this logic is activated, the contact without voltage of the clock must be connected in place of the input CH. With this function, the road will remain open until the clock contact is closed and will close when the clock contact opens. In the event of a power failure, when the voltage returns, the control unit guarantees the reclosing or reopening even if the clock has switched while the control unit was off. When the clock contact is closed, the management of the pause is excluded. If during the automatic reclosing of the clock safety 1 intervenes, the door reopens and will try to close again after 5 minutes. The closing attempts will continue until the door closes or until a user command arrives.

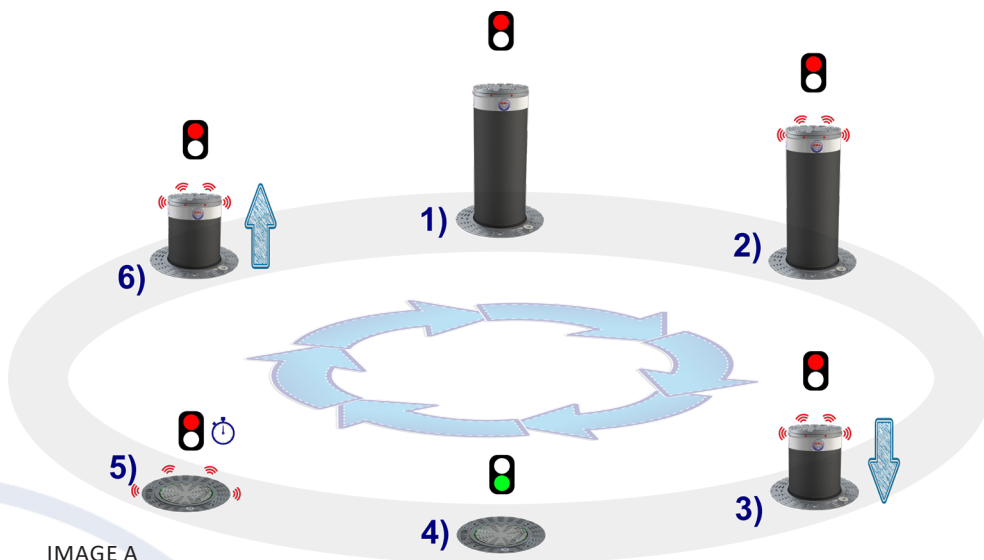


IMAGE A

### 3.M) ACTIVATION OF HYDRAULIC PRESSURE RETENTION

To activate this function, DIP 3 must be in "ON".

When the system is in "CLOSE" state, the control board check the position of closing limit switches.

If the limit switches have inverted their state, due to pistons lowering, the control board commands the closing of the bollard. The control is done every 10 minutes and the forced closing lasts up to the reaching of the limit switches or to a maximum of 3 seconds. Before the forced closing the bollard makes some signalling flashes (examples: quick start flash of sensitive head +led ORION)

The flashing light doesn't work during the forced closing.

During the forced closing the safeties S1 and S2 don't order the inversion but only the stop.

### 3.N) SEQUENTIAL STARTING UP OF THE MOTORS

With this function the motors don't start up at the same time but in sequence:

M1 >> M2 >> M3 >> M4.

PROCEDURE:

- 1) Turn off the control board
- 2) Put the DIP4 in ON.

### 3.O) EXCLUSION OF THE DELAY TIME OF THE LIMIT SWITCH

Usually the motor stops after 250ms from the opening of the contact of the limit switches. Thanks to this procedure it is possible to exclude the delay, making the motor stops as soon as the limit switch contact is opened.

ROCEDURE:

- 1) Turn off the control board
- 2) Put the DIP5 in ON.

### 3.P) NETWORK SETUP

The system can consist of up to 4 cards.

Each board must have a different address, the addresses are formed by DIP 8 and DIP 9 according to this table.

