

LEO

D80000 00-00-99 Vers. 00



CONTROL UNIT FOR ICARO



Thank you for buying this product, our company is sure that you will be more than satisfied with its performance.

This product is supplied with an "Instruction Manual" which should be read carefully as it provides important information about safety, installation, operation and maintenance.

This product complies with recognised technical standards and safety regulations. We declare that it is in conformity with the following European Directives: 89/336/EEC, 73/23/EEC and subsequent amendments.

1) GENERAL SAFETY

WARNING! An incorrect installation or improper use of the product can cause damage to persons, animals or things.

- The "Warnings" leaflet and "Instruction booklet" supplied with this product should be read carefully as they provide important information about safety, installation, use and maintenance.
- Scrap packing materials (plastic, cardboard, polystyrene etc) according to the provisions set out by current standards. Keep nylon or polystyrene bags out of children's reach.
- Keep the instructions together with the technical brochure for future reference.
- This product was exclusively designed and manufactured for the use specified in the present documentation. Any other use not specified in this documentation could damage the product and be dangerous.
- The Company declines all responsibility for any consequences resulting from improper use of the product, or use which is different from that expected and specified in the present documentation.
- Do not install the product in explosive atmosphere.
- The construction components of this product must comply with the following European Directives: 89/336/CEE, 73/23/EEC, 98/37/EEC and subsequent amendments. As for all non-EEC countries, the above-mentioned standards as well as the current national standards should be respected in order to achieve a good safety level.
- The Company declines all responsibility for any consequences resulting from failure to observe Good Technical Practice when constructing closing structures (door, gates etc.), as well as from any deformation which might occur during use.
- The installation must comply with the provisions set out by the following European Directives: 89/336/CEE, 73/23/EEC, 98/37/EEC and subsequent amendments.
- Disconnect the electrical power supply before carrying out any work on the installation. Also disconnect any buffer batteries, if fitted.
- Fit an omnipolar or magnetothermal switch on the mains power supply, having a contact opening distance equal to or greater than 3mm.
- Check that a differential switch with a 0.03A threshold is fitted just before the power supply mains.
- Check that earthing is carried out correctly: connect all metal parts for closure (doors, gates etc.) and all system components provided with an earth terminal.
- Fit all the safety devices (photocells, electric edges etc.) which are needed to protect the area from any danger caused by squashing, conveying and shearing.
- Position at least one luminous signal indication device (blinker) where it can be easily seen, and fix a Warning sign to the structure.
- The Company declines all responsibility with respect to the automation safety and correct operation when other manufacturers' components are used.
- Only use original parts for any maintenance or repair operation.
- Do not modify the automation components, unless explicitly authorised by the company.
- Instruct the product user about the control systems provided and the manual opening operation in case of emergency.
- Do not allow persons or children to remain in the automation operation area.
- Keep radio control or other control devices out of children's reach, in order to avoid unintentional automation activation.
- The user must avoid any attempt to carry out work or repair on the automation system, and always request the assistance of qualified personnel.
- Anything which is not expressly provided for in the present instructions, is not allowed.

2) GENERAL OUTLINE

The LEO control panel is supplied by the manufacturer with standard setting. Any alteration must be set by means of the incorporated display programmer or by means of UNIPRO. The Control unit completely supports the EELINK protocol, including the programmer self-supply from the control unit.

It is available in two versions: one for external installation, inside the SD box, the other fitted and pre-wired inside the ICARO controller.

Its main characteristics are:

- Electronic torque setting
- Adjustable electrodynamic braking
- Closing / opening limit-switch inputs
- Separate inputs for safety devices
- Clock input
- Serial protocol connection input
- Incorporated radio receiver

The board is provided with a terminal board which can be pulled out for easier maintenance or replacement. The board is supplied with a series of pre-wired jumpers to facilitate the installer's work.

The jumpers relate to the following terminals: 21-23, 21-24 and 21-30. If the above-mentioned terminals are in use, remove their respective jumpers.

3) TECHNICAL SPECIFICATIONS

Power supply: 230V±10% 50Hz*
 Mains/low voltage insulation: > 2MΩ 500Vdc
 Dielectric strength: mains/low voltage 3750Vac for 1 minute
 Motor output current: 1.5Amax
 Maximum motor power: 750W
 Supply to accessories: 24Vac (1A max absorption)
 Gate-open warning light: 24Vac 3W max
 Blinker: 230V 40W max
 Dimensions: see figure 1
 Fuses: see figure 2
 (* other voltages available on request)

4) TERMINAL BOARD CONNECTIONS (Fig.3)

WARNING – During the wiring and installation operations, refer to the current standards as well as principles of good technical practice.

The cables must be tied by additional fastening next to the terminals, by means of clips for example.

All the operator wiring operations must be carried out by qualified personnel.

JP1

1 $\frac{\perp}{\perp}$ GND terminal
 2-3 Single-phase mains supply 230V±10% 50Hz (2=N) (3=L)

JP2

4-5 Blinker connection (mains voltage) 40W Max.
 6-7-8-9 Motor connection:
 6 operation 1 + capacitor
 7 common (blue)
 8 operation 2
 9 capacitor

JP3

10-11 Output 24V~ 1A max – power supply for photocells or other devices.
 12-13 Gate-open warning light output (24V 3W max)

JP5

Encoder connection
WARNING! The maximum length of the connection cable of the encoder should not exceed 3.00 mt.

