

Central control board for electromechanical gearmotors

HERCULES 24V



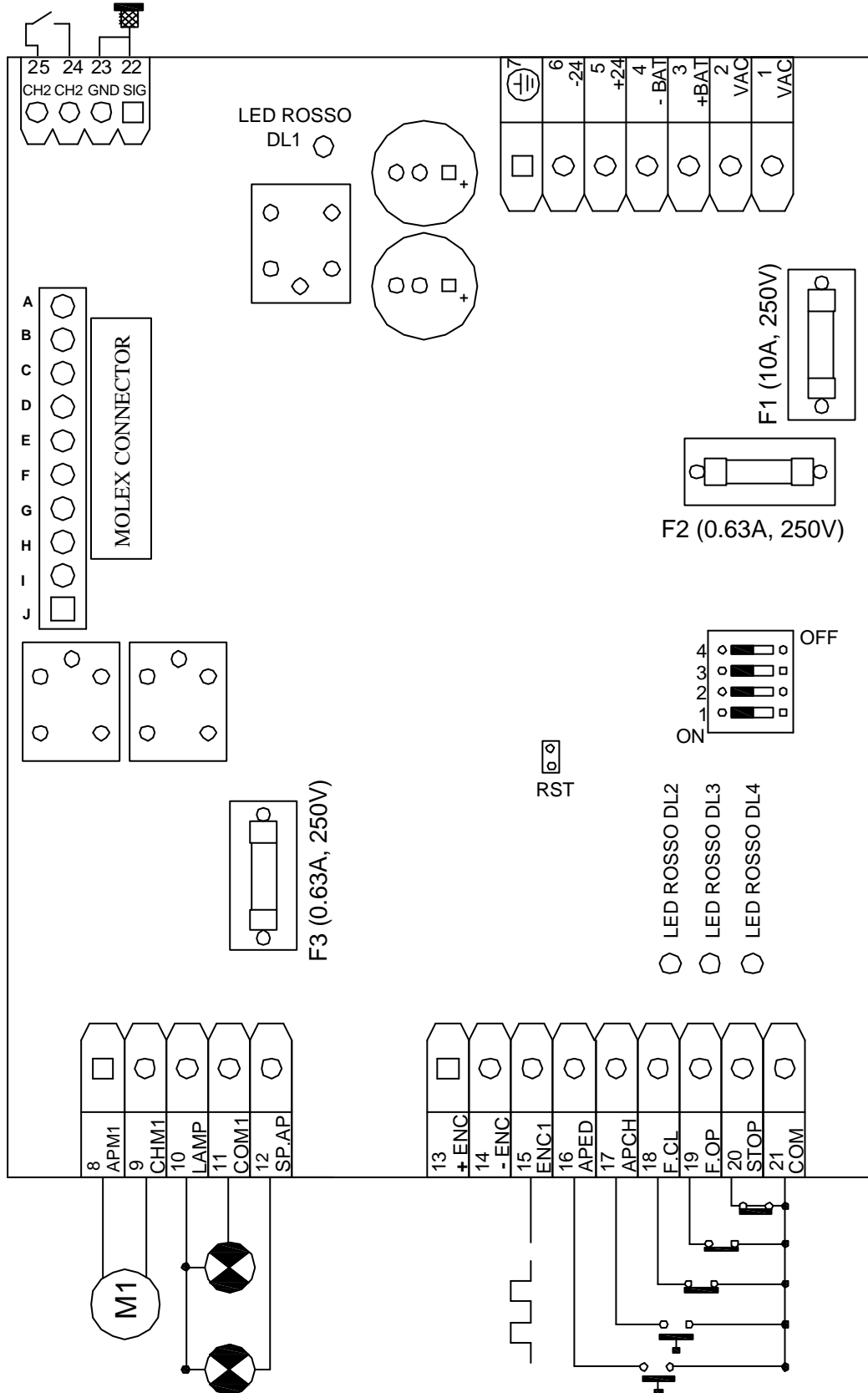


Attention !