	DIP 8	DIP 9
MASTER	OFF	OFF
SLAVE 1	OFF	ON
SLAVE 2	ON	OFF
SLAVE 3	ON	ON

If only 2 cards or 3 cards are installed, one must always be the MASTER (you cannot have only SLAVES)

If you want to use the card alone, you need to set it as MASTER.

After connecting the cards, the MASTER must be taught which SLAVE cards are connected via the following procedure:

- Hold button A until the RED LED starts flashing.
- Press button B, the RED LED will become steady on.
- Once the LED has turned off, the procedure is finished

At the end of the procedure, all the slaves connected to the master are associated.

NOTE: the SLAVES have a very short start-up time so that they can be immediately ready to be able to receive the command from the MASTER.

To be able to skip the start time of the MASTER (about 1 minute) it is necessary to press button A.

After pressing the button, the MASTER remains in the start time for another 2 seconds after which it becomes operational.

NOTE 2: The CLOCK logic cannot be activated on the slaves. If activated via the dip, the card will continue to function normally. The clock must be connected to the MASTER board.

### 3.Q) ADDITIONAL FUNCTIONS

Failed motor fuse signaling: in the event of a broken motor fuse (FUSE 1-4), the two-color LED will flash red

24V fuse signaling: if the fuse on the 24V is broken (FUSE 6) the two-color LED will flash green.

In the event of a green light but the opening limit switches not pressed (for a possible fault) it is sent automatically an opening command to all pistons.

For installations where access blocking has priority, even at the expense of security (for example customs etc ...) it is possible to activate the dip7 which excludes all safety checks on the traffic light (if the traffic light remains stuck in green the pistons can be raised anyway and do not go back down automatically). With dip 7 in ON the electrical valve is also excluded and is always kept off, in this way, if the option is activated mistakenly on a normal installation with electrical valve, the pistons always remain low and it is possible noticing the error while remaining safe.

In the event of an interruption in closing due to pressing a safety device, the maneuver will be retried after approx 20 seconds, even if automatic reclosing has not been programmed. If, on the other hand, reclosing is programmed automatic, re-closing will normally take place according to the programmed time.

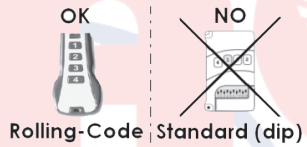



If the pause is programmed on the MASTER then it is automatically programmed on all the SLAVES connected (the opposite is not true, if programmed on SLAVE it is NOT sent to the other boards).


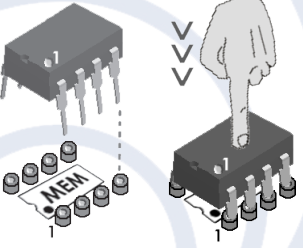
If the traffic light waiting time is programmed on the MASTER then it is programmed on all the SLAVES connected (the opposite is not true, if programmed on SLAVE it is NOT sent to the other boards).







Maximum current for accessories:

- Output LED: 100mA
- Output 24Vac: 800mA

### 3.R) REMOTE CONTROL PROGRAMMING

RADIO CONTROL REMOTE PROGRAMMING	OPERATIONS	PICTURES
<p>This procedure allows to guarantee a new radio code without directly operating on the board.</p> <p>The programming operations occur all by radio using a remote control already programmed on the control board.</p> <p>If there are more codes to be memorized, it is necessary to repeat every time this procedure from the beginning.</p>	<p>The function of the new radio code can be selected during the programming following the same criterion for the standard memorisation.</p>	 <p>Rolling-Code   Standard (dip)</p>
<p>This function is available only if in the control board are only memorized Rolling-Code codes.</p>	<p>1. Send a command to the control board with a remote control IRIS RC type already added in memory.</p>	
	<p>2. Within 8 seconds, push simultaneously 1 and 3 buttons of the IRIS RC remote control used in the previous point. The control board is entered into programming.</p>	
	<p>3. Within 8 seconds, send the new radio code of the remote control to be memorised (Rolling-Code type). If no code is sent, the control board exits from the programming after 8 seconds automatically.</p>	
	<p>4. Check that the new code memorised perfectly works, otherwise repeat the procedure.</p>	

