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Scheda elettronica di controllo per attuatori ROBO PLUS o CLIMBER

Manuale di istruzione per l'installatore

GB

Electronic control card for ROBO PLUS or CLIMBER actuators

Installation instruction manual

Ⓕ

Centrale électronique de contrôle pour actionneurs ROBO PLUS ou CLIMBER

Manuel d'instructions pour l'installation

Ⓓ

Elektronische Steuerkarte für Kolbentorantriebe ROBO PLUS oder CLIMBER

Installationsanleitungen

Ⓔ

Ficha electrónica de control para accionadores ROBO PLUS o CLIMBER

Manual de instrucciones para la instalación

QUESTO LIBRETTO È DESTINATO SOLO ALL'INSTALLATORE.
L'installazione dovrà essere effettuata solamente da personale professionalmente qualificato in conformità a quanto previsto dalla legge n° 46 del 5 marzo 1990 e successive modifiche ed integrazioni e nel pieno rispetto delle norme UNI 8612.

This manual is for use only by technical personnel qualified to carry out the installation.
No information given in this manual can be considered of any interest to the end user!

INDEX:

IMPORTANT NOTICE:

It is our duty to remind you that you are carrying out operations on machine systems classified in the “Automatic gates and doors” category and as such are considered particularly “hazardous”. It is your job to make them as “Safe” as is **reasonably possible!**

Only qualified personnel should install and service the equipment. It is the responsibility of the installer to ensure that the equipment is correctly and professionally installed in compliance with all relevant regulations and standards applicable in the country of installation.
We draw your attention to the following most important European directives - it is the installers responsibility to check what other regulations apply in the country of installation.

EEC 89/392 (Machine Directive)
EEC 89/336 (EMC Directive)
EEC 73/23 (Low Voltage Directive)
PrEN 12453 (Safety in using motorised doors - requirements and classifications)
PrEN 12445 (Safety in using motorised doors - testing methods)

Nice products are designed and manufactured to meet all current European standards and it is essential that the installer also installs the equipment in accordance with all local and European requirements.

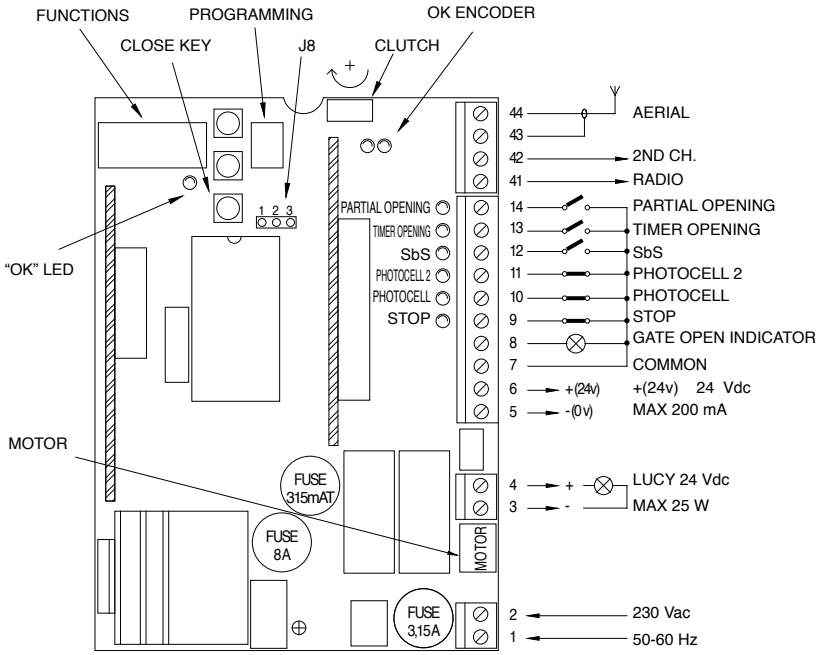
Unqualified personnel or those who do not know the standards applicable to the “Automatic gates and doors” category:
Must under no circumstances attempt to install or service the equipment

Personnel who install or service the equipment without observing all the applicable standards:
Will be held responsible for any damage the system may cause!

QUICK GUIDE:

Do not install the motor without the "Mechanical travel stop devices"!

Install the gearmotor , the control devices (key switch or push button) and safety devices (emergency stop, photocells, sensitive edges and flashing light) and then connect the unit as follows:



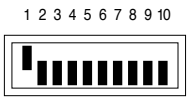
Turn the unit on and check that the input voltage on terminals 1and 2 is 230Vac, and the output voltage on terminals 5 and 6 is 24Vdc; the LEDs on 'active' inputs should be on and the OK LED should blink at 1 second intervals. The OK ENCODER LEDs signal each movement of the gate/door.

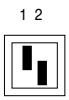
Check movement direction by pressing the CLOSE key twice: if the gate/door opens turn the unit off, turn the MOTOR connector 180° and turn the jumper J8 in the opposite position.

To set up a new installation, or if the control card memory has been cancelled carry out procedures 1 and 2 below:

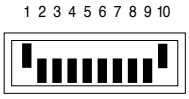
☞ 1) Press the CLOSE key on the card for a moment.

☞ 2) Set the FUNCTIONS and PROGRAMMING dip-switches as indicated and then press the CLOSE key on the card. If dip switch 10 is OFF, point "C" is positioned 5 cm from point "0"; if it is ON, point "C" corresponds to "0".





Switch 10 "OFF" recommended for sliding gates "RO1024"



Switch 10 "ON" recommended for sectional or sliding doors "CR2040"

Wait for the search procedure to finish (slow closing, slow opening ending with quick reclosing)

Set the FUNCTION dip-switches as required with the PROGRAMMING switches both "OFF".