- The present user's manual is designed for personnel skilled in installation, not for the final user; the electrician is then due to inform the user about modes of use of the device, possible danger and about the necessity to apply periodical maintenance.
- The installation can be carried out only by skilled personnel and in compliance with the rules currently in force regarding the automated locks. In particular, the installation requires the following of the regulations 89/392 and norm EN 12453 and EN 12445..
- Use only original parts. Stagnoli does not take any responsibility for damage caused by using unoriginal parts.
- Before operating the device, make sure that the power supply has been cut off.
- The feeding cable can be connected only with feeders supplied with proper electric protection. In particular, make sure that the distance between the contacts is of at least 3.5 mm in order to avoid omnipolar disconnection from the grid.
- Take into consideration the safety devices to be installed and the place where they should be positioned. Always have an emergency stop device available to allow proper detachment of the feeding cable.
- Do not operate the machine with wet or damp hands or feet and avoid exposing the machine to atmospheric conditions.
- The device should be used only according to the purpose that it has been designed for, any other use is to be considered as improper and therefore dangerous.
- Maintenance, including possible replacement of courtesy light unit , can be carried out only by skilled staff.

Technical specification and connection diagram

The electronic control board for Stagnoli's 24V electromechanical gear motors, is designed for controlling operations of 24 Vdc motors, used for the activation of sliding gates up to 500 kg heavy; the movement is controlled by the encoder and there's no need to use any limit switch.



Electric connections

1. Neutral power supply from transformer (20Vac)
2. Phase power supply from transformer (20Vac)
3. Battery connection (positive pole).
4. Battery connection (negative pole).
5. Auxiliary output 24Vdc – 500mA (positive pole)
6. Auxiliary output 24Vdc – 500 mA (negative pole)
7. Connection of grounding
8. Output electric motor 24Vdc (opening)
9. Output electric motor 24Vdc (closing)
10. Blinking logic output (24V – 25W max.)
11. Common.
12. Output dial lamp – gate open (24V – 10W max.)
13. Output encoder card power supply(+24V).
14. Output encoder card power supply(-24V).
15. Input encoder card signal.
16. Electric contact normally opened by Pedestrian Command
17. Electric contact normally opened by Open/Close Command.
18. Electric contact normally closed by the photocell for the closing operation.
19. Electric contact normally closed by the photocell for the opening operation.
20. Electric contact normally closed by the Stop button.
21. Common.
22. Input antenna (signal).
23. Input antenna (braided wire).
24. 2nd output – radio channel (unpolarized contact)
25. 2nd output – radio channel (unpolarized contact)

Connections radio card (MOLEX CONNECTOR)

- | | |
|----|--|
| A. | Input antenna (signal). |
| B. | Input antenna (braided wire) |
| C. | Power supply receiver: negative pole |
| D. | Power supply receiver: positive pole |
| E. | Disconnected |
| F. | Disconnected |
| G. | 2 nd input receiver channel |
| H. | 2 nd input receiver channel |
| I. | 1 st input receiver channel (parallel to input of Open/Close) |
| J. | 1 st input receiver channel (parallel to input of Open/Close) |



- **IT' S COMPULSORY POSITIONING THE EARTH WIRE CONNECTION (TERMINAL 7)**
- **Unused N.C contacts have to be short circuited.**
- **Unused N.O contacts have to be open circuited.**
- **Double insulated cables should be used when connected to devices supplied at low voltage.**
- **In order to follow the regulations of “ Low Safety Voltage” rule (EN 60335-1), the single insulated cables used for power supply should be equipped with additional insulation of at least 1 mm, and should be at least 4 mm from those with low voltage.**
- **The cables used for power supply of motors, should be of at least 2.5 mm² and the length should not exceed 10 m;**

DEFINITIONS OF CONTROL UNIT PARTS

F1- FUSE TRANSFORMER INPUT(10A, 250V)
F2 – FUSE AUXILIARY OUTPUT (0.630A, 250V)
F3 – FUSE BLINKER (3.15A, 250V)

DIP SWITCH FOR SELECTION OF FUNCTION MODES:

SW – 1 indicates torque of 1st motor (electric friction M1).
SW – 2 allows the set up of the function mode for automatic or semiautomatic.
SW – 3 indicates the operational sequence of the Open/Close command.
SW – 4 allows adjustment of the mains for automatic cycle and intervals.

LED – SIGNALLING:

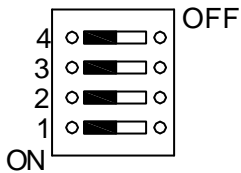
DL2 – (RED): a Led which signals activation of the photocell in the closed mode; the LED automatically switches off when the photocell detects an obstruction during closing.
DL3 – (RED): a Led which signals activation of the photocell in the opened mode; the LED automatically switches off when the photocell detects an obstruction.
DL4 – (RED): a Led which signals blockade of the gate; the LED automatically switches off when the command Stop is activated.
DL5 – (RED): a Led which signals whether the central unit is plugged(on) or not(off); in the case of supply from the accumulator the LED switches off.