EXTERNAL MEMORY	OPERATIONS	PICTURES
<p>If the external memory module is inserted on the control board, it is possible to expand the memory capacity of the radio codes from 160 standard codes and 60 Rolling-Code to 8000 standard codes and 2000 Rolling-Code.</p> <p>When the control board detect the presence of the external memory, the internal memory management is automatically excluded. It means that the radio codes memorized before the insertion of the new don't work.</p> <p>If it is necessary to recover the codes memorized previously, the procedure of memory copy INT &gt;&gt; EXT. must be done.</p>	<p>1. Turn off the control board and insert the memory module on the base 8 pin [MEM] following the warnings below:</p>	
	<p>Handle the external module with care. Don't wet it, don't drop it, don't expose it to electromagnetic fields or to heat sources.</p>	
	<p>The assembly on the board must be done respecting the component polarity. The pin n°1 is indicated with a white circle.</p>	
<p>2. Place the module on the base and check that all the pins are aligned with the related holes Insert the module pushing it toward the board. Be careful not to bend the pins.</p>		
<p>Before memorising the new radio codes, make a copy of the internal memory on the external memory, or do the reset procedure.</p>		

COPY MEMORY INT----->EXT :	OPERATIONS	IMAGES
<p>This function is usable only if there is an external memory module. When the control board detects the presence of the external memory, internal memory management is automatically excluded. It means that the radio codes memorised before the input of the new memory don't work.</p> <p>This procedure allows to recover the codes memorised in the internal memory by making a copy of the codes from the internal memory to the external memory.</p>	<p>Turn off the control board Keep pushed the PROG. Button</p>	<p>SPEGNERE LA CENTRALE</p> 
	<p>Turn on again the control board. The OK led flashes two times quickly and then remain fixed</p>	<p>ACCENDERE LA CENTRALE</p> 
	<p>Wait until the led begins to flash again (around 3sec)</p>	<p>Attendere</p>  <p>LAMPEG.</p> 
	<p>When the OK led stops to flash and turns itself off, the copy is finished. (copy time: around 60sec)</p>	<p>Attendere</p>  <p>SPENTO</p> 

## 4.0 SAFETY WARNINGS FOR MAINTENANCE AND USE

### WARNINGS

These warnings are integral and essential parts of the electronics and they are to be given to the final user. So it is necessary to keep this manual. Read carefully the instruction book which gives important indications about the installation. The wrong installation or the improper use of the control board may be a source of serious danger.

### MAINTENANCE

To guarantee the efficiency of the control board professional staff must make the maintenance in times decided by the installer, by the producer and by the legislation in force. The operations of installation, maintenance, reparation and cleaning must be documented. This documentation is to be kept by the user.

### FOR THE USER

Read carefully the instructions and the documents enclosed. The product must be used according to the use designed by the constructor. Any other use is to be considered improper and dangerous. In case of maintenance, cleaning, breakdown or malfunction of the product, turn off the power supply and avoid any attempt of intervention except when indicated. Call MAC s.r.l. staff before any maintenance or sending of damaged/broken material.

### WARRANTY

The warranty is twenty-four (24) months starting from the selling date of the control board. It decays in case of: negligence, mistake or wrong use of the product, use of non-compliance accessories to the specifics of the builder, tampering operated by the customer or by a third party, natural causes (lightnings, floods, fire, etc.), vandalism acts, changes in the environmental conditions in the installation place. The warranty does not include, moreover, the parts subject to wear. (batteries, oil, etc.). The purchase of the product implies the complete acceptance of the general sale conditions.