JP8

21-22 Open-Close button (N.O. Start), key selector.
 21-23 Block button (N.C. Stop). If not used, leave jumped.
 21-24 Photocell input (N.C.). If not used, leave jumped.
 21-25 Opening limit switch connection (N.C. SWO). If not used, leave jumped.
 21-26 Closing limit switch connection (N.C. SWC). If not used, leave jumped.
 21-27 Pedestrian button connection (N.O. Ped)
 21-28 Open-Button connection (N.O. Open)
 21-29 Close-Button connection (N.O. Close)
 21-30 Rubber edge connection (N.C.). If not used, leave jumped.
 21-31 Timer input connection (N.O.). If the contact is open the leaves close and the gate is ready for normal operation. If the contact is closed (N.C.), the leaves open and remain open until the contact is opened.

JP9

34 TX1 serial output
 35 TX2 serial output
 36 RX1 serial input
 37 RX2 serial input
 38-39 Antenna input for snap-in radio receiver board (38 signal - 39 braid). Cable RG58
 40-41 Second radio channel output of twin-channel receiver board

5) PROGRAMMING

The control panel provided with a microprocessor is supplied with function parameters preset by the manufacturer, suitable for standard installations. The predefined parameters can be altered by means of either the incorporated display programmer or UNIPRO.

In the case where programming is carried out by means of UNIPRO, carefully read the instructions relating to UNIPRO, and proceed in the following way.

Connect the UNIPRO programmer to the control unit through the UNIFLAT accessory (See fig. 5). Enter the "CONTROL UNITS" menu, and the "PARAMETERS" submenu, then scroll the display screenfuls using the up/down arrows, and set the numerical values of the parameters listed below. For the function logics, refer to the "LOGIC" submenu.

In the case where programming is carried out by means of the incorporated programmer, refer to Fig. A and B and to the "configuration" paragraph.

6) CONFIGURATION

The display programmer is used to set all the LEO control panel functions. The programmer is provided with three pushbuttons for menu scrolling and function parameter configurations (Fig. 2):

- + menu scrolling/value increment key
- menu scrolling/value reduction key

OK Enter (confirm) key

The simultaneous pressure of the + and – keys is used to exit the active menu and move to the preceding menu.

If the + and – keys are pressed simultaneously at the main menu level (parameters, logics, radio, language, autoselection, self-diagnosis), programming is exited and the display is switched off (the OK message is displayed).

The modifications made are only set if the OK key is subsequently pressed. When the OK key is pressed for the first time, the programming mode is entered.

The following pieces of information appear on the display at first:

- Display Software version
- Control unit Software version
- Number of total manoeuvres carried out (the value is expressed in thousands, therefore the display constantly shows 0000 during the first thousand manoeuvres)
- Number of manoeuvres carried out since the latest maintenance operation (the value is expressed in thousands, therefore the display constantly shows 0000 during the first thousand manoeuvres)
- Number of memorised radio control devices.

When the OK key is pressed during the initial presentation phase, the first menu (parameters) can be accessed directly.

Here follows a list of the main menus and the respective submenus available.

The predefined parameter is shown between square brackets [0].

The writing appearing on the display is indicated between round brackets. Refer to Figures A and B for the control unit configuration procedure.

6.1) Parameter Menu (PRRrRr)

1- Pedestrian opening (P_t PE_d) [001.0 m]

Set the numerical value of the pedestrian opening from 10 cm (000.1) to 6m (006.0).

2- Automatic Closing Time (TCA) (t_{cR}) [40s]

Set the numerical value of the automatic closing time from 1 to 180 seconds.

3- Encoder (EncodEr) [80]

Set the encoder sensitivity value from 1 to 99. A higher value corresponds to greater sensitivity, whereas a lower value corresponds to lesser sensitivity.

 **WARNING: Check that the impact force value measured at the points established by the EN 12445 standard is lower than that specified in the EN 12453 standard.**

 **Incorrect sensitivity setting can cause injuries to persons or animals, or damage to things.**

4- Opening torque (oPE_n t_{oR}qUE) [50%]

Set the motor opening torque value between 1% and 99%.

5- Closing torque (cL5. t_{oR}qUE) [50%]

Set the motor closing torque value between 1% and 99%.

6- Brake (brRHE) [0%]

Set the required brake value between 0 and 99%, compatibly with the weight of the gate and the existing stresses.

7- Zone (ZonE) [0]

Set the zone number between a minimum value of 0 and a maximum value of 127. See paragraph 7 on "Serial connection".

6.2) Logic Menu (LoG ic.)

- TCA (t_{cR}) [ON]

ON Activates automatic closing

OFF Excludes automatic closing

- 3 Steps (3 StEP) [OFF]

ON Enables 3-step logic. A start impulse has the following effects:

door closed: opens

on opening: stops and enters TCA (if configured)

door open: closes

on closing: stops and reverses movement

after stopping: opens

OFF Disables 3-step logic

- Opening Impulse lock (i_{bl} oPE_n) [OFF]

ON The Start impulse has no effect during the opening phase.

OFF The Start impulse becomes effective during the opening phase.

- Impulse lock TCA (i_{bl} t_{cR}) [OFF]

ON The Start impulse has no effect during the TCA dwell period.

OFF The Start impulse becomes effective during the TCA dwell period.

- Pre alarm (PrE-RLRrR) [OFF]

ON The blinker comes on about 3 seconds before the motor starts.

OFF The blinker comes on at the same time as the motor starts.

- Hold-to-run (hoLd-t_o-r_un) [OFF]

ON Hold-to-run operation: the manoeuvre continues as long as the command key is kept pressed.

OFF Impulse operation: one impulse opens the gate if closed, and closes it if open.

- Rapid closing (FR5t cL5) [OFF]

ON Closes the gate after photocell disengagement, before waiting for the end of the TCA (automatic closing time) set.

