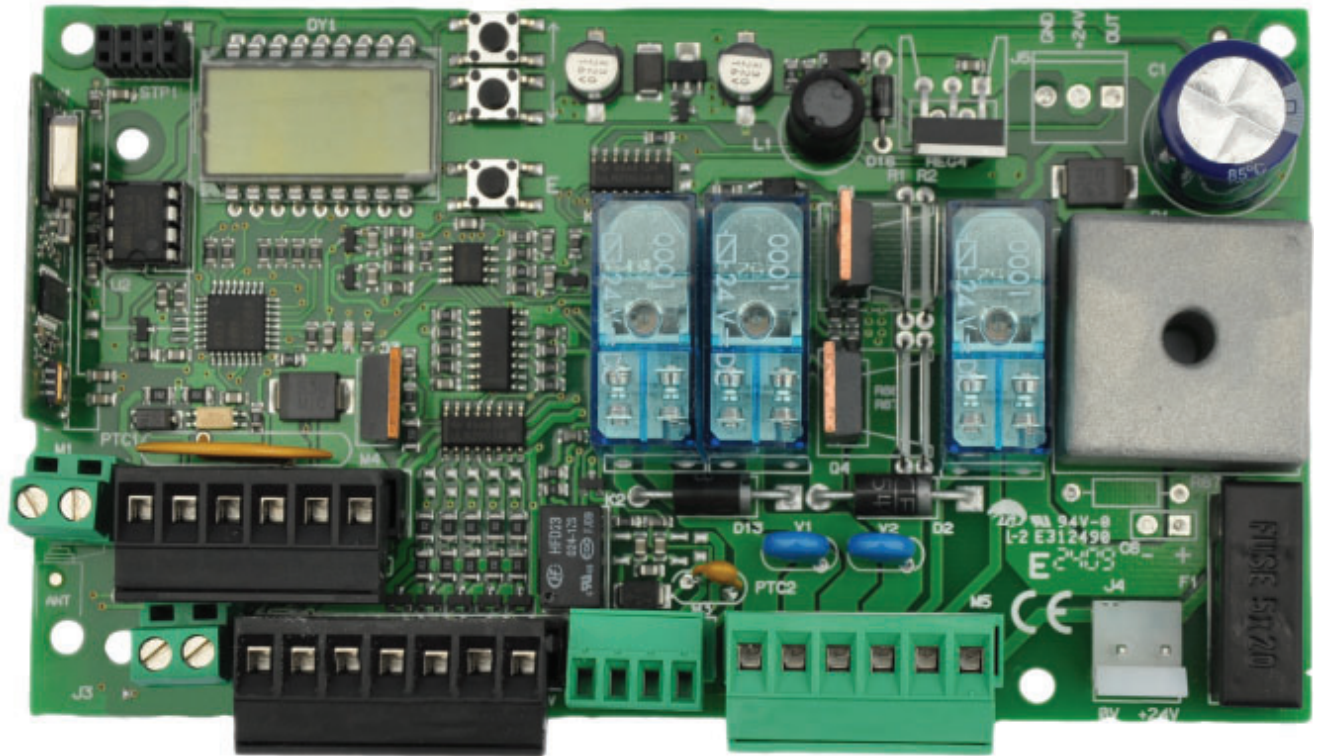# E24

I	Centrale di comando per motori battenti a 24V
GB	Control board for 24V swing motors
F	Centrale de commande pour moteurs battants à 24V
D	Steuerzentrale für Schwingflügelmotoren von 24V
E	Central de mando para motores batientes a 24V

The **Stagnoli E24** is is the control board that has been studied for 24V swing motors and relative accessories.

Made using only prime quality materials, it has been designed for low absorption at rest allowing a low consumption of electricity. Particular attention has been paid to professionals in the sector making it easier to programme the board by using a multi-language display.

WARNINGS AND SAFETY REGULATIONS

• **This manual has been created by Stagnoli for specific use by professional and qualified staff.**

• **It is advisable to read the instruction manual completely before proceeding with installation.**