## GUIDE FOR THE CAUSES RESEARCH OF SOME DRAWBACKS

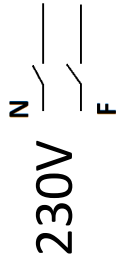
N	DRAWBACKS	PROBABLE CAUSES	HYPOTESIS OF FAULT	SOLUTIONS
1	BOLLARD NO RAISES (wrong connections)	<ul style="list-style-type: none"><li>• wrong sense of rotation</li><li>• reversed limit switches</li><li>• lack of power supply</li><li>• control board out of order</li><li>• fuses damaged</li></ul>	<ul style="list-style-type: none"><li>• wrong connection of electrical engine</li><li>• wrong limit switch connection</li><li>• sectional switch open</li><li>• control board damaged</li><li>• high absorption peak</li><li>• short circuit on the engine line, electrical valve, inputs, output24Vac, traffic light</li></ul>	<ul style="list-style-type: none"><li>• rewire the electrical engine on the control board (reverse rise/fall wires)</li><li>• rewire magnetic limit switches (reverse limit switch close with open-rise)</li><li>• reactivate sectional switch</li><li>• replace the control board</li><li>• replace the fuse with others appropriate</li><li>• check and fix the breakdown</li></ul>
2	BOLLARD NO RASES COMPLETELY (during the rise the bollard stops)	<ul style="list-style-type: none"><li>• bollard stops at the mid of the stroke</li><li>• magnetic limit switches remain closed (lights FC and FA switch on about MOT)</li></ul>	<ul style="list-style-type: none"><li>• wrong programming of working time</li><li>• magnetic limit switch out of the reading zone of the magnet</li></ul>	<ul style="list-style-type: none"><li>• program again the working time</li><li>• establish the right position for limit switches reading between the magnet and the sensor (moving close the magnetic limit switch)</li></ul>