OFF Command not entered.

- Photocells on opening (PhoLc. oPE_n) [OFF]

ON: In case of obscuring, this excludes photocell operation on opening. During the closing phase, it immediately reverses the motion.

OFF: In case of obscuring, the photocells are active both on opening and on closing. When a photocell is obscured on closing, it reverses the motion only after the photocell is disengaged.

- Master/Slave (M_{RS}tEr) [OFF]

ON The control panel is set as Master in a centralised connection (see Paragraph 7).

OFF The control panel is set as Slave in a centralised connection (see Paragraph 7).

- Loop (LooP) [OFF]

ON In the case of a closed loop centralised connection (Fig.5), set the control unit to ON.

OFF In the case of an open centralised connection (Fig.5), set the control unit to OFF.

6.3) Radio Menu (rRd id)

- Add (Rdd)

Allows you to add one key of a radio control device to the receiver memory; after storage it displays a message showing the transmitter number in the memory location (from 01 to 64).

NOTE: When using transmitters with two or more channels, the first push-button which has been stored is associated to the START function. If a second push-button is stored, it will be associated to the pedestrian function.

- Read (rERd)

Checks one key of a receiver; if stored it displays a message showing the receiver number in the memory location (from 01 to 64), and the key number (T1, T2, T3 or T4).

- Delete (ER_{RS}E i)

Removes one single key of a transmitter from the receiver memory; after deletion it displays a message showing the receiver number in the memory location (from 01 to 64).

- Eliminate list (ER_{RS}E 54)

WARNING! Completely removes all memorised radio control devices from the receiver memory.

6.4) Language Menu (LRnGURGE)

Allows you to set the language on the display programmer.

5 languages are available:

- ITALIAN (tR)

- FRENCH (FrR)

- GERMAN (dEU)

- ENGLISH (EnG)

- SPANISH (ESP)

6.5) DEFAULT MENU (dEFRIULt)

Restores the preset default values on the control unit.

6.6 Self-diagnosis Menu (SELFTEST)

Allows you to carry out control unit self-diagnosis.

If, at the end of the diagnosis, the answer is OK, it means that the control unit and connected devices operate correctly.

In case of error, the display indicates the number of the terminal which does not operate correctly; thus proceed to checking the devices connected to this, making reference to the following table:

22	Start error
23	Stop error
24	Photocell error
25	Opening limit-switch error
26	Closing limit-switch error
27	Pedestrian input error
28	Open error
29	Close error
30	Electric edge error
31	Clock error

6.7 Autoset Menu (AUTOSET)

Allows you to automatically set the following parameters:

Opening torque
Closing torque
Encoder
Brake

To carry out autotesting, connect two N.O. pushbuttons, if not provided, to inputs 21-28 (Open) and 21-29 (Close).

WARNING!! The autotesting operation is only to be carried out after checking the exact leaf (opening/closing) movement, and correct limit-switch activation.

Therefore, during display of the (.....) message, carry out about fifteen opening and closing manoeuvres in "Hold-to-run" mode, by pressing and keeping the OPEN or CLOSE pushbutton alternatively pressed until the opening or closing limit switches are activated.

During this phase, the control panel carries out tests with various levels of opening/closing torque, encoder sensitivity and brake value.

Moreover, during autotesting, the leaf may be stopped, due to the checks which are being carried out by the control panel.

After this, if autotesting is successfully completed, the control unit automatically exits the (.....) phase, and displays the "OK" message which indicates correct autotesting execution.

If, on the other hand, the control unit remains in the (.....) phase after the 15 expected manoeuvres, it means that there are certain resistance points along the gate which do not allow the control unit to set optimum operation values.

Proceed to find out whether there are any mechanical obstructions which might prevent regular leaf movement.

WARNING! About 10 manoeuvres are carried out in "Hold-to-run" mode in the course of the autotesting phase, during which the installer must control the automation movement and prevent persons or things from approaching or standing within the automation working range.



WARNING: Check that the impact force value measured at the points established by the EN 12445 standard is lower than that specified in the EN 12453 standard.



Incorrect sensitivity setting can cause injuries to persons or animals, or damage to things.

6.8 Statistics

Having connected the UNIPRO programmer to the control unit, enter the CONTROL UNIT / STATISTICS menu and scroll the screenful showing the statistical parameters:

- Board microprocessor software version.
- Number of cycles carried out. If motors are replaced, count the number of manoeuvres carried out up to that time.
- Number of cycles carried out from the latest maintenance operation. It is automatically set to zero after each self-diagnosis or parameter writing.
- Date of latest maintenance operation. To be updated manually from the appropriate menu "Update maintenance date".
- Installation description. 16 characters can be entered for installation identification.

7) SERIAL CONNECTION (Fig.5)

The LEO control panel allows several automation units to be connected in a centralised way by means of appropriate serial inputs and outputs. This makes it possible to use one single command to open and close all the automation units connected.

Following the diagram in Fig. 5, proceed to connecting all the LEO control panels, exclusively using a telephone-type line.

Should a telephone cable with more than one pair be needed, it is indispensable to use wires from the same pair.

The length of the telephone cable between one appliance and the next must not exceed 250 m.

At this point, each of the LEO control panels must be appropriately configured, by setting a MASTER unit first of all, which will have control over all the others, to be necessarily set as SLAVE (see logic menu).

Also set the Zone number (see parameter menu) between 0 and 127.

The zone number allows you to create groups of automation units, each one answering to the Zone Master unit. Each zone can only be assigned one Master unit, the Master unit in zone 0 also controls the Slave units in the other zones.