• **During installation, the system must not be live.**

• **Automatic gate systems must be installed by qualified technical staff in compliance with legal requirements.**
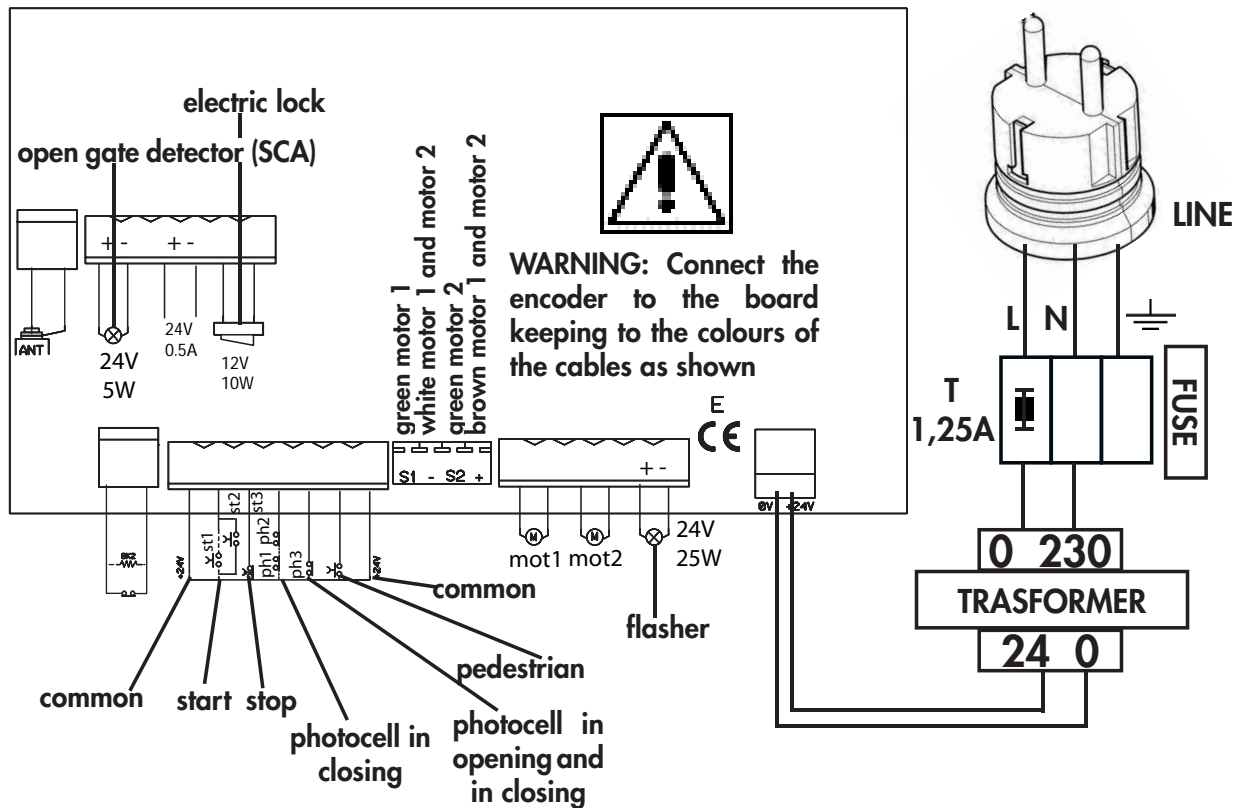
Inform the end user in detail of the method of use, residual dangers, the need for maintenance and the need to check safety devices at least once every six months.
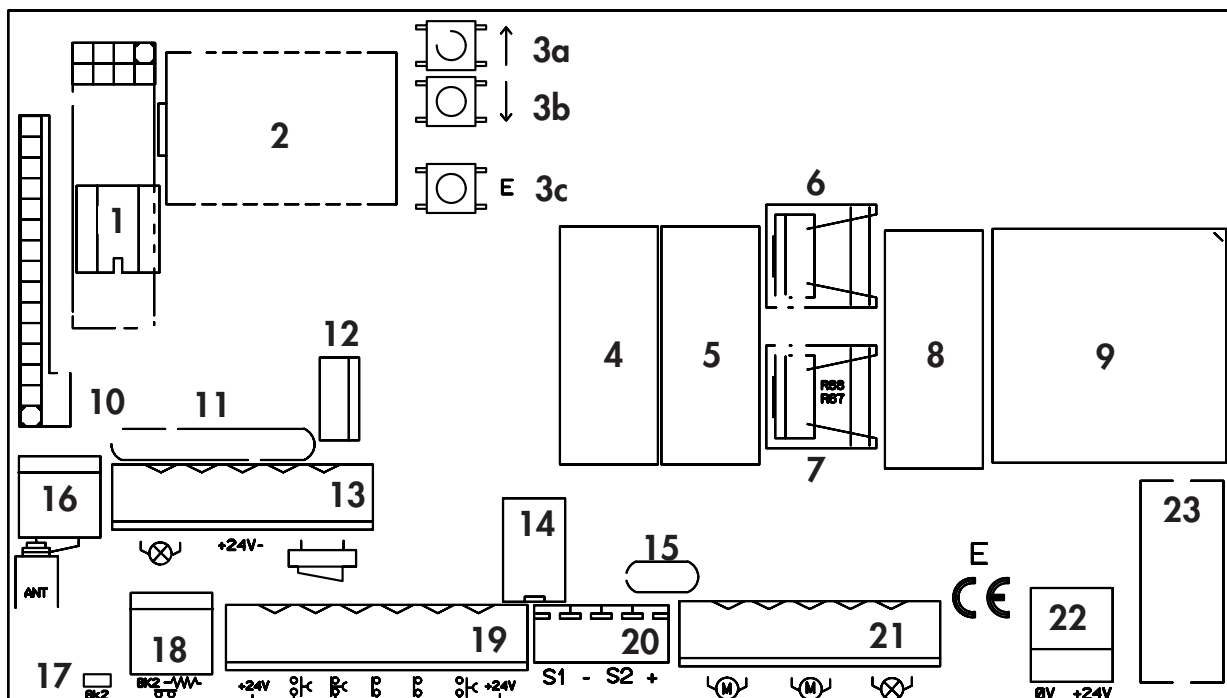
1	System memory
2	Display
3	Setting keys
4	Directional relay motor 1
5	Directional relay motor 2
6	Mosfet motor 1
7	Mosfet motor 2
8	Flasher relay
9	Diode bridge
10	Receiver module
11	PTC 3A for electric lock 12V
12	Mosfet electric lock
13	Open gate (SCA)/accessories/electric lock open gate detector output terminal
14	Open gate detector relay
15	PTC 0,1A encoder
16	Radio aerial terminal
17	Resistive rib Jump
18	Rib entry terminal
19	Input/controls connector
20	Motor encoder connector
21	Flasher/motors Connector
22	Central power 24V terminal
23	Rapid fuse 2,5A

GB

19

electric lock

open gate detector (SCA)

green motor 1
white motor 1 and motor 2
green motor 2
brown motor 1 and motor 2

WARNING: Connect the encoder to the board keeping to the colours of the cables as shown

LINE

L N

T
1,25A

FUSE

24V
0.5A

24V
5W

12V
10W

ANT

S1 - S2 +

0V +24V

+ -

CE

E

mot1 mot2

24V
25W

0 230

TRASFORMER

24 0

st2 st3
st1
ph2
ph1 ph3

common

flasher

common   start   stop

pedestrian

**photocell in
closing**

**photocell in
opening and
in closing**

The current feed line (230V L,N,⏚) to the automation must be protected by a magnetometric switch or a pair of 5A fuses. A differential switch is recommended but not neccessary if it is already found at the top of the system.
Feed the device with a 3x1,5mm² cable (phase+neutral+ground). If the distance between the board and the connection to the grounding system exceeds 30m it is necessary to provide an earth plate near the control board.