Switches 1-2:	Off Off	= " Hold to run control " functioning mode
	On Off	= "Semiautomatic" functioning mode
	Off On	= "Automatic" functioning mode (Automatic Closing)
	On On	= "Automatic + Close Always" functioning mode
Switch 3	On	= Condominium functioning mode
Switch 4	On	= Cancel STOP in the step-by-step cycle
Switch 5	On	= Preflashing
Switch 6	On	= Flashing also in Pause
Switch 7	On	= Recloses immediately after Photocell (only if in the Automatic functioning mode)
Switch 8	On	= Safety device (Photocell) also in opening
Switch 9	On	= Safety devices (Photocell and Photocell 2) also at the beginning of each movement
Switch 10	On	= Automatic realignment, if required, when power returns

If the automatic mode is selected (Switch 2 "On") Pause Time is preset at 30 seconds. To alter it see Chapter 4.4.

Adjust the CLUTCH trimmer until the required triggering threshold is reached (thrust is increased by turning it clockwise).

1.1) INTRODUCTION:

The electronic card is designed to control either the **"RO1024"** ROBO PLUS actuator model or the **"CR2024"** CLIMBER actuator model which both have a 24 V dc motor. This is a state-of-the-art product: in place of the traditional limit switches, the actuators have an optical position control system that reads the shaft's rotation degrees (ENCODER). This provides the system with the facility for more functions than traditional control methods do. The stop point is reached by slowing down and coming to a halt within only a few millimetres/centimetres from the mechanical stop. Speed is constantly measured during movement and any obstacles in the path of the door/gate is promptly signalled and movement is reversed.

In addition, travel limits can be set very easily using the control cards built-in automatic self-learning procedure.

The most advanced technologies have been used for this product to guarantee maximum immunity against interference, greater flexibility of use and the widest possible range of programmable functions. There are three main functioning modes: "hold to run control", "semiautomatic" and "automatic".

There are also some sophisticated functions like "Reclose immediately after Photocell" and "Always reclose", "Flashing light also in pause", operating functions like "Slow Start" and "Slow Stop" which are standard features, and a sensitive "Brake" that only works if movement has to be stopped quickly.

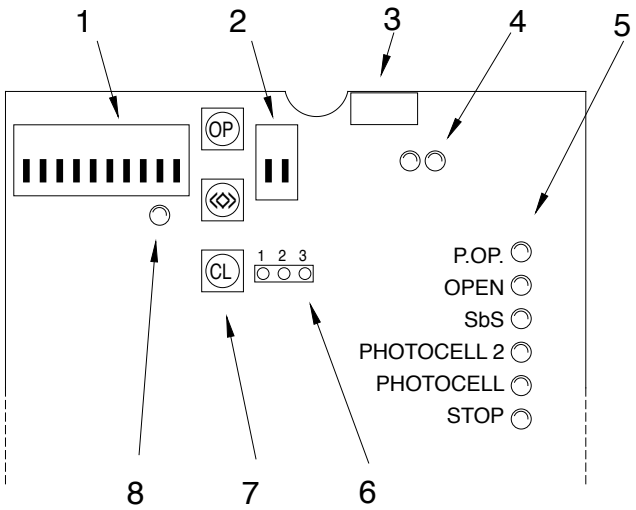
The whole range of **Nice** plug-in radio receivers, **"K"**,**"Bio"** or **"Flo"**, can be fitted to the control card.

1.2) DESCRIPTION OF THE PRODUCT:

READ ALL OF THE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO CARRY INSTALLATION OR SERVICE OF THE EQUIPMENT

Quick reference chart of the most important elements on the control card:

Fig. 1



① Set of dip-switches for FUNCTION selection (Chap. 5.1)

② Set of dip-switches for PROGRAMMING selection (Chap. 4.1)

③ Intelligent clutch adjustment trimmer (Chap. 1.3)

④ LEDs indicating the functioning state of the ENCODER (optical reader) (Chap. 1.4)

⑤ LEDs indicating the functioning state of the control and safety device inputs (Chap. 1.5)

⑥ Tab jumper that sets the encoder for clockwise rotation in opening or vice versa (Chap. 1.6)

⑦ Small push buttons for programming or for the direct control of the unit (Chap. 1.7)

⑧ LEDs that flash at regular intervals signalling correct functioning (Chap. 1.8).

1.3) Encoder

Gate/door movement is detected by a shaft rotation control system that reads the marks on a wheel mounted on the driving shaft. Two LEDs indicate the correct functioning of this reading system: when the shaft is made to turn these LEDs should flash while the marks are being read.

1.4) Intellibent clutch:

The ENCODER is mainly used to control the position of the gate/door during movement. This same system can also read gate/door speed constantly.
By assessing the speed of the motor, the control card can automatically compensate for variations in voltage and take appropriate action if movement is obstructed.
A drop in speed below a given limit (adjustable) would normally indicate that an obstacle is in the way and cause the safety logic on the control board to trigger, however there are also other factors that could cause this drop in speed: a voltage drop would cause the system to trigger and a rise in voltage would provoke greater pressure before the system triggers. For these reasons **Nice** has designed its own "intelligent" clutch system.
During movement the "average speed" is calculated constantly and updated. A percentage reduction (adjustable with the trimmer) is calculated with respect to this speed and this is the triggering limit threshold.
With this method, if there is a drop in voltage for instance, average speed would be slower and, automatically, the triggering threshold would also be lower.
If, during movement, the clutch system triggers, movement will be stopped with the aid of the brake (that removes the residual part of accumulated kinetic energy). If one of the automatic functioning modes is active, a movement in the opposite direction will be started.
However, to increase the level of safety still further, if the clutch triggers three consecutive times without ever reaching the natural end of movement, movement will be stopped without reversal.

1.5) Imputs:

When the unit is first powered up, the indicator lights on active(closed) inputs will turn on indicating that the 24 V d.c. voltage is present. Normally, the LEDs on the safety inputs, PHOTOCELL, PHOTOCELL2 and STOP, are on while those on the command inputs, STEP-BY-STEP, PARTIAL OPENING and TIMER-OPENING, are off.