Loop closing of the serial connection (indicated by a dotted line in Fig.5) is only needed if you require to check the no. of the connected devices by means of UNIPRO.

7.1 Opposite sliding leaves (Fig. 6)

Serial connection also provides centralized control of two opposite sliding gates (Fig. 6a).

In this case, the Master M1 control board will perform closing and opening of Slave M2 control board simultaneously.

In case of opposite sliding leaves, the M1 (master) control board and the M2 (slave) control board should bear the same area number without other devices being connected in such area.

If the opening direction of one of the two motors is incorrect, invert the connection 6 and 8 of the motor as well as the connections 25 and 26 of the opening and closing limiting devices.

The safety devices (photocells and sensing edges) should be connected according to the diagram in Fig. 6b.

The Start, Open, Close, push-buttons and the Timer contact should be normally connected to the M1 (master) control board.

The pedestrian command is to be connected to the M2 panel (slave).

The Stop command provides greater safety and is generated by a double contact NC push-button connected to both control boards as shown in Fig. 6b.

NOTE: Disable the TCA function from the M2 (slave) panel.

8) SCRAPPING

Warning: This operation should only be carried out by qualified personnel. Materials must be disposed of in conformity with the current regulations. In case of scrapping, the automation devices do not entail any particular risks or danger. In case of materials to be recycled, these should be sorted out by type (electrical components, copper, aluminium, plastic etc.).

9) DISMANTLING

Warning: This operation should only be carried out by qualified personnel. When the control unit is disassembled to be reassembled on another site, proceed as follows:

- Disconnect the power supply and the entire electrical installation.
- In the case where some of the components cannot be removed or are damaged, they must be replaced.

The descriptions and illustrations contained in the present manual are not binding. The Company reserves the right to make any alterations deemed appropriate for the technical, manufacturing and commercial improvement of the product, while leaving the essential product features unchanged, at any time and without undertaking to update the present publication.

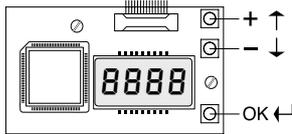
Fig. A

ACCESS TO MENU

Press the OK key
OK

- bFt Display software version
- dISP ID Control unit software version
- LEo ID No. total manoeuvres (in thousands)
- 0000 No. manoeuvres since latest maintenance (in thousands)
- 00 No. radio control devices memorised

LEGENDA



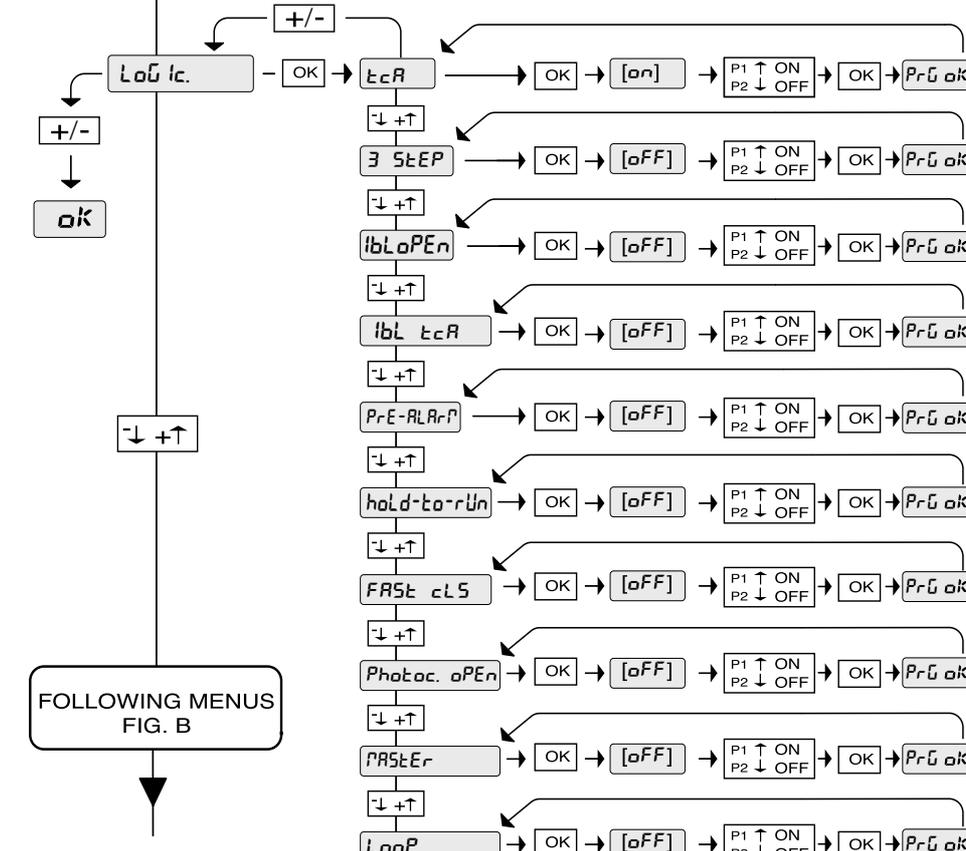
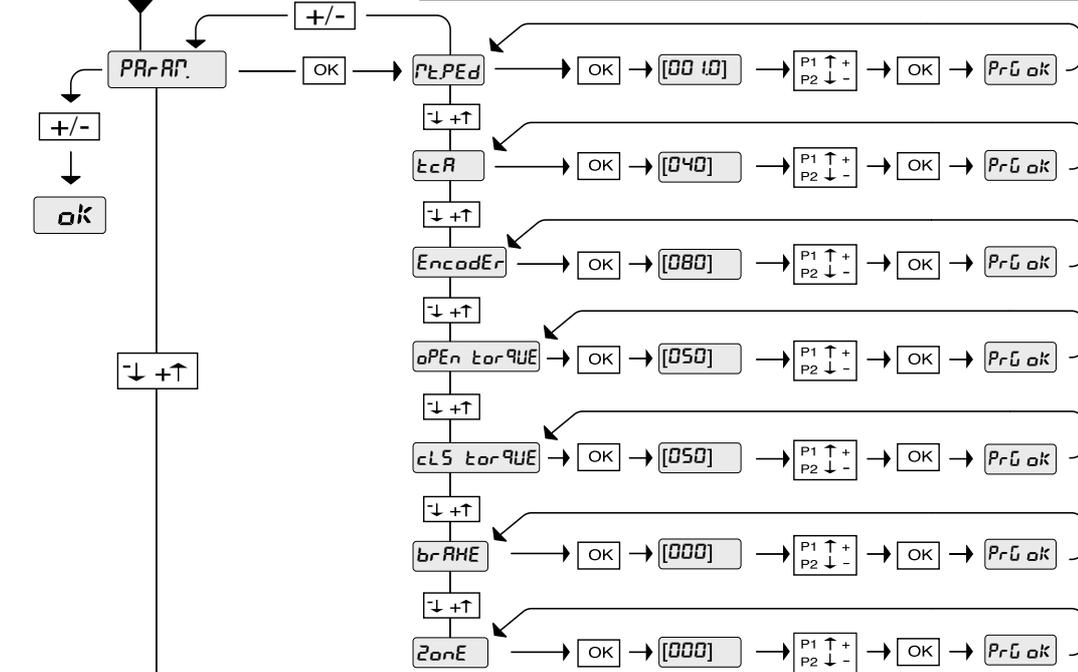
- [00] Preset value
- ↑ +/ON Parameter increment/reduction or ON/OFF commutation
- ↓ -/OFF
- OK Press OK key (Enter/confirm)
- ↓ +↑ Menu scrolling (+ = preceding - = following)