Cabling must be done when the control board is switched off.
Input of N.C. type contacts (normally closed), if they are not used, must be bridged with an ordinary terminal (+24V). If there are more N.C. contacts for the same input they must be placed in series (example: ph1 and ph2 in the diagram).

Inputs of N.O. type contacts (normally open), if not used, must be left free. If there are more N.O. contacts for the same input they must be placed in parallel (example: st1 and st2 in the diagram).

Operating procedure at the first start up

•Undertake the electric wiring for the plant and check when the card is switched off.

•Check that the mechanical stops have been installed correctly and that the wiring of the two motors with the respective encoders has been done.

•Unblock the gate and check its movement (the hinged leaves must have no obstacles in their path). The stroke of the leaves must not have any stiff points during movement, it must be smooth.

display

LED indicator for power supply

↑ ↓ E
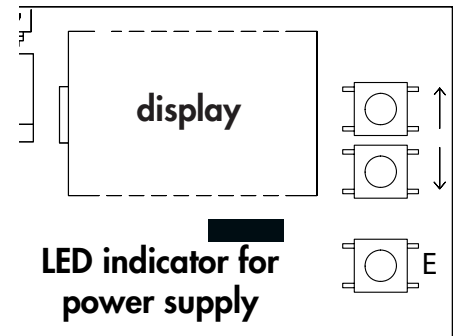
•Block the gate and supply current to the control board. At this point the electric mains detection led will light up and the display will show r 00 or f 00. If this does not occur check that the control board receives power and check the inputs activated (see the description of the diagnostics on the display).

•Activate the safety devices one at a time and check that the display shows the relative diagnostics wording. For example, activate the photocell and check that the message pho shows on the display.
Enter the menu and select the item setup. The first two manoeuvres help to identify the start and end of the stroke of the motor. The two that follow detect the peak of absorption of the motors when the gate is closing and opening. In this phase, monitor the values shown on the display.

•At the end of the learning phase the display will show ok if programming was done correctly, or err if errors occurred. To exit the programme press the select key.

•Correctly set the levels of anti-crushing force in opening and in closing, these must be greater than the maximum values viewed during learning.

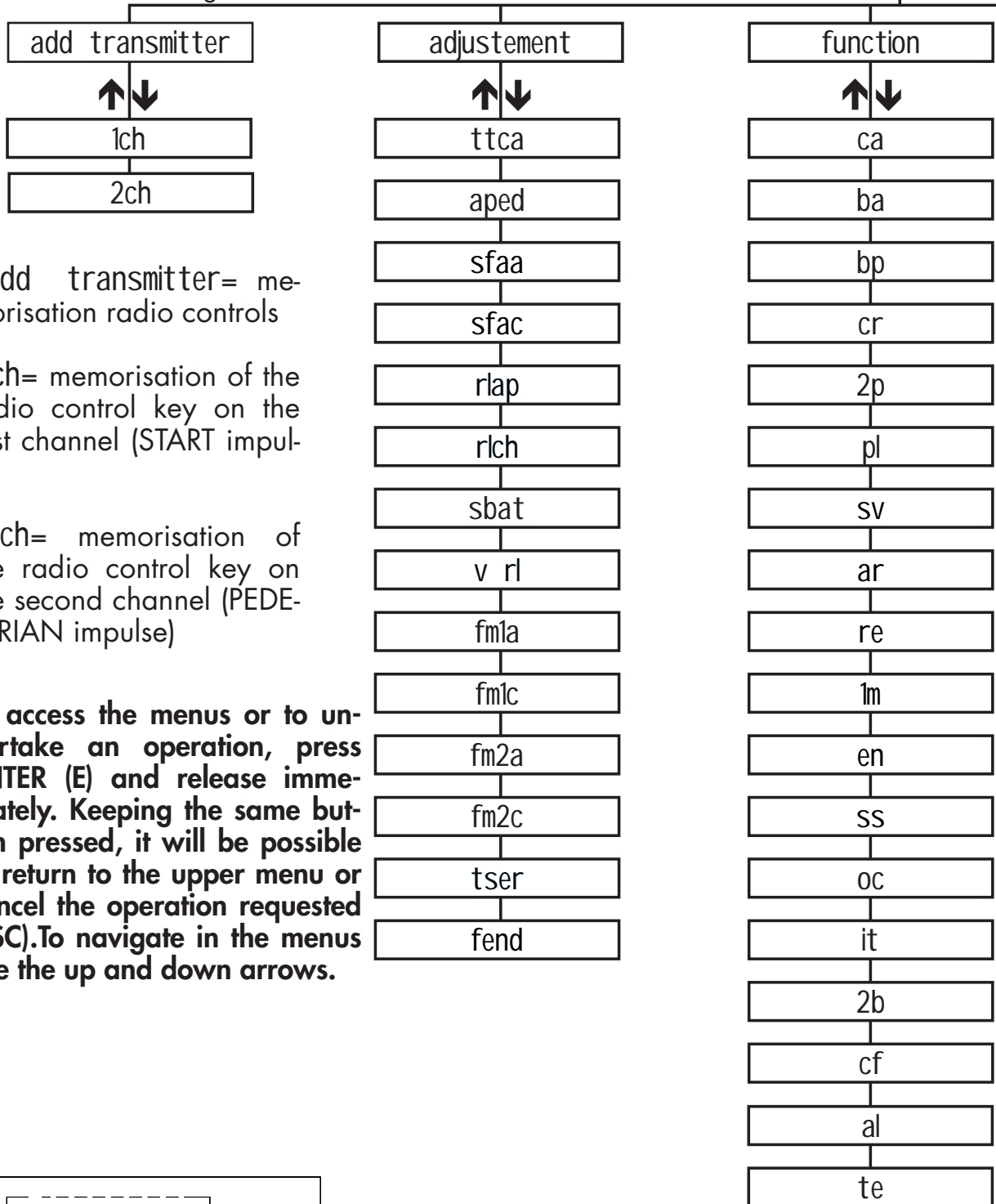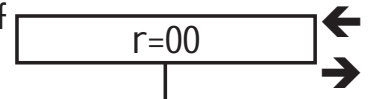**WARNING**: this regulation can influence the degree of safety of an automated device.
During learning manoeuvres the control board ignores the START and PEDE-STRIAN commands and works with the force parameters that have been set. Even if the safeties remain active make sure that there are no objects or people in the pathway of the gate.