1.6) Jumper for clockwise and anticlockwise rotation:

It is essential to define the direction of rotation of the motor required for the open and close manoeuvres: PHOTOCELL should trigger mainly in closing, while PHOTOCELL2 mainly in opening. When the gearmotors are made they are set for clockwise rotation of the shaft in opening and anticlockwise in closing. If you wish to change rotation direction you have to reverse the motor connector AND you must also "instruct" the encoder so it will correctly interpret the pulses that reach the optical reading system. This is done via the tag jumper "J8" which should be pulled out turned 180'and plugged back in.

1.7) Small keys:

When the gearmotor is being installed it is often necessary to move the gate/door from one side to the other. This can be done using the three small keys "OP", "CL" and "<<>>": with "OP" you activate gate opening movement, with "CL" you activate gate closing movement and with "<<>>" movement speed is increased in the case of a slow movement phase. The same three keys serve in programming for the memorisation phase.

1.8) "ok" led:

The purpose of the "OK" LED is to signal the correct functioning of the internal logic: regular flashing at 1 second intervals means that the internal microprocessor is active and everything is in order. Fast flashing at 5 second intervals means that the unlock lever is open, that the supply voltage is insufficient or that an incorrect programme has been selected.
When there is a variation in input state or if a dip-switch is moved, the LED will flash twice quickly.

2.1) INSTALLATION INSTRUCTIONS:

When installing the gearmotor follow all the instructions given in the enclosed instruction manual. It is necessary to underline that the gate/door must be equipped with the necessary mechanical travel stops which are essential for the correct functioning of the "Travel limit search" and are required in order to comply with point 5.2.1 of the prEN 12453.

Do not install the gearmotor unless the necessary "Mechanical travel stops" have been installed!

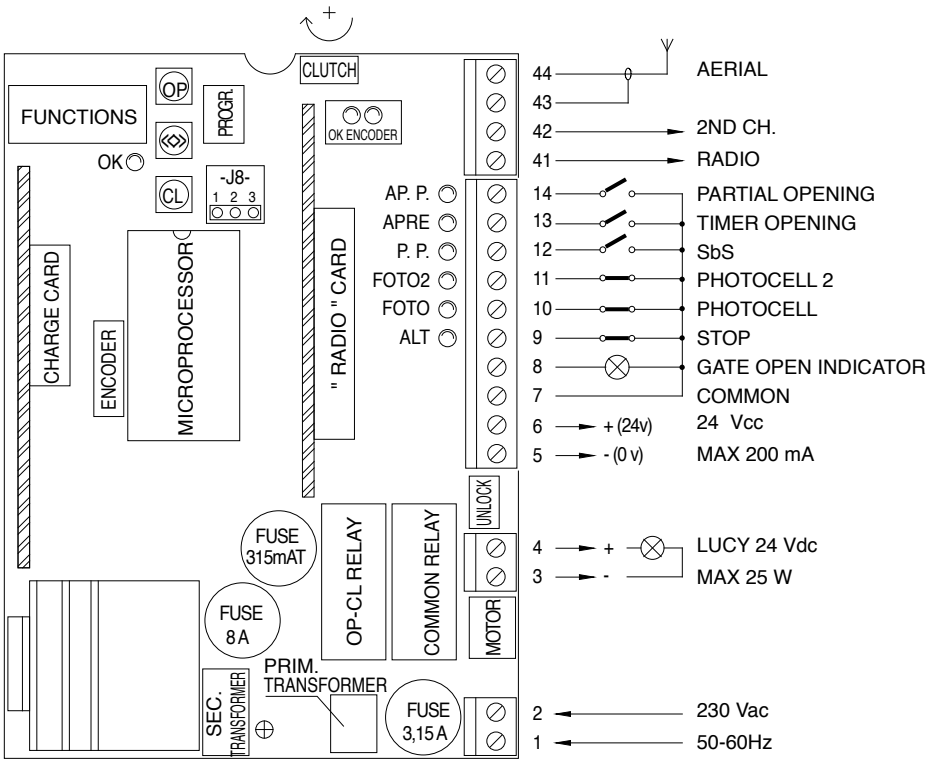
These stopping devices must be able to stop gate/door movement under any conditions; it is advisable to check that the reaching of the mechanical stop point is not cause of a hazard and that the safety margins are always complied with!

Make absolutely sure that the mechanical stop is able to withstand and absorb, without the slightest deformation, all the kinetic energy that has accumulated with the gate/door movement!

Install all the necessary control devices (key switch or push button) and safety devices (emergency stop, photocells, sensitive edges and flashing lights). Now make the necessary electrical connections as described below:

2.2) <u>WIRING DIAGRAM</u>:

Fig. 2



NOTE:
Only qualified personnel must carry out the installation and subsequent maintenance expertly and in total conformity with the machine directive 89/392 and with EN 60204 regarding electrical wiring of machines. Whoever carries out these jobs is held responsible for any damage caused

2.3) <u>DESCRIPTION OF THE CONNECTIONS:</u>

Connections

1-2	: 230 V a.c.	= 230 V a.c. 50/60 Hz
3-4	: Flashing light	= Output for connection to the 24 V d.c. flashing light, maximum lamp power: 25 W
5-6	: 24 V d.c.	= 24 V d.c. output for supplying accessories (Photocell, Radio, etc.) maximum 200 mA
7	: Common	= Common for all inputs (terminal 6 can also be used as the Common)
8	: Gate open Indicator	= 24 V d.c. output for gate/door open indicator light, maximum indicator power 2 W
9	: Stop	= Input with STOP function (Emergency, shutdown or extreme safety)
10	: Photocell	= Input for safety devices (Photocells, pneumatic edges)
11	: Photocell2	= Input for safety devices with triggering in opening (Photocells, pneumatic edges)
12	: Step-by-Step	= Input for cyclic functioning (OPEN STOP CLOSE STOP)
13	: Open-Timer	= Input for opening (which could be timer controlled)
14	: Partial Opening	= Input for partial opening (pedestrian opening)
41-42	: 2nd radio channel	= Output for the second radio receiver channel if existing
43-44	: Aerial	= Input for the radio receiver aerial

The following connections are done in the factory:

PRIMARY TRANS.	= Primary winding of the power transformer
SECOND. TRANS.	= Secondary winding of the power transformer
MOTOR	= Output for 24 V d.c. motor connection
RELEASE	= Microswitch that detects the motor released state (hand manoeuvre)
ENCODER	= Connections to the optical reader that detects shaft rotation

There are an additional two slots for optional cards:

RADIO	= Slot for **Nice** radio receivers
CHARGE	= Slot for battery charger card

2.4) INSTRUCTIONS FOR CONNECTIONS:

Disconnect all power (24V and 230V) before carrying out any work on the system

We recommend waiting until installation is complete, the system tested and correct operation verified before plugging in the optional **RADIO** or **CHARGE** cards. The optional cards are not necessary for the working of the system and if they are used they make troubleshooting more complex.