+/- Simultaneously press the + and - keys. Simultaneous pressure of the + and - keys allows you to exit the active menu and return to the preceding menu; if this takes place at the main menu level, programming is exited and the display switched off. The modifications made are only confirmed if the OK key is subsequently pressed.

PrG ok OK! message (confirms modification made)

PrG ko KO! message (value or function error)

-ε "Wait" message (enter value or function)



PARAMETER MENU

Pedestrian opening - value expressed in m (default 001.0=1m, min 000.1=0,1m, max 006.0=6m)

TCA - value expressed in seconds (default 40=40s, min 1=1s, max 180=180s)

Encoder - value expressed in % (default 80%, min 1%, max 99%)

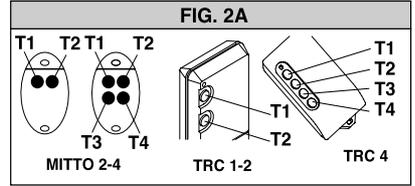
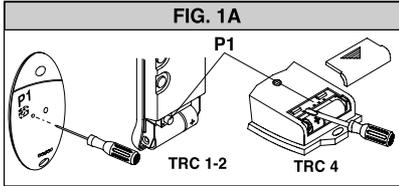
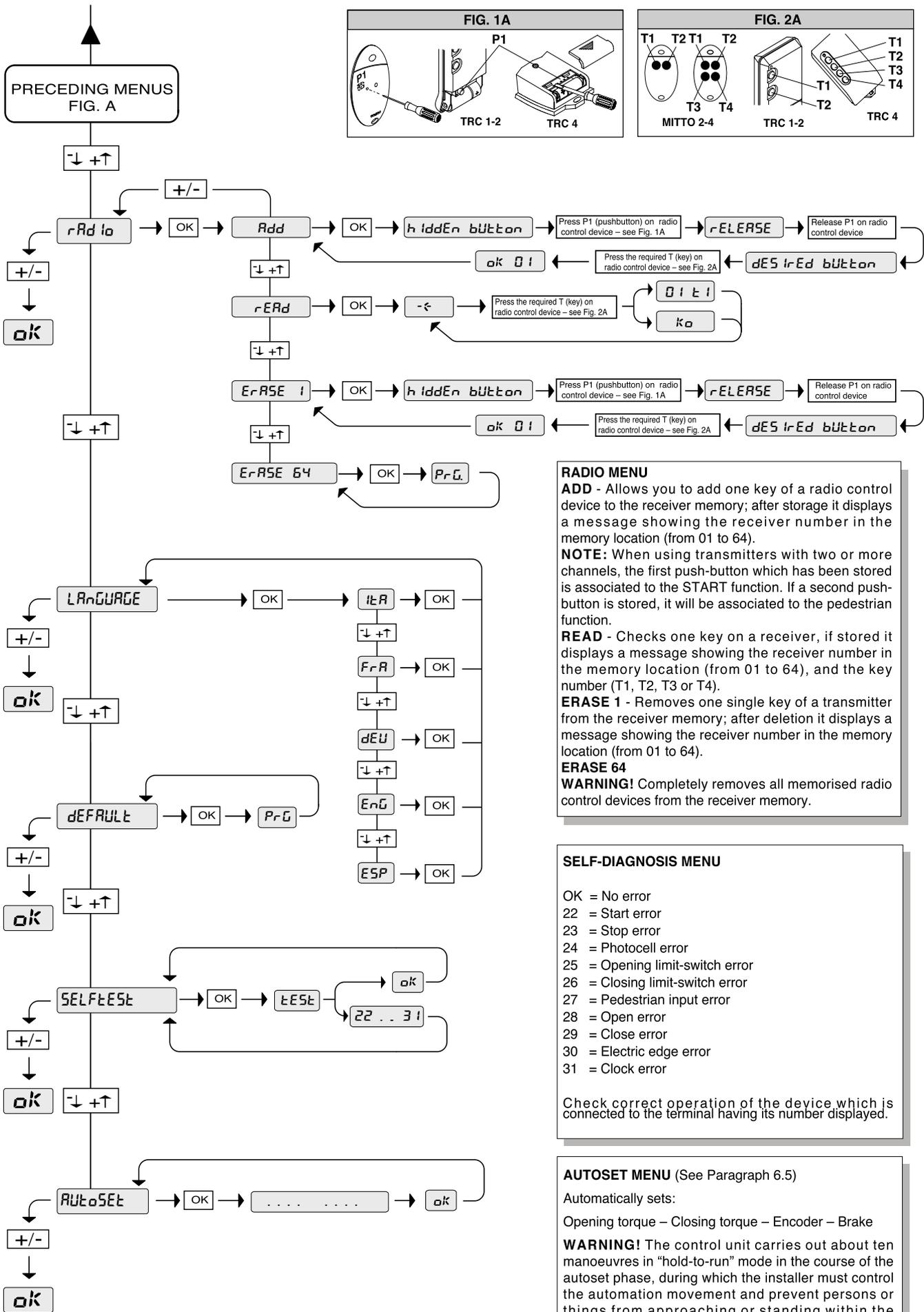
Opening torque - value expressed in % (default 50%, min 1%, max 99%)