•Carry out some test cycles checking the correct operation of the entire system.

•Measure the force of impact of the gate according to the specifications of regulation EN12445.

N.B: If a blackout occours while the automation is working, the first START command given to the control board with power supply back, will close the gate until the board finds the stops. Let the motor finish its run before giving other commands.

- r= rolling code receiver indicator
- = the upper line indicates the operation of the encoder of the first motor, while the lower indicates the second
- 00= registered transmitters

| r=00 |

add transmitter		adjustement		function
⬆⬇		⬆⬇		⬆⬇
1ch		ttca		ca
2ch		aped		ba
		sfaa		bp
		sfac		cr
		rlap		2p
		rlch		pl
		sbat		sv
		v rl		ar
		fm1a		re
		fm1c		1m
		fm2a		en
		fm2c		ss
		tser		oc
		fend		it
				2b
				cf
				al
				te

- add transmitter= memorisation radio controls

- 1ch= memorisation of the radio control key on the first channel (START impulse)

- 2ch= memorisation of the radio control key on the second channel (PEDE-STRIAN impulse)

To access the menus or to undertake an operation, press ENTER (E) and release immediately. Keeping the same button pressed, it will be possible to return to the upper menu or cancel the operation requested (ESC).To navigate in the menus use the up and down arrows.
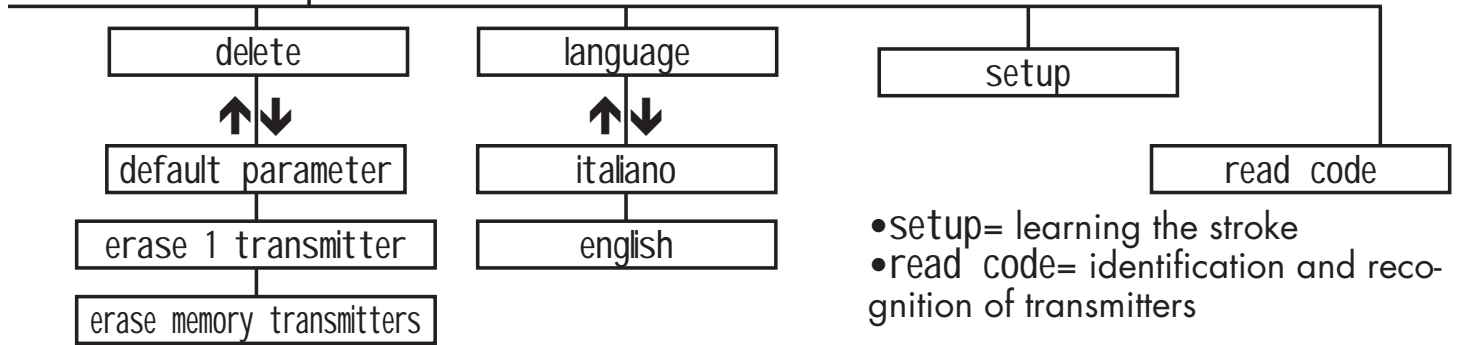
ENTER - press and release

ESC - press for two seconds
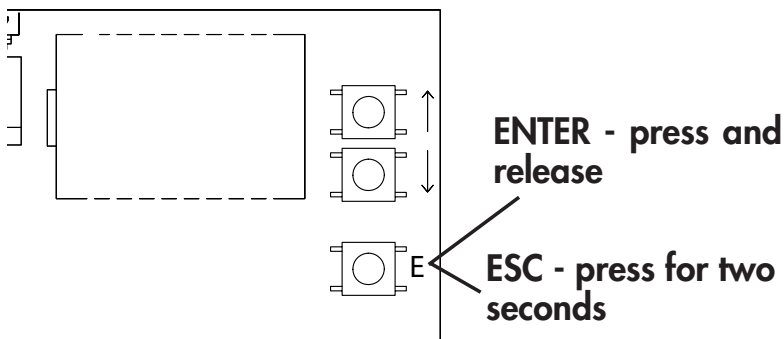
WARNING: When navigating in the menus, the control board will ignore any command to START.

```
→   ┌─────────────────┐
    │     00  00      │
←   └─────────────────┘
```

•00 00= instant power absorbed by motor 1 and motor 2.