If the inputs of the NC (Normally Closed) contacts are not used they should be linked out; if there is more than one then they should be placed in SERIES with one another; if the inputs of the NO (Normally Open) contacts are not used they should be left free. The inputs must be of the voltage free mechanical type; DO NOT USE Open Collector type inputs ("PNP", "NPN" etc.).

A) Carry out the necessary connections, following the diagram in Fig. 1; remember that there are specific standards that must be complied with both as regards the safety of the electrical systems and as regards automatic doors and gates.

B) Power the door/gate and position it halfway, turn power off. It is now free to be opened or closed.

Do not power the gearmotor unless the necessary "Mechanical travel stops" have been installed!

C) Power the unit, checking immediately that a voltage of 230 V a.c. reaches terminals 1-2 and a voltage of 24 V d.c. reaches terminals 5-6. As soon as the unit is powered the indicator lights (LEDs) on the active inputs should turn on and shortly after the "OK" LED should start flashing regularly. If none of this happens, turn power off immediately and check the connections more carefully.

The "OK" LED in the centre of the card has the job of signalling the state of the internal logic: regular flashing at 1 second intervals means that the internal microprocessor is active and waiting for commands. When the microprocessor recognises a variation in the state of an input (whether it is a command or function Switch input) it generates a quick double flash even if the variation does not have any immediate effect. Quick flashing at 5 second intervals means that the release lever is open, the power voltage is insufficient or an incorrect programme has been selected (see Chapter 4.1).

D) Now check that the LEDs relative to the NC contacts are on (all safety devices active) and that the LEDs relative to the NO inputs are off (no command present); if this is not the case, check connections and effectiveness of the various devices.

E) Check that all the unit's safety devices are in proper working order (emergency stop, photocells, pneumatic edges, etc.): each time they trigger the relative STOP, PHOTO or PHOTO2 LEDs, should turn off.

Do not move the gearmotor unless the necessary "Mechanical travel stops" have been installed!

F) The last thing to do is to check if movement is in the right direction. In the factory all the gearmotors are set for clockwise rotation of the shaft in opening and anticlockwise in closing. To check that this is so, just press the small "CLOSE" key and see whether or not the gate/door moves in the closing direction.

Whether the direction of movement is right or not, it is advisable to stop the manoeuvre immediately by pressing the small "CLOSE" key again.
Now, if movement was not in the direction it should be then proceed as follows:

1 - Turn power off

2 - Unplug the "MOTOR" connector and plug it back in after having turned it 180°

3 - Unplug the jumper on the connector, "J8", turn it 180'and plug it back into the symmetrically opposite position

Once you have done this it is advisable to try movement again to see if the direction is correct, repeating the procedure in paragraph "F".

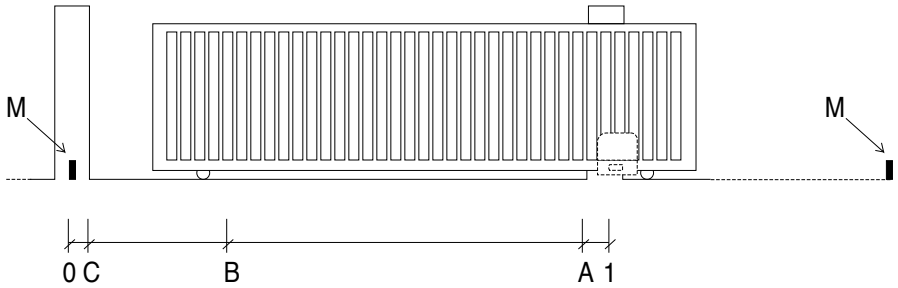
NOTE:
When movement is reversed then all three operations described above must be carried out., If you turn the "MOTOR" connector but you do not move the "J8" jumper, an error will be generated in the shaft rotation reading system (the gearmotor is controlled in the opening phase but the system reads a movement in the closing phase) and in this case any attempt to move is stopped straight away. This situation can be seen by means of the two "Ok-Encoder" LEDs that blink briefly after which the motor stops immediately.

3.1) TRAVEL LIMITS:

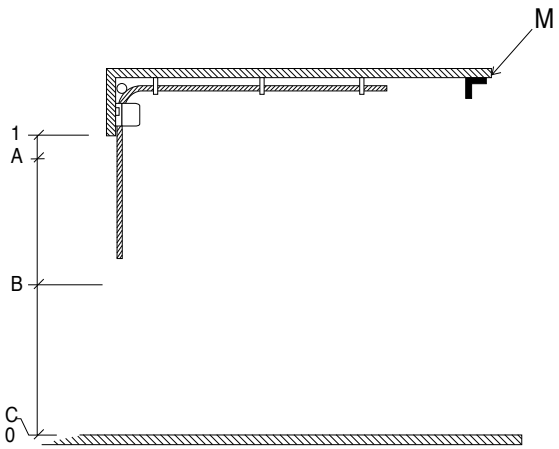
Once you have reached this point of the installation you can now set the travel limits within which the gate/door can move. As described in the introduction (Chapter 1.1), the gearmotor has a gate/door position control system that optically reads the shaft's rotation degrees, controlling it all the time.
Of course the internal logic has to be instructed as to the distances within which movement must occur; these distances are shown in the diagram in Fig. 3 as well as a description of their meaning.