INPUTS/OUTPUTS DEFINITIONS

- **Input power supply from transformer** : 20V~ +/- 10%.
- **Input/ output accumulators** : 2 batteries in series from 12V – 3Ah
- **Auxiliary output** : 24V $\overline{\text{---}}$, 500 mA max
- **Motor output** : 24V $\overline{\text{---}}$, 120W
- **Blinking logic output (24V, 25W max)**: the unit allows to signal movement of the gate (blinking), the interval during the automatic operation (steady light for 3 seconds) and possible activation of the safety device during the same interval (blinking maximum 10 seconds); it signals also the subsequent opening or closing by means of pre-blinking.
- **Control unit(dial lamp) gate opened output (24V, 10W max)**: activated just after receiving the command of opening and disabled when the gate is closed.
- **Output encoder card power supply(24V)**: allows to feed of the encoder.
- **Encoder input** : form the input for the signals coming from the Encoder, placed on the motor; enables measuring the length of the travel by the gate.
- **Pedestrian input**: enables control of the partial opening and closing of the gate.
- **Open/Close input**: enables the sending of closing and opening commands of the gate according to the sequence that depends on the position of the dip switch SW-3.
- **Activated photocell in the closing mode input**: the activation of this input is disabled during the opening phase, stops and opens the gate during the closing.
- **Activated photocell in the opening mode input**: the activation of this input causes, during the opening the gate, its immediate stop; if the photocell is deactivated, the gate restarts the opening phase.
- **Stop input**: if the Stop command is activated, all of the possible cycles and every starting command are disabled. The Stop command during the motion causes immediate stop of the gate and a little inversion of the its travel. If the Stop command is given during the interval, the working cycle is interrupted until the new command of closing.
- **2° radio channel output (unpolarized contact)**: by the means of using the 2 channel receiver, it is possible to control an external supplementary unit.
- **Antenna input**: allows the connection with an external antenna by a coaxial cable.

- **Radio connector input (Molex connector):** the unit is adapted to connect an accessory radio receiver card. The 1st card channel is connected parallel to the Open/Close input. The 2nd channel is connected in the terminals 24 – 25 (CH2)

FUNCTIONING MODES



The unit may control various functions based on the combinations of the Dip Switches:

DIP	FUNCTION	ON	OFF
SW - 1	ELECTRONIC FORCE CONTROL	The motor supplies the maximum thrust.	The motor supplies the minimum thrust.
SW - 2	AUTOMATIC CLOSING	The automatic operation is activated	The semiautomatic operation is activated
SW - 3	COMMAND OPEN/CLOSE	impulse opens – impulse blocks – impulse closes	impulse opens – impulse closes
SW - 4	AUTOMATIC LEARNING	For the automatic learning of the gate movements and the pause time.	The automatic learning phase is deactivated.

PROGRAMMING

The programming of the central unit requires the following steps:

- Manual opening of the gate.
- Program SW - 4 = ON, the blinking unit will emit a steady light to inform the user that the programming procedure has been started.
- Press the Open/Close button or the radio control button once; the gate will be closed completely. If the gate is activated in the opening phase, one should cut the power supply off and invert the connections in the motors in order to enable proper programming.
- After having closed the gate, starts the opening phase(automatically) and it lasts until reaching the mechanical positive stops in the opening(the process of reaching the end points proceeds in slow motion).
- From the moment when the gate has reached the mechanical stops in the opening, the estimation of automatic closing time starts; when the requested time has passed, one should press once again the Open/ Close button or the radio control button, in order to control the closing of the gate.
- When the closing operation has come to the end, set SW - 4 = OFF;
- Select the functioning mode you desire.