delete	language	setup
⬆⬇	⬆⬇	

default parameter	italiano	read code

erase 1 transmitter	english

erase memory transmitters

•setup= learning the stroke
•read code= identification and reco-gnition of transmitters

adjustement

•ttca= automatic closing time
•aped= pedestrian opening
•sfaa= delay in opening time of motor 2
•sfac= delay in closing time of motor 1
•rlap= slowed stroke in opening
•rlch= slowed stroke in closing
•sbat= strike space
•v rl= slowing speed
•fm1a= anti-crushing force of motor 1 in opening
•fm1c= anti-crushing force of motor 1 in closing
•fm2a= anti-crushing force of motor 2 in opening
•fmac= anti-crushing force of motor 2 in closing
•tser= electric lock activation time
•fend= final thrust force on striking

function

•ca= automatic closing
•ba= blocks impulses during opening
•bp= blocks impulses during pause
•cr= rapid closing
•2p= open/close operation
•pl= preflashing
•sv= suction lock
•ar= impact on opening
•re= energy saving
•1m= operation with one motor
•en= encoder operation
•ss= soft start
•oc= open/close operation
•it= total reversal after encountering an obstacle
•2b= two safety ribs
•cf= operation of the fixed code receiver
•al= alarm
•te= diagnostics check before every start

delete

•default parameter= setting of factory parameters
•erase 1 transmitter= cancels one transmitter
•erase memory transmitters= cancel all registered transmitters

Addition of radio controls

•Before memorising a transmitter make sure that it is compatible with the type of receiver that is integrated (the first time the display shows r, if the receiver is in rolling code mode, or f if the receiver is in fixed code mode). The receiver can memorise rolling codes type HCS300 STAGNOLI with billions of combinations or fixed codes type HT53200 with 13 bits or the fixed part of a rolling code (28 bit SN). It is possible to memorise up to 76 codes.

•Enter the menu add transmitter move over the wording display 1ch or 2ch eand select the channel that is to be added. Press ENTER, the wording premi (press) will appear. Press the key that must be memorised: at this point the display shows the wording ok if the operation has been carried out correctly, err if there are registration errors or full if the receiver memory is full.

•An external antenna installed far from the ground, increases the visibility between the transmitter and the receiver. The power of the receiver can be reduced if metal parts or reinforced concrete are placed next to it.

Regulating

•ttca (**automatic closing time**)= this is the time from when the gate is fully open to when it is closed automatically. If the photocell is engaged, the ttca time is counted from the time when the photocell is freed. The default time set by Stagnoli is 10 secs and it can be regulated from 1 to 240secs.

•aped (**pedestrian opening**)= this is the length of the stroke stated in centimetres of the partial opening, namely the pedestrian mode. The default value set by Stagnoli is 70 and it can be regulated from 30 to 150. In case of en=0, the command PEDESTRIAN opening allows the door controlled by motor 1 to open completely.

•sfaa (**motor 2 opening delay time**)= In the opening phase the second motor delays its start. The default time set by Stagnoli is 1 and can be regulated from 0 to 10 seconds.

•sfac (**motor 1 closing delay time**)= In the closing phase the first motor delays its start. The default time set by Stagnoli is 3 and can be regulated from 0 to 10 seconds.
WARNING: before setting the slowing phase, check that the gate has been balanced correctly. In this phase, the motors have less power and the way this parameter is set can influence the level of safety of the system itself. Once these parameters have been regulated, check the force of impact of the gate leaves.

•rlap (**slowed stroke in opening**)= the control board slows down the stroke of the motors in the end part of its opening phase. The default stroke set by Stagnoli is 20 cm and it can be regulated from 0 to 70cm (for 1,8m gate wing).

•rlch (**slowed stroke in closing**)= the control board slows down the stroke of the motors in the end part of its closing phase. The default stroke set by Stagnoli is 20 cm and it can be regulated from 0 to 70cm (for 1,8m gate wing).
WARNING: before setting the slowing phase, check that the gate has been instal-

led correctly. In this phase, the motors have less power and the way this parameter is set can influence the level of safety of the system itself. Once these parameters have been regulated, check the force of impact of the gate leaves.

•sbat **(striking space)**= this is the space in centimetres before the strike (when opening or closing) when the control board interprets the obstacles as a limit stop and stops. The default space set by Stagnoli is 5cm and can be regulated from 1 to 10cm.
WARNING: The way this parameter is set can influence the level of safety of the system itself. Installation must be carried out in compliance with the safety measurements in order to keep this parameter as low as possible and to ensure the safety of the system.

•v rl **(slowing speed)**= these are values that concern the speed with which the motors operate in the slowing phase. The default value set by Stagnoli is 3 and it can be regulated from 1 to 4, where the lowest value indicates low speed and 4 indicates a speed of approximately half the motor operating speed.

•fm1a **(anti-crushing force of motor 1 in opening)**= this is the anti-crushing force of the first leaf of the gate stated in percentage compared with the maximum force that the same can generate. The default value set by Stagnoli is 50 and it can be regulated from 20 to 99.

•fm1c **(anti-crushing force of motor 1 in closing)**= This is the anti-crushing force of the first leaf of the gate stated in percentage compared with the maximum force that the same can generate. The default value set by Stagnoli is 50 and it can be regulated from 20 to 99.

•fm2a **(anti-crushing force of motor 2 in opening)**= this is the anti-crushing force of the second leaf of the gate stated in percentage compared with the maximum force that the same can generate. The default value set by Stagnoli is 50 and it can be regulated from 20 to 99.