Fig. 3

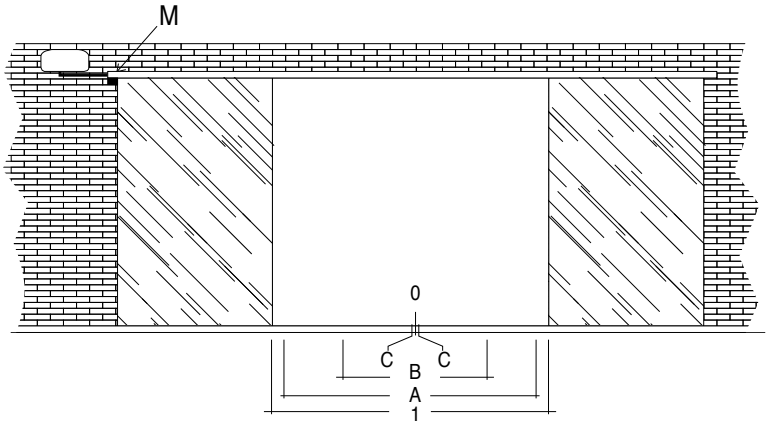
"RO1024" SLIDING GATE



"CR2024" SECTIONAL DOOR



"CR2024" 2-WING SLIDING DOOR



"0"= Mechanical Stop in CLOSING (corresponding to item M)
"C"= Desired CLOSING point
"B"= Desired PARTIAL OPENING point
"A"= Desired OPENING point
"1"= Mechanical Stop in OPENING (corresponding to item M)

All these distances are stored in a permanent memory on the control card during the programming phase. It is also possible to programme these distances "manually" one by one so you can make the gate/door stop in exactly the places you want. To simplify the programming there is a completely automatic programming phase.

If the gearmotor has never been installed before there will be no valid distances memorised so normal gate/door movement will be impossible; in this case the first command that reaches the inputs or if the "CLOSE" key is pressed, an "initial limits search" procedure will be activated immediately.

Do not activate the "initial limits search" unless the necessary "Mechanical travel stops" have been installed!

3.2) INITIAL LIMITS SEARCH:

The "initial limits search" procedure is extremely easy, entailing only these two phases:

1) Power the unit and make sure that all the safety devices are active and effective.
2) It is advisable to power on the gearmotor and bring the gate 50-100 cm from the mechanical stop in closing and then power off; in this way the "initial limits search" will be quicker.
3) Briefly press the small "CLOSE" key on the control card.

The motor will now move the gate/door slowly in the closing direction until point “0” is detected (mechanical stop that defines the maximum closing point). Once point “0” is reached the gate/door stops, causing the intelligent clutch system to work (see Chapter 1.3) and the close mechanical stop point detected by the encoder will be used to reset the “distance counter”. Immediately after, the gearmotor will move the gate/door slowly in the opening direction until point “1” is detected (the other mechanical stop that defines the maximum opening point); when point “1” is reached, the gate/door stops and the distance is memorised.

The maximum travel limits have been measured with these two operations. With a mathematical operation point “C” is calculated which is set, if used like RO1024 (with switch 10 in the OFF position) 5 centimetres from point “0”.
Point “A” is set a few centimetres before point “1” and, lastly, point “B” is set, in the case of CR2024, halfway between points “0” and “1” while in the case of RO1024, 1 metre from point “C”.

Now all the distances are memorised and finally the gate/door will move quickly until it reaches point “C”.

4) the “initial limits search” procedure is now completed. Set the function dip-switches in the mode required and the gearmotor is ready to use

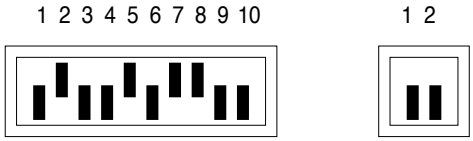
As the procedure described memorises the distances that have just been measured automatically, no other operations are necessary.

If, during the “initial limits search”, an external event occurs (another small key is pressed, the Photocell triggers or there is a Step-by-Step pulse) gate movement will be stopped immediately, and the operation must be repeated from point (3).
Subsequent to an initial search, if you wish to, you can modify any of the distances measured (except for distance 0) by means of the manual search.

4.1) PROGRAMMING:

As an alternative to the “initial limits search” which only takes place if the gearmotor has never been installed before, it is possible, at any time, to activate an “automatic limit search” or to directly establish each single position by manual programming.

The various phases and the specific parameter to programme are selected with two sets of Dip-Switches on the card which are called, respectively, “FUNCTIONS” and “PROGR.”.



PROGR.: It activates the various possible programmes. In the normal functioning mode the two dip-switches must be in the “OFF” position

FUNCTIONS: In “normal” use it is used to set the functioning modes required
In the programming phase it is used to select which parameter to memorise

In the gearmotor’s normal functioning mode the “PROG.” dip-switches must be turned “OFF” and the functioning modes can be selected with the “FUNCTIONS” dip-switches. If one of the “PROG.” dip-switches is turned “ON” the programming phase is entered and the “FUNCTIONS” dip-switches will be used to select the parameter to be memorised. If the programming phase is active and an incorrect parameter is selected with the “FUNCTIONS” dip-switch, the “OK” LED will start flashing quickly.

4.2) MEMORISING THE PARAMETERS:

The manual parameter programming phases end when what has been selected has been memorised. You will find that the “Memorising procedure” will be referred to several times in the following chapters, in these cases it is necessary to carry out the following procedure:
Memorising Procedure

☞ **1)** Press the blue coloured “<<>>” key for at least 2 seconds
(the OK LED will flash quickly)

2) Take your finger off the “<<>>” key
(the OK LED will flash quickly for 3 seconds -Whilst it is flashing proceed quickly to the next stage ...)

☞☞ **3)** Press the two small yellow keys “A” and “C” simultaneously for an instant
The OK LED will stay on for 2 seconds to confirm correct memorising.

👌 At this point the parameter selected has been permanently memorised.