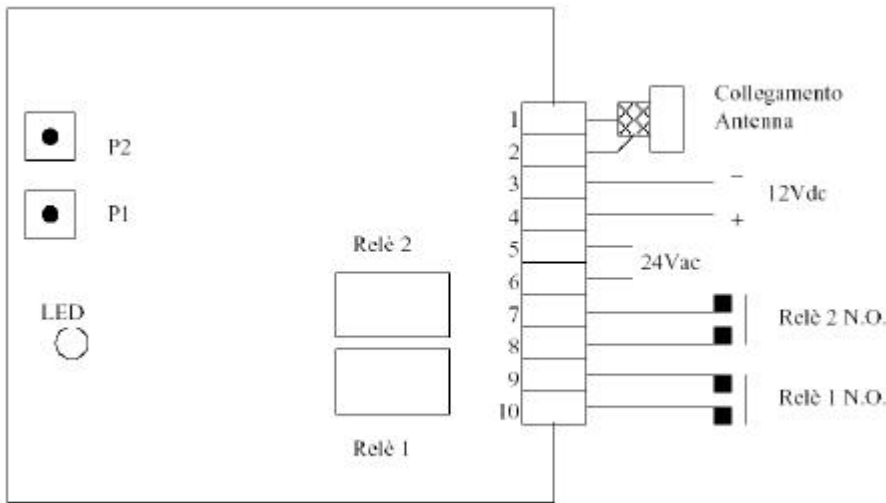
NOTE

1. **In order to secure at all times the safety of the automation and to enable the proper carrying out of the programming operation, it is necessary to use the mechanical positive stops at the end of the gate's course (in opening and in closing).**
2. The electric trip switch can be adjusted to make the motor more or less sensitive to the obstruction; if the obstruction is detected, in the opening or in the closing phase, the control unit, at first, reverses the course of the gate. If the obstruction is detected again, the control unit blocks the operation of the gate deactivating, if programmed, the process of automatic closing; it is necessary to give a new command. If the obstruction is detected for the third time, the control unit starts the emergency mode by opening the gate completely to the mechanical positive stops in the opening and then the gate closes automatically(if the automatic closing is programmed).
3. During the opening phase in the automatic mode, with SW – 3 = ON, every Open/Close command(terminal 19) will be inactive, whereas during the closing phase the gate movement is inverted with each impulse(CONDOMINIUM MODE). If the semi-automatic functioning is activated, with SW – 3 = ON, every Open/Close command will cause the inversion of gate movement , both during the opening and closing phase.
4. The Open/Close command, after the power supply is cut or reset(by touching the two Pins marked as RST with the screwdriver point), provokes first the complete opening of the gate, and then the automatic closing up to the proper mechanical positive stops.
5. During the regular mode, the central unit blocks the gate a few centimeters before the end point in the opening, in order to avoid striking the mechanical stops.

MAINTENANCE

- Maintenance operations and more importantly contact with the internal parts of the gearmotor, can be carried out by skilled staff only.
- Safety units should be checked periodically.
- **The prongs that pass through the encoder should be controlled periodically in order to check possible damages or blockages caused by dirt and in order to avoid wrong readings of the encoder.**
- All of the maintenance operation should be carried out with the power supply cut off.

RECEIVER (optional)



The receiver connected with the central unit is of the two channels type with 1st channel connected parallel to the Open/Close input, while the 2^d is brought to the output in terminals 24 and 25; the receiver is capable of storing up to 127 different codes in the requested channel. The memory content is stored also when the power supply is cut off.

PROGRAMMING THE RECEIVER

Programming of the receiver requires two phases:

1) Pressing the button P1 for to choose the functioning mode

- a) Pressing P1 1 time inserts a code that activates the relay 1 in its monostable version.
- b) Pressing P1 2 times inserts a code that activates the relay 2 in its monostable version.
- c) Pressing P1 3 times inserts a code that activates the relay 1 in its bistable version.
- d) Pressing P1 4 times inserts a code that activates the relay 2 in its bistable version.

Attention :

- Wait at least 1 second before pressing the P1 button once again.
- After having carried out one of the 4 operations(a,b,c,d) wait until the LED switches on.

2) Recording /storing the code

The second phase consists of sending the code to be stored(for at least 1 second) by the transmitter; when the button is released, the LED situated on the receiver switches off, signaling that the code has been recognized and memorized. If the code is not accepted the LED is on for approximately 10 seconds and after that time switches off automatically (the end of the operation).

ERASING THE CODE FROM THE MEMORY

- a) Press the P2 button situated on the receiver for at least 1 second; when released the LED switches off.
- b) Send the code to be erased for at least 1 second. When the LED switches off it means that the code has been cancelled.

ERASING ALL CODES FROM THE MEMORY

In order to erase all the codes stored in the memory, press the P2 button for about 10 seconds until the LED goes off.

Instructions

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