•fm2c **(anti-crushing force of motor 2 in closing)**= This is the anti-crushing force of the second leaf of the gate stated in percentage compared with the maximum force that the same can generate. The default value set by Stagnoli is 50 and it can be regulated from 20 to 99.
WARNING: The way these two parameters are set can influence the level of safety of the system itself. Stagnoli advises setting this parameter with a safety margin that is at least +10 compared with the maximum current consumed by the motors in the opening and closing phases respectively. This is shown during the motor stroke on the display in the second main screen.
fm1a, fm1c, fm2a and fm2c with low values indicate greater anti-crushing sensitivity.
At the end of installation check that the force of impact is in compliance with the regulation EN12453.

•tser **(electric lock activation time)**= this is the time stated in seconds, going from the time of total closure of the gate to the activation of the electro lock. The default value set by Stagnoli is 2 and it can be regulated from 0 to 7 seconds.

WARNING: check that the lock catches without creating friction and regulate the parameter tser accordingly.

•fend **(end force thrust on striking)**= this is the force that the motors exercise in closing once the limit stop strikers are reached. This is stated in percentages compared with the maximum force that the motors themselves can exercise. The default value set by Stagnoli is 30 and it can be regulated from 20 to 70.
WARNING: regulate fend with a low value should the gate structure be very light. The regulation of this parameter can influence the time and force with which the gate works in the final phase of the stroke.

Functions
•ca **(automatic closing)**= automatic closing of the gate after it has opened fully.
ca=0 function not enabled.
ca=1 function enabled.
Set the ttca regulation to customise the time that must pass from the end of opening to the start of automatic closing. N.B: If ca=1 and 2p=0, a START command, activated while the leaves are opening, will stop the gate and load the ttca time for automatic closing.

•ba **(impulse block during opening)**= the control board ignores the START impulses during the opening phase.
ba=0 function not enabled.
ba=1 function enabled.

•bp **(blocks impulses during pause)**= the control board ignores the START impulses during the pause between opening and automatic closing (ca=1). Each START command received during the pause between opening and automatic closing recharges the ttca time.
bp=0 function not enabled.
bp=1 function enabled.
These functions allow the gate not to block or reverse the stroke due to other START commands, in condominium use for example.

•cr **(rapid closing)**= if there is a passage through the photocells during the opening phase or with the gate open, the regulation time ttca (if activated and greater than 3 secs) is automatically reduced to 3 secs.
cr=0 function not enabled.
cr=1 function enabled.

•2p **(open/close operation)**= 2p=1 function enabled: at each START impulse, the movement of the gate changes direction (OPENING - CLOSING).
2p=0 function not enabled. the gate movement sequence becomes OPENING - CLOSING (ttca) - CLOSING - STOP.

•pl **(preflashing)**= after the START signal, the flasher or courtesy light activates for two seconds before the opening or closing phase begins.
pl=0 function not enabled.
pl=1 function enabled.

•sv **(suction lock)**= activating this function, at the start of the opening manoeuvre, a 12V suction lock is controlled after an activation time regulated by the parameter tser.
sv=0 function not enabled (the exit is activated only for the tser time).
sv=1 function enabled (the exit remains active and deactivates only for the tser time).

•ar **(ramming on opening)**= before starting the opening manoeuvre, motor 1 pushes the door in closing for two seconds, allowing the electric lock to move away from the fastener. At this point, the lock is activated and the manoeuvre continues its normal opening movement.
ar=0 function not enabled.
ar=1 function enabled.

•re **(energy saving)**= keeps the photocells off while the system is not active, permitting energy saving. The photocells therefore remain active only while the leaves are in movement and during ttca.
re=0 function not enabled.
re=1 function enabled.
Connect the current feed +/-24V of both the transmitter and receiver of the photocells at flasher exit.

•1m **(one motor)**= operation of the system only with motor 1.
1m=0 function not enabled.
1m=1 function enabled.

•en **(encoder operation)**= allows the system to operate also if there is an encoder malfunction (the gate blocks shortly after the start of movement and the display shows ENC1 or ENC2).
en=0 encoder not enabled.
en=1 encoder enabled.
WARNING: the operation of the system without encoder is to be considered as being an emergency operation. In this mode every obstacle encountered by the motors will make it stop. When the encoder is active instead, operating with it=0, each obstacle encountered by the motors commands an reversal of movement by approximately 30cm.

•ss **(soft start)**= allows the motor to undertake a soft start and at reduced speed to diminish stress of the mechanical parts of the system. Activating this function, the motors deliver less power in the starting phase.
ss=0 function not enabled.
ss=1 function enabled.

•oc **(open/close function)**= lthe START terminal input becomes OPEN and the PEDESTRIAN terminal input becomes CLOSE. In this mode, one control opens the gate and another closes it without intermediate stops. The PEDESTRIAN and START functions can be activated with the radio control on the first and second channels respectively.
oc=0 function not enabled.
oc=1 function enabled.

•it **(total reversal)**= activating this function, if the motors encounter an obstacle in the opening phase, they reverse the motion and close the gate completely. In the closing phase, if they encounter an obstacle, the movement is reversed and the gate opens completely. If the function has not been activated, in the opening phase, the motors stop if they encounter obstacles while in the closing phase they reverse motion by 30cm before stopping.
it=0 function not enabled.
it=1 function enabled.

•2b **(two safety ribs)**= Operates with two safety ribs 8k2 connected in parallel.
2b=0 function not enabled.
2b=1 function enabled.

•cf **(operation of the fixed code integrated receiver)**= cf=0 receiver works with rolling codes.
cf=1 receiver works with fixed codes.
Functioning with receiver fixed codes or rolling codes can also be seen on the initial page of the display, where r-00 indicates the rolling code functioning and f-00 functioning with fixed code.
The receiver can memorise rolling codes type HCS300 STAGNOLI with billions of combinations or fixed codes type HT53200 with 13 bits or the fixed part of a rolling code (28 bit SN).