Closing torque - value expressed in % (default 50%, min 0%, max 99%)

Brake - value expressed in % (default 0%, min 1%, max 99%)

Zone - numerical value (default 0, min 0, max 127)

Fig. B



RADIO MENU
ADD - Allows you to add one key of a radio control device to the receiver memory; after storage it displays a message showing the receiver number in the memory location (from 01 to 64).
NOTE: When using transmitters with two or more channels, the first push-button which has been stored is associated to the START function. If a second push-button is stored, it will be associated to the pedestrian function.
READ - Checks one key on a receiver, if stored it displays a message showing the receiver number in the memory location (from 01 to 64), and the key number (T1, T2, T3 or T4).
ERASE 1 - Removes one single key of a transmitter from the receiver memory; after deletion it displays a message showing the receiver number in the memory location (from 01 to 64).
ERASE 64
WARNING! Completely removes all memorised radio control devices from the receiver memory.

SELF-DIAGNOSIS MENU

- OK = No error
- 22 = Start error
- 23 = Stop error
- 24 = Photocell error
- 25 = Opening limit-switch error
- 26 = Closing limit-switch error
- 27 = Pedestrian input error
- 28 = Open error
- 29 = Close error
- 30 = Electric edge error
- 31 = Clock error

Check correct operation of the device which is connected to the terminal having its number displayed.

AUTOSET MENU (See Paragraph 6.5)
 Automatically sets:
 Opening torque – Closing torque – Encoder – Brake
WARNING! The control unit carries out about ten manoeuvres in “hold-to-run” mode in the course of the autoset phase, during which the installer must control the automation movement and prevent persons or things from approaching or standing within the automation operating range.