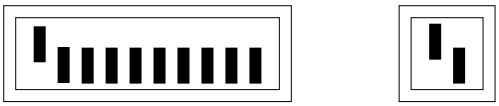
4.3) MANUALLY PROGRAMMING THE DISTANCES:

All the distances described in the previous chapter can be programmed manually:

4.3.1) Automatic limits search (all gate/door limits):

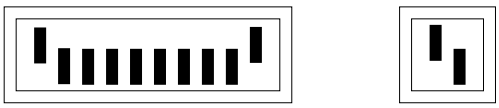
An “automatic limits search” is carried out which is identical to the “initial limits search” except that the former can be activated at any time even if the gearmotor is already installed and the memory has correct distance values stored

1 2 3 4 5 6 7 8 9 10 1 2



USE AS FOR AN “RO1024” SLIDING GATE

1 2 3 4 5 6 7 8 9 10 1 2



USE AS FOR A “CR2040” SECTIONAL OR SLIDING DOOR

1) Set the dip-switches as indicated; in this way the “automatic limits search” is selected.
If dip-switch 10 is OFF point “C” is positioned 5 cm from point “0”, if it is ON point “C” corresponds to “0”.

☞ **2)** Briefly press the “CLOSE” key on the control card.

3) Wait until the search procedure has terminated (slow closing, slow opening and, lastly, fast reclosing)

4) Now that the “automatic limits search” is terminated, turn the programming switches “OFF”, set the function dip-switches on the mode required and the gearmotor is ready to use.

All the distances measured with the above procedure are memorised automatically.
Subsequent to an automatic search, if you wish to, you can modify any of the distances measured (except for distance 0) by means of the manual search.

4.3.2) Manual search for distance “0” (Mechanical Stop in CLOSING):

The “manual search for distance 0” is carried out with this procedure, that is, you programme the maximum closing point.

1 2 3 4 5 6 7 8 9 10 1 2

1) Set the dip-switches as indicated; in this way the “manual search for distance 0” is selected.

☞ **2)** Press the “CLOSE” key on the card to move the gate/door in the closing phase until the mechanical stop is reached

3) If you want, besides the “CLOSE” key, you can also press the “<<>>” key to accelerate movement.

4) When the gate/door has reached the mechanical stop, the distance has been measured so you can then proceed to memorisation.

With this procedure the maximum closing point has been found and memorised; this measurement is fundamental because all other measurements start from this point.

4.3.3) Manual search for distance “C” (Stopping point wanted in CLOSING):

The “manual search for distance C” is carried out with this procedure, that is, you programme the closing point you want; this is the point at which the gate/door stops in the closing manoeuvre. When using like RO1024, this distance is normally set a few centimetres from the mechanical stop in closing while in the case of using as CR2024, it is normally set a few millimetres from the mechanical stop device. Obviously this distance must always be more than distance “0”.

1 2 3 4 5 6 7 8 9 10 1 2

1) Set the dip-switches as indicated; in this way the “manual search for distance C” is selected.

☞ **2)** Press the keys “OPEN” or “CLOSE” to open or close the gate/door until it reaches the point wanted.

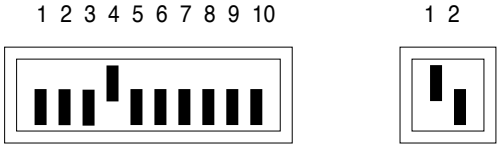
3) Movement can also be accelerated by pressing the “<<>>” key.

4) When the gate/door has reached the point wanted the distance has been measured so you can then proceed to memorisation.

With this procedure the closing point required has been measured and memorised.

4.3.4) <u>Manual search for distance "B"</u> (Stopping point wanted in PARTIAL OPENING):

With the "manual search for distance "B" you can programme the point wanted for partial opening; the distance is the point at which the gate/door stops when it receives a partial opening command. It is normally at an intermediate point between "A" and "C".



1) Set the dip-switches as indicated; in this way the "manual search for distance B" is selected.

☞ **2)** Press the "OPEN" or "CLOSE" keys to open or close the gate/door until it reaches the point wanted.

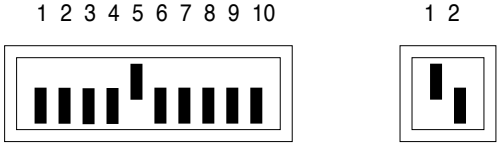
3) Movement can also be accelerated by pressing the "<<>>" key.

4) When the gate/door has reached the point wanted the distance has been measured so you can then proceed to memorisation.

When the gate has reached the point wanted the distance has been measured so you can then proceed to memorisation.

4.3.5) <u>Manual search for distance "A"</u> (Stopping point wanted in OPENING):

By means of the "manual search for distance A" you can programme the point wanted for opening; the distance is the point at which the gate/door stops in opening. This distance must always be greater than "B".



1) Set the dip-switches as indicated; in this way the "manual search for distance A" is selected.

☞ **2)** Press the "OPEN" or "CLOSE" keys to open or close the gate/door until it reaches the point wanted.

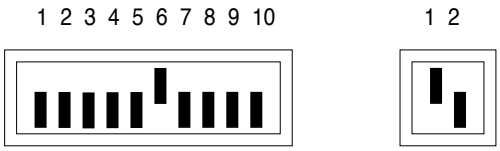
3) Movement can also be accelerated by pressing the "<<>>" key.

4) When the gate/door has reached the point wanted the distance has been measured so you can then proceed to memorisation.

With this procedure the opening point required has been measured and memorised.

4.3.6) <u>Manual search for distance "1"</u> (Mechanical stop in OPENING):

By means of the "manual search for distance 1" you measure the maximum opening point; the distance is the opening point beyond which the gate/door can go no further. This distance must always be greater than distance "A".



1) Set the dip-switches as indicated; in this way the "manual search for distance 1" is selected

☞ **2)** Press the "OPEN" key to open the gate/door, until it reaches the mechanical stop in opening.

3) Movement can also be accelerated by pressing the "<<>>" key.

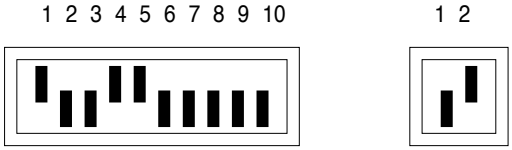
4) When the gate/door has reached the maximum opening point you can proceed to memorisation.