•al **(alarm)**= Alarm signalling that the gate has remained open. This function activates the SCA output after 20 seconds have passed from the end of the time regulated by ttca and the gate is still open.
al=0 function not enabled.
al=1 function enabled.

•te **(test)**= A diagnostics test is carried out to check the integrity of the encoder and amperometric sensors before each time the motors are started.
te=0 function not enabled.
te=1 function enabled.

Cancel
•default parameter= to cancel the regulation parameters and those of regulated functions and reset the factory settings, enter the menu cancel, go to default parameter on the display and press ENTER. The message RESE is shown, it flashes until the decision to reset all the parameters is confirmed or the operation is cancelled. The default parameters are: ttca=10, aped=70, sfaa=1, sfac=3, rlap=20, rlch=20, sbat=5, v rl=3, fm1a=50, fm1c=50, fm2a=50, fm2c=50, tser=2, fend=30, ca=1, ba=0, bp=0, cr=0, 2p=0, pl=0, sv=0, ar=0, re=0, 1m=0, en=1, ss=0, ac=0, it=0, 2b=0, cf=0, al=0, te=0.

•erase 1 transmitter= to cancel a transmitter code, enter the menu delete, then go to the wording erase 1 transmitter on the display and press ENTER. The message PREMI. (PRESS) will appear. Now press the key of the transmitter that must be cancelled. If the operation has been carried out correctly, the message OK will appear. If this has not been carried put correctly, the message ERR will appear.

•erase memory transmitters= to cancel all the recorded transmitters, enter the menu delete, then go to the wording erase memory transmitters on the display and press ENTER. The message PRG will appear, it flashes until the decision to cancel all the recorded codes is confirmed by pressing ENTER or the operation is cancelled by keeping the same key pressed for longer.

N.B: To cancel the memory of the receiver, it is neccessary to confirm twice the cancellation (erase memory transmitters **and** PRG)

Language

The display is available in two languages: italiano and english.

To select the chosen language go to the menu language and press ENTER. Go to italiano or english and confirm by pressing ENTER.

Learning

This operation allows the automation to automatically establish the start and end of a stroke identifying the respective mechanical strokes. Before proceeding with this operation, ensure that the gate has been installed correctly and firmly and that the en function of the control board has been activated (Stagnoli supplies the control board with this function already activated).

When the wording setup appears on the display, press ENTER. At this point the motors will close the gate. They will open it completely again and will repeat this operation once more with the control board display showing maximum use of the motors.   Then set the regulation values fm1a and fm1c so that they exceed the detected values (if fm1a, fm1c, fm2a and fm2c have a low value this indicates greater anti-crushing sensitivity).

Should consumption be shown to be excessively high, check that there are no areas where the gate has greater friction. To do this, monitor the values showing instant absorbed power by the motors during their stroke and presented in the second main screen of the display. If the operation has been carried out correctly, the message OK will appear. If this has not been carried out correctly, the message ERR will appear.

WARNING: during learning manoeuvres, the control board will ignore START and PEDESTRIAN commands and will work with the force parameters that have been set. Even if the safeties remain active, ensure that there are no objects or people in the area of operation of the gate.

Read code

It is possible to check if a code has already been memorised. Position yourself on the wording read code, press ENTER, the display will show the message PREMI (PRESS). Now press the transmitter key that must be checked, a series of screens describing the code will be viewed:

•first screen: S r 01 or – f 01.

The first letter indicates the manufacturer of the radio control, where S means Stagnoli and – a generic manufacturer.

The second letter indicates the type of code, where r indicates a rolling code and f a fixed code.

The last two indicate the code of the key that was pressed.

•second screen: P_00, where P indicates the word "position" and the number that follows (progressive from 0 to 75), indicates the position occupied by the

transmitter in the memory. If the transmitter is not found in the memory, the display will show ----.
•third and fourth screens: show the hexadecimal code of the transmitter.

Statistics screens

The control board has four statistics screens that are viewed by keeping the key ENTER pressed once the display is positioned on the main menu:
•first screen: E101, where E2 indicates the motor Hermes at 24V and 01 the software version.
•second and third screens: 0000 0000 indicates the number of complete manoeuvres undertaken.
•fourth screen: indicates the stroke in the memory.

Diagnostics screens

The control board can recognise problems or alarms that can occur in the system, therefore it can signal some messages on the main display to allow the problem to be identified:
•1 rf= activation of the START command on the first radio frequency channel.
•2 rf= activation of the START command on the pedestrian channel.
•ph0= activation of photocells input in closing on the terminal board.
•phoA= activation of photocells input in closing and in opening on the terminal board.
•bar= activation of the safety rib.
•sto= stop impulse.
•enc1= operation of the sensor with encoder on the first motor.
•enc2= operation of the sensor with encoder on the second motor.
•ope= activation of the opening command (with oc=1).
•clo= activation of the closing command (with oc=1).
•ped= activation of the pedestrian entry command.
•am1= activation of the anti-crushing sensor on motor 1.
•am2= activation of the anti-crushing sensor on motor 2.

Technical specifications

•Automation feed: 230V - 50/60Hz.
•Primary transformer protection fuse: T1,25A/230V.
•Accessory output protection fuse 24V: F2,5A.
•Integrated receiver (433Mhz): maximum capacity 76 radio codes.
•Operating temperature: -20° +55°
•Maximum rated power of motors: 70W+70W
•Flasher output maximum power: 25W
•Open gate detector output maximum power (SCA): 5W
•Electronic anti-crushing device: amperometric with encoder

F.A.Q. – Frequently Asked Questions

Why shall I have to choose a rolling code transmitter instead of a fix one?
The rolling code transmitters are safer as they can't be cloned and have 200 million combinations. They change for every transmission. On the contrary, the fix code transmitters have 1024 code combinations. They don't change for every transmission.