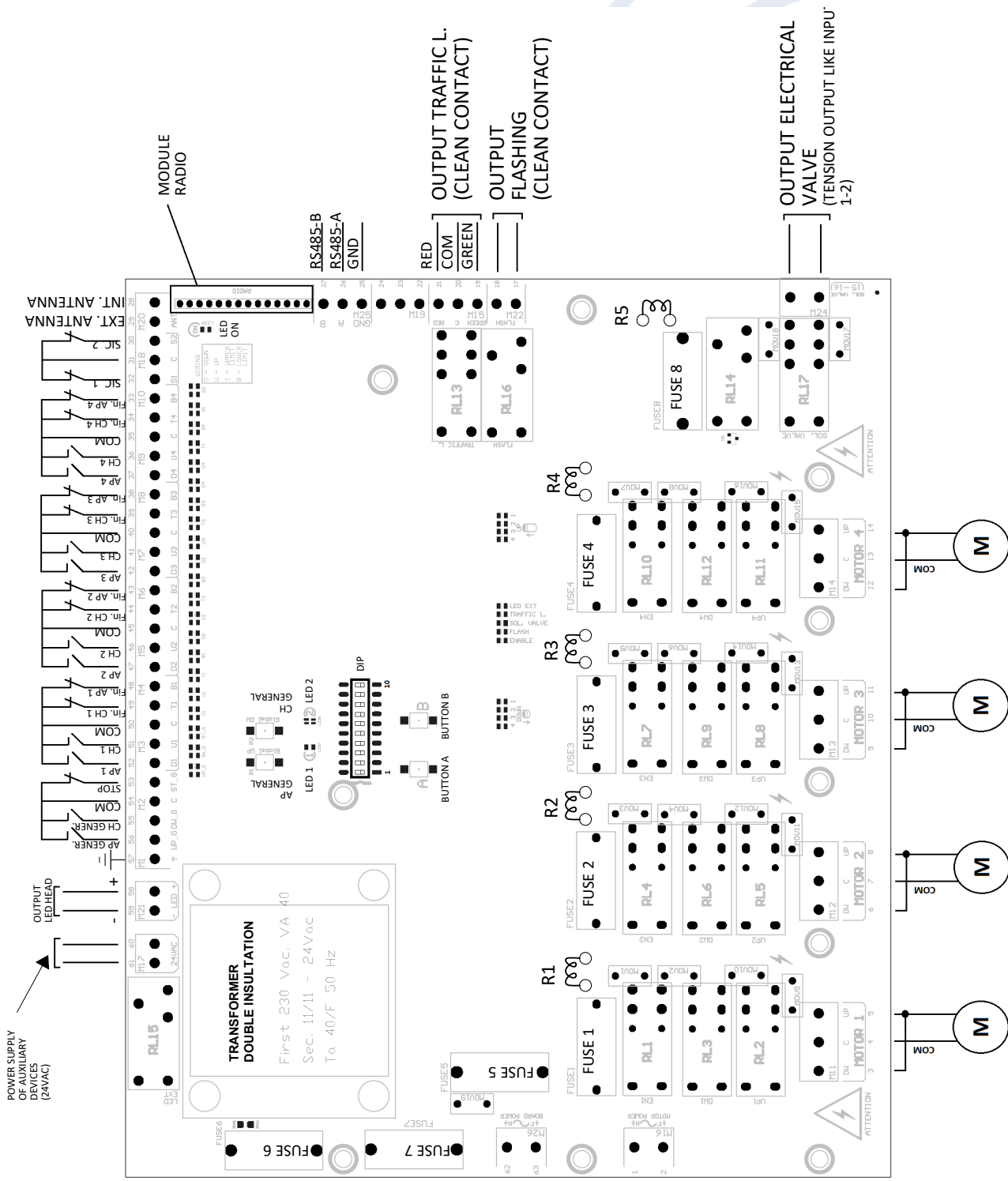


**WARNING:** Limit switch not used must be left open (NO)

**WARNING !**  
 WITH A 24V POWER SUPPLY, THE RESISTORS MUST BE CONNECTED