With this procedure the opening point beyond which the gate/door can go no further has been measured and memorised.

4.4) PROGRAMMING PAUSE TIME:

When the automatic closing function (see Chapter 5.1) is selected with the specific dip-switch a timer is activated that controls the “Pause Time”, following an opening manoeuvre. When this time has elapsed a closing manoeuvre is automatically activated. If this time has never been programmed it is set at 30 seconds but any time value can be selected, from 1 to 1023 seconds (about 17 minutes) by means of a specific procedure.

Proceed as follows to set “Pause Time”:



1) Set the 2-way dip-switches as indicated; in this way “Pause Time Programming” is selected.

2) Select the time wanted with the 10-way dip-switch:

Dip 1 On	= 1 Second
Dip 2 On	= 2 Seconds
Dip 3 On	= 4 “
Dip 4 On	= 8 “
Dip 5 On	= 16 “
Dip 6 On	= 32 “
Dip 7 On	= 64 “
Dip 8 On	= 128 “
Dip 9 On	= 256 “
Dip 10 On	= 512 “

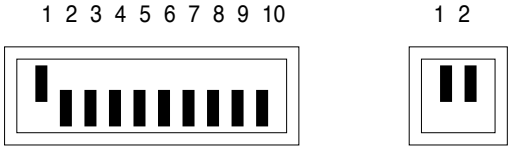
So if you want a pause time of, let’s say, 25 seconds turn dip-switches 5, 4 and 1 ON (the sum of 16+8+1=25).

3) Once you have selected the time you can proceed to memorisation.

“Pause Time” for automatic manoeuvres is memorised with this procedure.

4.5) CANCELLING THE MEMORY:

All the programmable parameters are stored on a permanent memory on the card; it could happen that you need to cancel all what is stored in one go and to do this you have to proceed as follows:



1) Set the dip-switches as indicated; in this way “Cancelling the Memory” is selected.

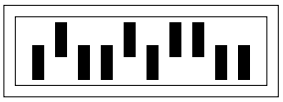
2) Now proceed to memorisation which, in this case, confirms cancellation.

With this operation all the parameters contained in the memory are cancelled. ATTENTION! with the memory reset it is as if the gearmotor has never been installed so it will be impossible to move the gate/door normally; in this case, the first command to reach the inputs when the “CLOSE” key is pressed will immediately activate an “initial distances search” procedure.

5.1) SELECTABLE FUNCTIONS:

The FUNCTIONS dip-switch lets you select the various possible functioning modes and to enable the functions you want.

1 2 3 4 5 6 7 8 9 10



Switches 1-2:	Off Off	= “Hold to Run Control” Functioning
	On Off	= “Semiautomatic” Functioning
	Off On	= “Automatic” functioning (Automatic Closing)
	On On	= “Automatic+Always Closes” functioning
Switch 3	On	= Condominium functioning
Switch 4	On	= Cancels STOP in the Step-by-Step cycle
Switch 5	On	= Preflashing
Switch 6	On	= Flashing also in Pause
Switch 7	On	= Recloses straight after Photocell (only if on Automatic)
Switch 8	On	= Safety (Photocell) also in opening
Switch 9	On	= Safety (Photocell+Photocell2) also at the beginning of each movement
Switch 10	On	= Automatic realignment, if required, when power comes back

For any switch that is OFF the corresponding function will not be activated.

Switches 1-2:	Off Off	= “Hold to Run Control” Functioning
	On Off	= “Semiautomatic” Functioning
	Off On	= “Automatic” functioning (Automatic Closing)
	On On	= “Automatic+Always Closes” functioning

When in the “Hold to run” functioning mode, the gate/door will only move for as long as the key is pressed down.
In the “Semiautomatic” mode one command pulse will cause the gate/door to carry out a movement in one direction only, until it reaches the set distance. In the “Automatic” functioning mode, an opening is followed by a pause time and then a closing manoeuvre.

The “Always Closes” function will, subsequent to a temporary power cut when the gate/door is open, cause a closing manoeuvre to start automatically preceded by 5 seconds of preflashing.

Switch 3: On = Condominium function

In the Condominium functioning mode, once an opening manoeuvre has started, for instance with a Step-by-Step pulse, this movement cannot be interrupted by any other command pulses until the gate/door has finished opening. During a closing manoeuvre, a new command pulse will stop the gate/door and reverse direction, opening it..

Switch 4: On = Cancels STOP in the Step-by-Step cycle

The Step-by-Step cycle is normally: OPEN-STOP-CLOSE-STOP; in this functioning mode the Step-by-Step cycle becomes: OPEN-CLOSE-OPEN.

Switch 5: On = Preflashing

With a command pulse, flashing is activated first and after 5 seconds (2 seconds if on manual) movement starts.

Switch 6: On = Flashing also in Pause

The flashing light is normally activated only during the opening and closing manoeuvres; this function means that the flashing light remains active also during the Pause Time to signal the “closing soon” condition.

Switch 7: On = Recloses straight after Photocell (only if on Automatic: Sw 2 = ON)

With this function the gate/door can be kept open only for the length of time needed for transit; it will always close automatically 5 seconds after the last object has passed by the “Photocell”, irrespective of the programmed Pause Time.

Switch 8: On = Safety (Photocell) also in opening

As a rule the safety “Photocell” only triggers in the closing cycle; if switch n° 8 is turned “ON”, triggering will cause the gate/door to stop even in the opening phase; if on Semiautomatic or Automatic, movement will start again, in opening, immediately after the last object has passed by the Photocell

Switch 9: On = Safety (Photocell+Photocell2) also at the beginning of each movement

Usually the safety “Photocell” triggers only during the closing manoeuvre and “Photocell2” only during the opening manoeuvre. If you wish to increase the level of safety it is possible to programme the system to check that the safety devices “PHOTOCELL” and “PHOTOCELL2”are clear before movement can start.