Can the control board run the operation of the motor with emergency batteries?
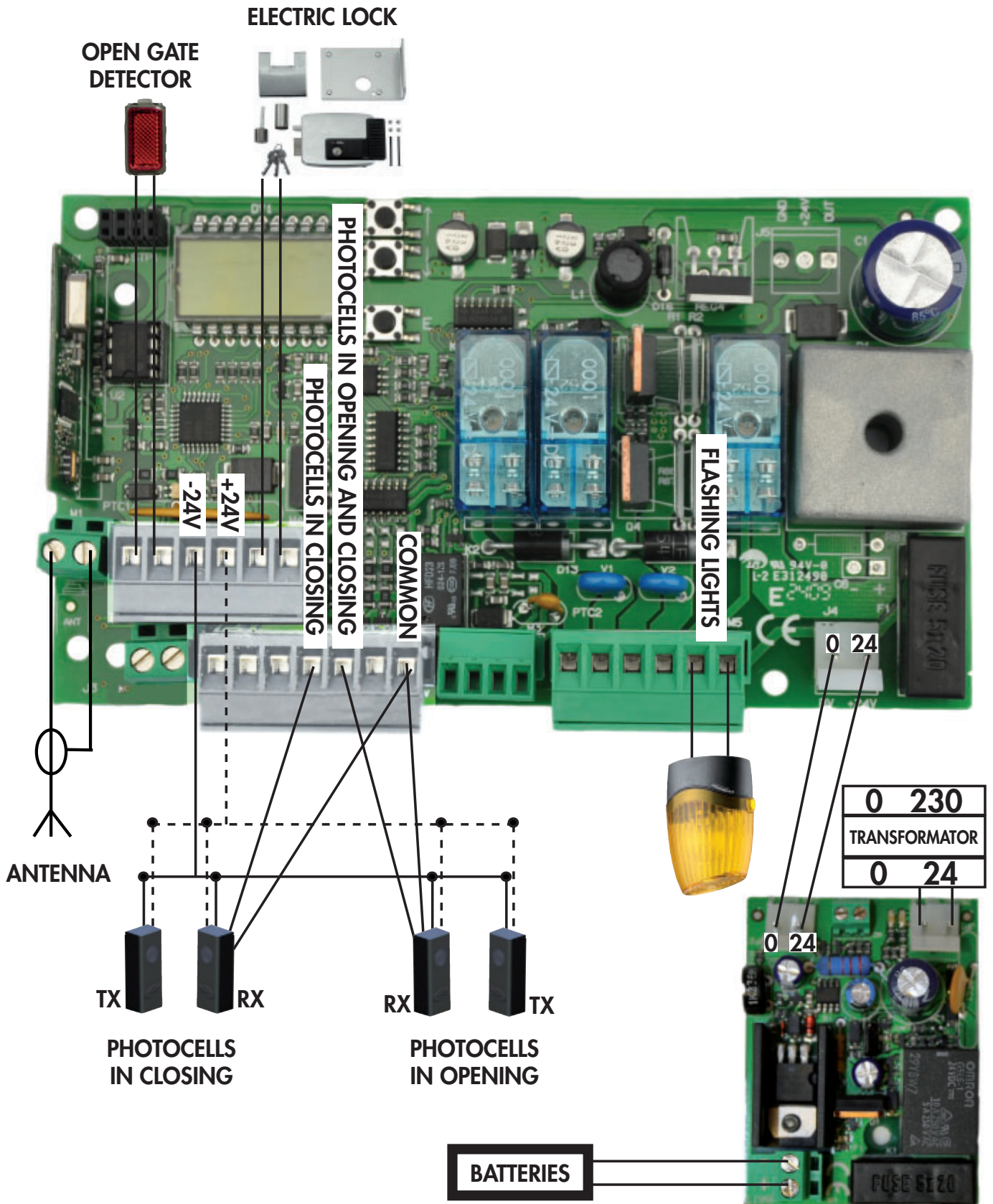Yes. To use emergency batteries use the kit supplied by Stagnoli.

The station does not recognise the transmitter. Why?
Check that you are using the same type of station and transmitter. It is possible to check the type of transmitter used by the station from the main screen and change if necessary by setting the parameter Cf.

Once the motor gets to the stop, it turns back instead of arresting. Why?
One reason that can make the control board loose its parameters is that the motor has been working while unlocked. To be sure that the control board has found back its parameters, shut off the supply, make sure that the motor is locked and then put the supply back to the control board. At the first START input, the control board will find again its parameters.

ELECTRIC LOCK

OPEN GATE DETECTOR

PHOTOCELLS IN OPENING AND CLOSING

PHOTOCELLS IN CLOSING

-24V

+24V

COMMON

FLASHING LIGHTS

0 24

ANTENNA

0 230

TRANSFORMATOR

0 24

0 24

TX

RX

RX

TX

PHOTOCELLS IN CLOSING

PHOTOCELLS IN OPENING

BATTERIES

BATTERY-CHARGER BOARD

WARNING: If a battery charger is used, the control board is supplied by the C24 charger board, linked to a trasnsformator. For the details of the connection, see the C24 instructions.

PEDESTRIAN OPENING
COMMON
ENCODER
MOTOR 2
MOTOR 1
SUPPLY

COMMON
START
STOP

COMANDS

0   24V

0   24
TRANSFORMATOR
0   230

SAFETY RIB

MOTOR 2   MOTOR 1