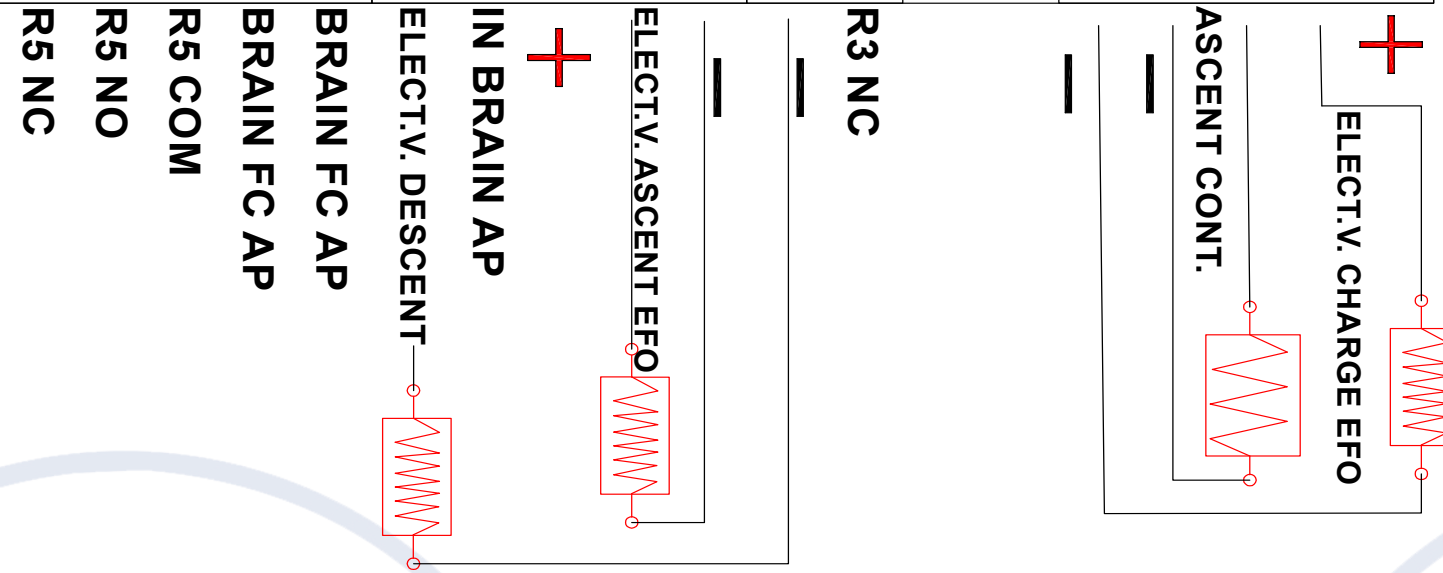
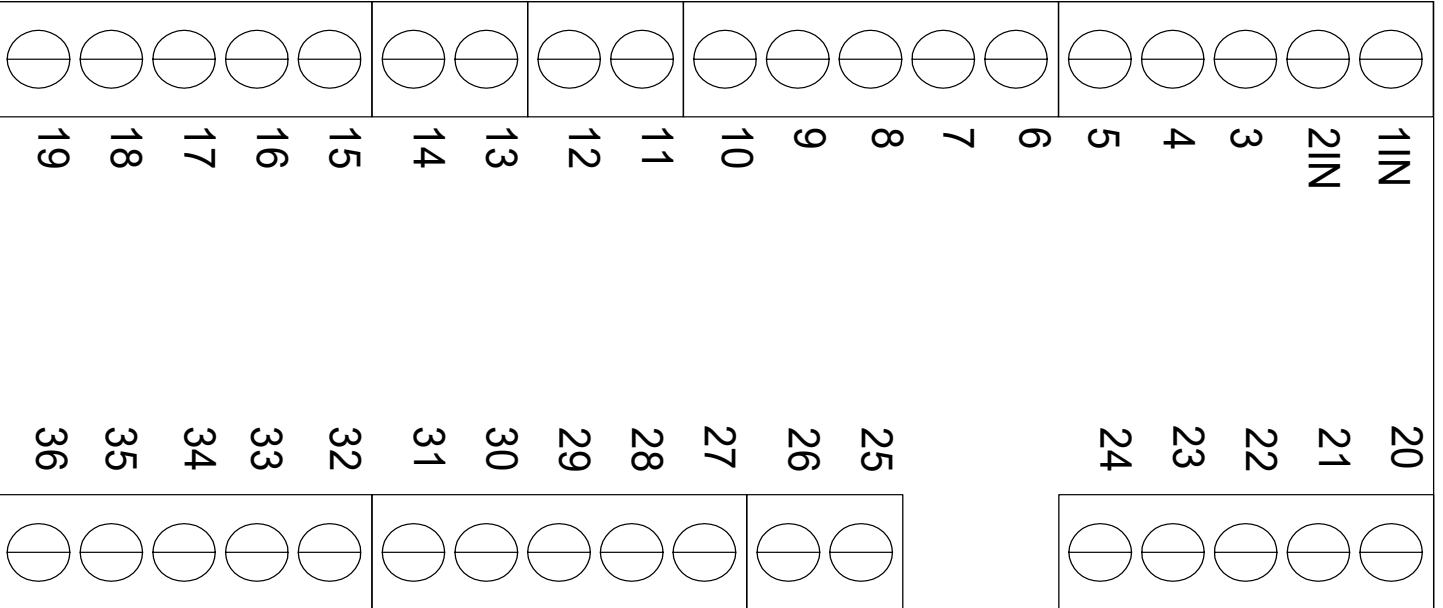
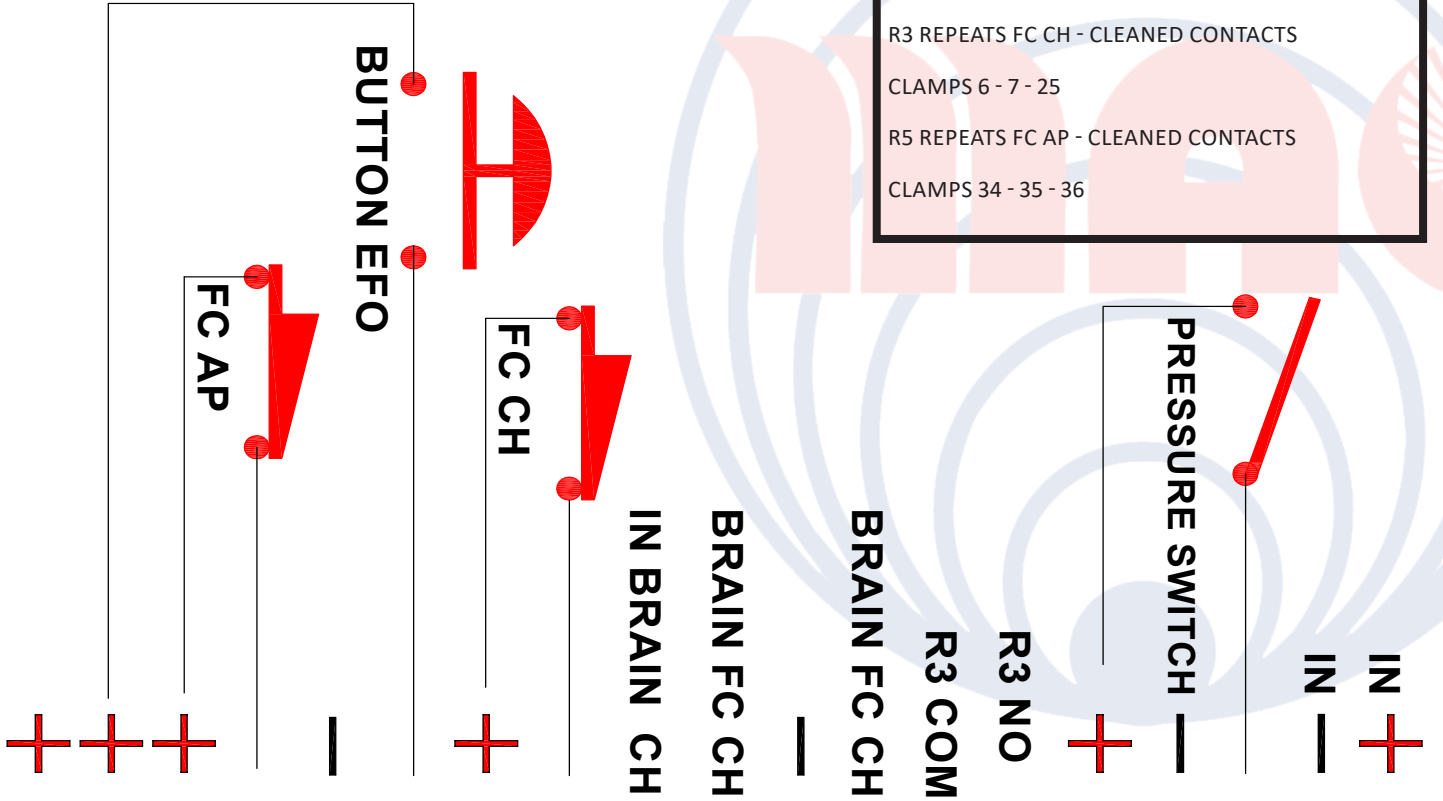


**POWER SUPPLY / ELECTRICAL MOTORS / VALVE**  
 24V dc



REPEATER CONTROL BOARD LIMIT SWITCH WITH EFO

R3 REPEATS FC CH - CLEANED CONTACTS  
 CLAMPS 6 - 7 - 25  
 R5 REPEATS FC AP - CLEANED CONTACTS  
 CLAMPS 34 - 35 - 36



REPEATER CONTROL BOARD LIMIT SWITCH WITHOUT EFO