Fig. 1

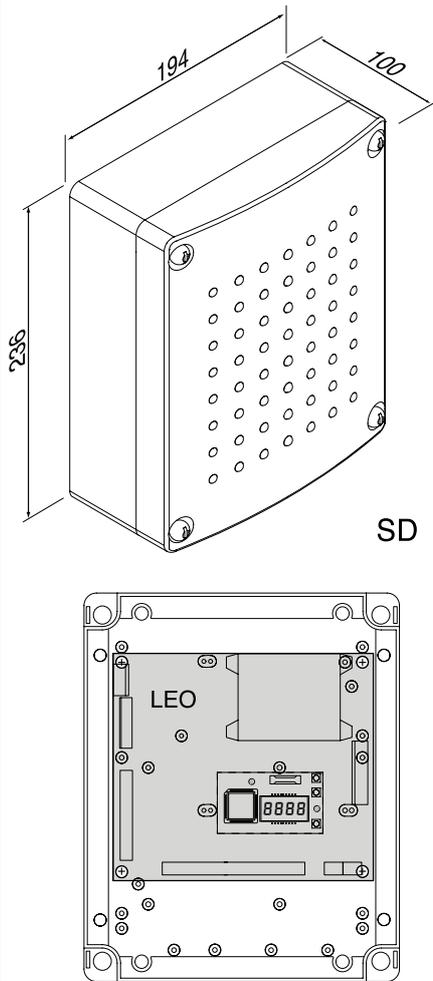


Fig. 2

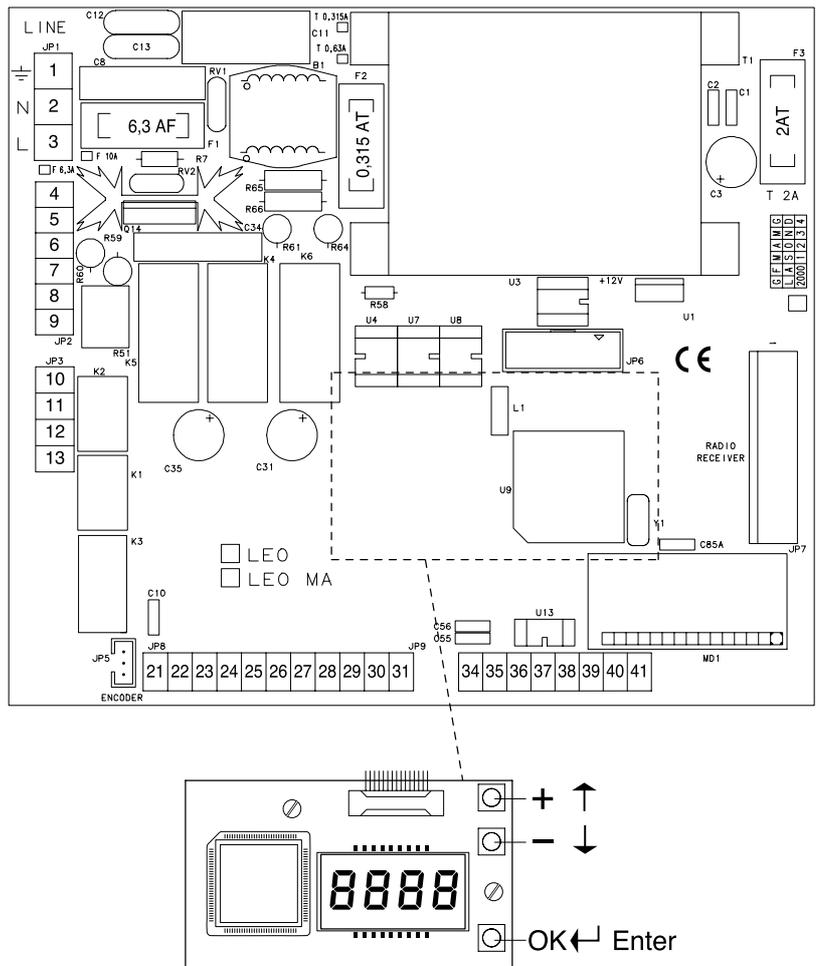


Fig. 3

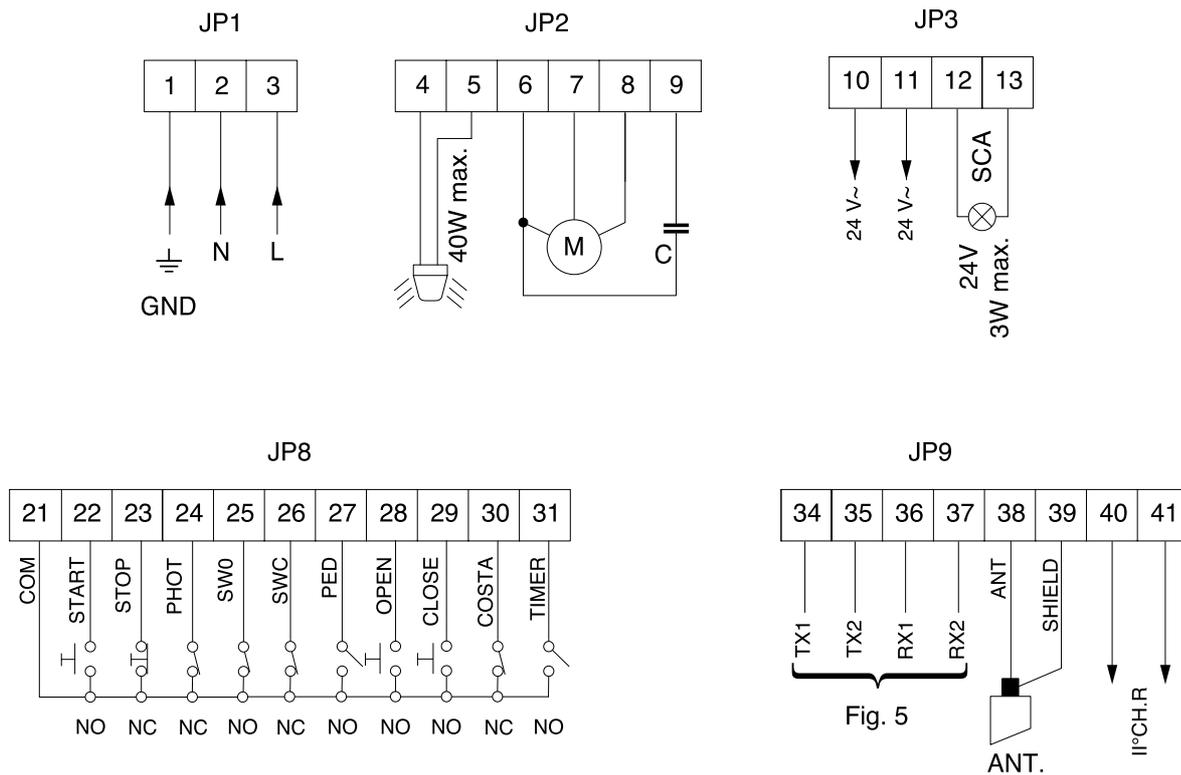