Switch 10: On = Automatic realignment, if required, when power returns

When there is a power cut and the gate/door is without power, the gate/door position reading system loses the distance; in such circumstances the “Realignment” procedure has been designed that will search for point “C” again. The realignment procedure is normally carried out when power returns, when the first command pulse is received. With dip-switch n° 10 “ON” realignment occurs as soon as power returns, without waiting from any command pulse

6.1) FUNCTIONING TESTS:

After the connections have been checked and verified (Chapter 2.4), and the travel limits programming phase has been carried out (Chapter 3.2 or 4.3.1), it is possible to test actuator movement. We suggest you work in the “hold to run control” functioning mode with all the functions deactivated (all switches OFF); in all cases, in the “hold to run control” mode, by releasing the command key, the motor stops immediately. If you use the Step-by-Step input command the first movement (after turning on) will be an opening manoeuvre. In this phase you will find it extremely easy to use the small keys “OP”, “CL” on the card. By means of the command inputs, move the gate/door up to the point of opening “A” wanted. About 20 cm before the stop position, the “slowing” phase must come into play so the gate/door reaches the stop position at a speed reduced by about 30%. Now carry out a closing manoeuvre up to the point of closing “C” you want. Here too, the slowing down phase should start 20 cm before the stopping point. Now test triggering of the safety devices: PHOTOCELL in the opening phase has no effect; in the closing phase it will stop movement; PHOTOCELL2 has no effect in the closing phase; in the opening phase it will stop movement. The devices connected to the STOP input act both in the opening and closing manoeuvres, stopping movement.

The recent European standards, prEN 12453: safety in using motorised doors - requirements and classifications; prEN 12445: safety in using motorised doors - testing methods; (not yet approved but they will be in 1998), require the use of measurements so as to limit the forces involved in moving automatic doors, equal to a maximum of 1400N as the force of impact and a maximum residual static force of 150N that must be cancelled out within 5 seconds from impact. The **FRIZZ** (clutch) trimmer is on the card and is used to establish the clutch’s intervention threshold.

As described in Chapter 1.4, the intelligent clutch system calculates to find the average movement speed so it can intervene with greater precision. To evaluate the effect the adjustment has on the trimmer it is best to wait for movement to start and for the gate/door to reach standard speed. Also ensure for safety reasons, that if the clutch intervenes three times in a row, movement is stopped without any reversal.

If the automatic functioning mode is selected, at the end of the opening manoeuvre there is a “pause time” followed automatically by a closing manoeuvre. Pause time, if not programmed, will be 30 seconds

The pause will also be activated in the semiautomatic movement phase when, in closing, the triggering of a safety device or the intelligent clutch, causes a reversal in opening.

Only now, when all the adjustments have been made and with the electricity off, do we advise you to connect the radio receiver.

6.2) DESCRIPTION OF THE FUNCTIONING MODES:

In the “hold to run control” functioning mode the OPEN-TIMER input allows movement up to the opening point wanted; the PAR-OPEN input allows movement up to the partial opening point; STEP-BY-STEP allows alternative opening and closing manoeuvres; as soon as the command in input stops, movement stops. In the opening phase the gate/door will stop in the set position or if PHOTOCELL2 is interrupted; in the closing phase movement will stop if the PHOTOCELL input is interrupted. An action on STOP will cause movement to stop immediately both in opening and closing. Once movement has stopped the command in input has to be stopped too before any new movements can be started

In any of the automatic functioning modes (semiautomatic-automatic and closes always) a command on the OPEN-TIMER input will cause an opening manoeuvre; if the command persists after the gate has opened, movement remains “frozen” in an infinite pause; only when the command stops will the gate/door be able to close. Command pulses on the PAR-OPEN input will cause an opening manoeuvre only up to the partial opening point. A pulse on the STEP-BY-STEP causes alternative opening and closing manoeuvres. A second pulse on the STEP-BY-STEP or on the same input that started the movement, will cause a Stop.

STOP will cause movement to stop immediately both in opening and closing.

If in a command input there is a continuous signal instead of a pulse, it will cause a “priority” state which means all the other command inputs remain disabled (useful to connect a timer or Night-Day selector).

If the automatic functioning mode is being used, subsequent to an opening manoeuvre there will be a pause time followed by a closing manoeuvre. If, during the pause the PHOTO triggers, the timer will be reset with a new time; if, on the other hand, a STOP intervenes during the pause, the reclosing function is cancelled and there will be a STOP condition.

Triggering of the PHOTOCELL has no effect in an opening manoeuvre while PHOTOCELL2 causes reversal of direction. In a closing manoeuvre triggering of the PHOTOCELL will reverse the direction followed by a new pause and then a closing manoeuvre. If, at the beginning of an opening manoeuvre, the PHOTOCELL input is not clear, the request to open is cancelled.

7.1) "CHARGE" CARD also battery powered

The unit is equipped with a power transformer that can provide the motor's power requirement and that of the electronic card so it can all be powered directly by the mains.

If you want the system to continue working in the case of a power cut then you have to add a suitable battery and the relative battery charger card.

Due to the size of the battery it must be installed externally to the motor unit and connected to two terminals on the battery charger card; the latter must be connected to the connector on the unit.

8) MAINTENANCE:

The card, being electronic, needs no particular maintenance. However check periodically, at least twice a year, the perfect efficiency and adjustment of the device that controls maximum motor force and, if required, adjust with the trimmer.
Check effectiveness of the safety devices (photoelectric cells, pneumatic edges, etc.) and correct functioning of the flashing light.

TECHNICAL FEATURES OF THE UNIT:

Mains power	: 230 Vac ±10% , 50 - 60 Hz
Battery power	: 21 ÷ 28 Vdc (> 6Ah capacity)
Max. Access: current 24 Vdc	: 200 mA
Max. flashing light power	: 25 W (24 Vdc)
Max gate-open power indicator	: 2 W (24 Vdc)
Pause time	: from 1 to 1023 seconds
Encoder resolution	: 4.73 degrees (76 pulses/rev)
Working temperature	: -20 ÷ 70 °C