Fig. 4

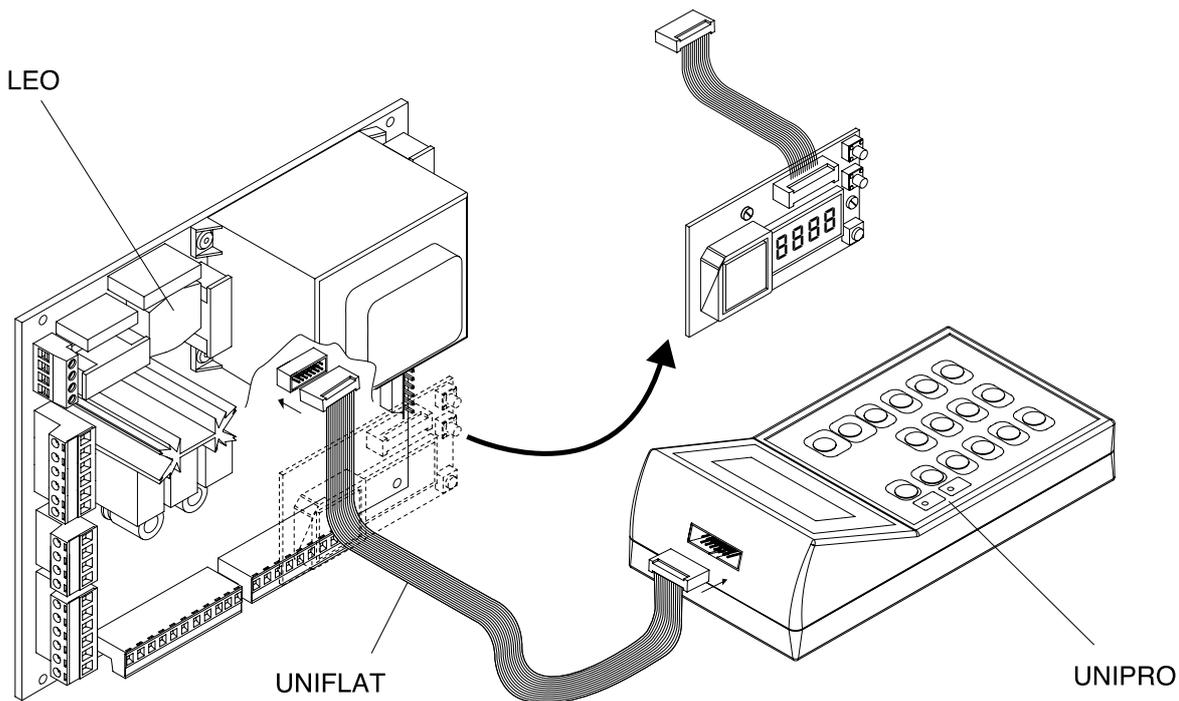


Fig. 5

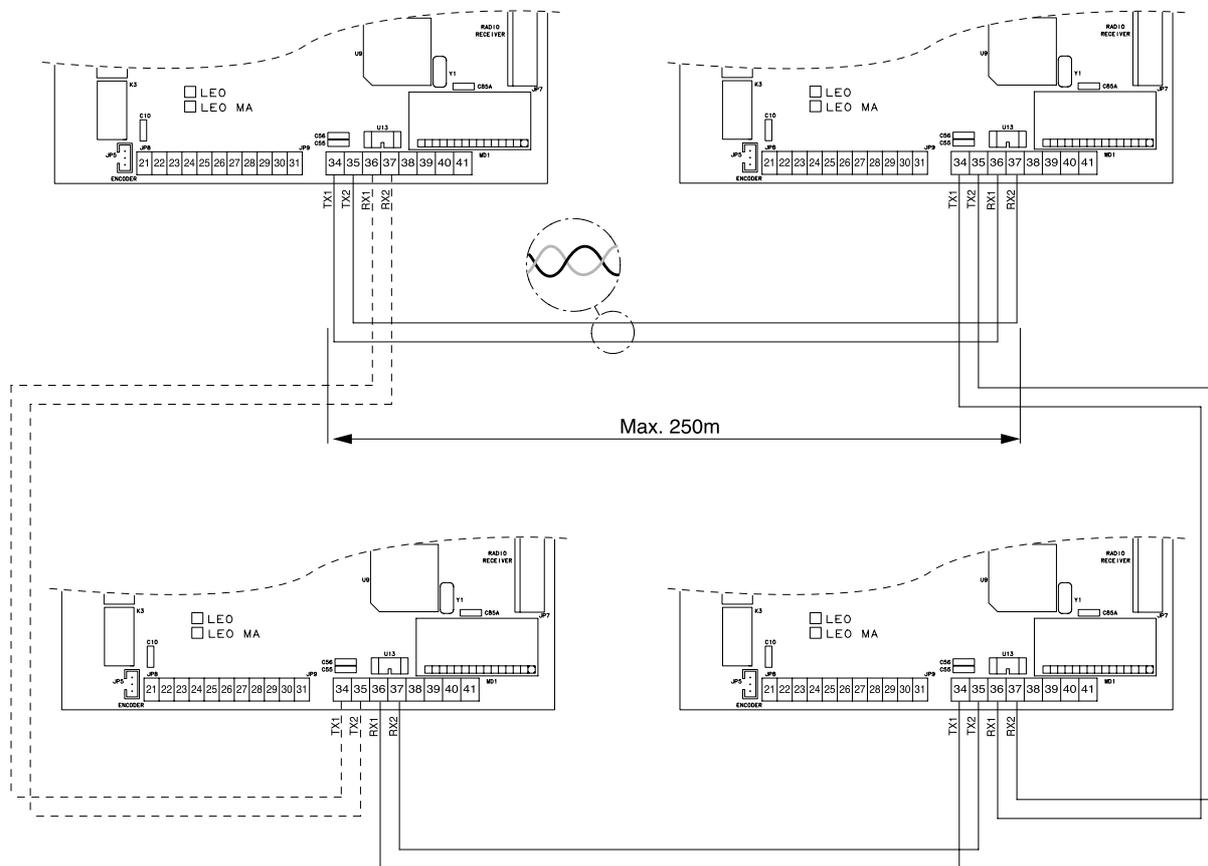


Fig. 6

