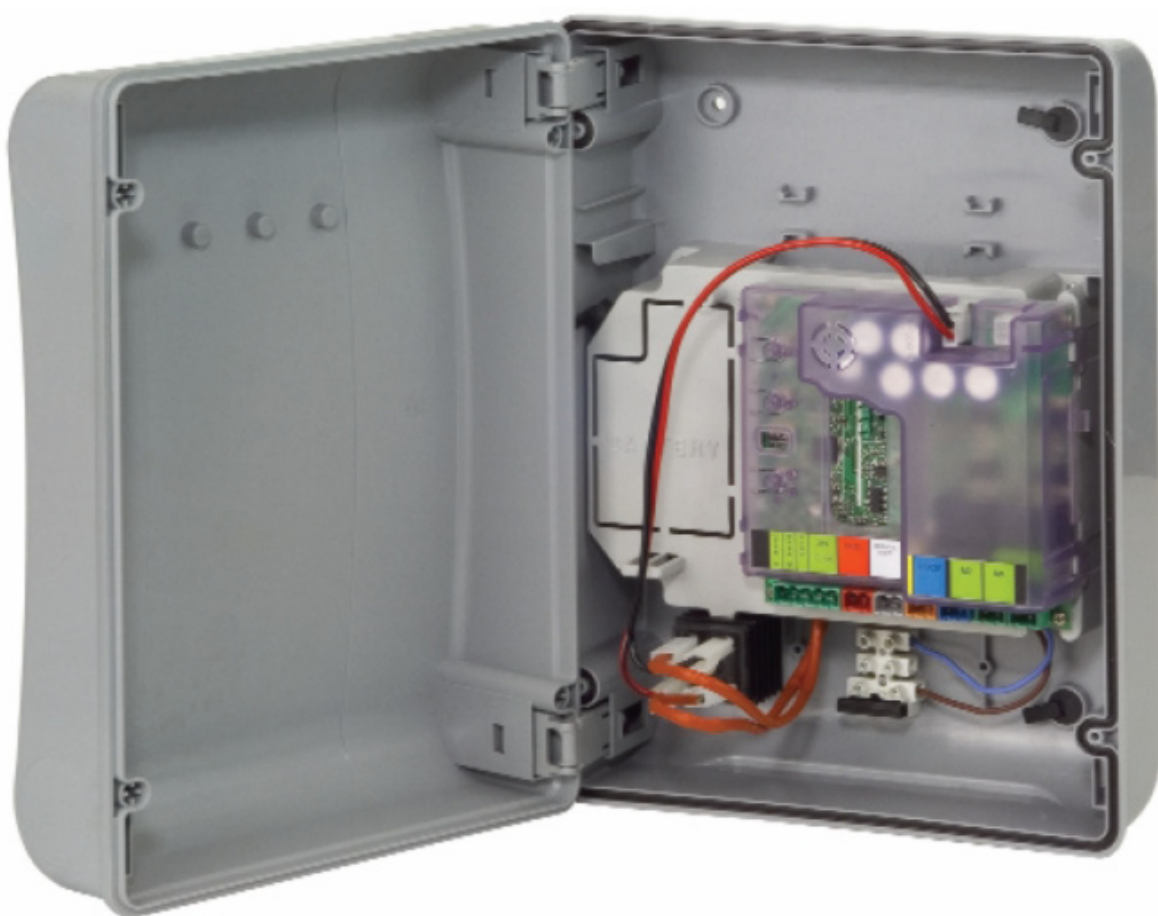


# E024S



omni  
DEC

2easy



FAAC

DS4	DS3	DS2	DS1	Description
OFF	OFF			391
ON	OFF			S418
OFF	ON			412-413-415-390-770
ON	ON			HYDRAULIC MOTOR S450H/S700H/S800H/S800H ENC
		OFF	OFF	LOW FORCE
		ON	OFF	MEDIUM - LOW FORCE
		OFF	ON	MEDIUM - HIGH FORCE
		ON	ON	HIGH FORCE



**ATTENZIONE**

**PRIMA DI EFFETTUARE IL SETUP SELEZIONARE CON I DIP SWITCH DS1(DS3-DS4) L'OPERATORE COLLEGATO ALL'APPARECCHIATURA E024S. PER TUTTI GLI ALTRI SETTAGGI FARE RIFERIMENTO AL MANUALE ISTRUZIONI E024S.**



**ATTENTION**

**BEFORE PERFORMING THE SETUP, SELECT THE OPERATOR CONNECTED TO THE E024S EQUIPMENT WITH THE DS1(DS3-DS4) DIP SWITCHES. FOR ALL OTHER SETTINGS, REFER TO THE E024S INSTRUCTION MANUAL.**



**ATTENTION**

**AVANT D'EFFECTUER LE SETUP, SÉLECTIONNER L'OPÉRATEUR CONNECTÉ À L'ÉQUIPEMENT E024S À L'AIDE DES DIP SWITCH DS1(DS3-DS4). POUR TOUTES LES AUTRES OPÉRATIONS DE SETUP, REPORTEZ-VOUS AU MANUEL D'INSTRUCTIONS E024S.**



**ACHTUNG**

**VOR DER DURCHFÜHRUNG EINES SETUPS MUSS MIT DEN DIP-SWITCHES DS1(DS3-DS4) DER AN DIE ANLAGE E024S ANGESCHLOSSENE ANTRIEB ANGEWÄHLT WERDEN. ANLEITUNGEN ÜBER ALLE ANDEREN EINSTELLUNGEN SIND DER BETRIEBSANLEITUNG E024S ZU ENTNEHMEN.**



**ATENCIÓN**

**ANTES DE EFECTUAR EL SETUP SELECCIONAR CON LOS DIP SWITCHES DS1 (DS3-DS4) EL OPERADOR CONECTADO AL EQUIPO E024S. PARA TODAS LAS OTRAS CONFIGURACIONES TOMAR COMO REFERENCIA EL MANUAL DE INSTRUCCIONES E024S.**



**LET OP**

**ALVORENS DE SETUP UIT TE VOEREN, MOET MET DE DIPSCHAKELAARS (DS3-DS4) DE AANDRIJVING WORDEN GESELECTEERD DIE OP HET APPARAAT E024S IS AANGESLOTEN. RAADPLEEG VOOR ALLE ANDERE INSTELLINGEN DE INSTRUCTIEHANDLEIDING E024S.**

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## CE DECLARATION OF CONFORMITY

**Manufacturer:** FAAC S.p.A.

**Address:** Via Calari, 10 - 40069 Zola Predosa BOLOGNA - ITALY

**Declares that:** Control board mod. E024S,

- conforms to the essential safety requirements of the following EEC directives:  
2006/95/EC Low Voltage Directive

2004/108/EC Electromagnetic Compatibility Directive

Additional information:

This product underwent a test in a typical, uniform configuration.



(all products made by FAAC S.p.A)

Bologna 10-11-2014

CEO  
A. Marcellan



## WARNINGS

- Important! For the safety of people, it is important that all the instructions be carefully observed.
- Incorrect installation or incorrect use of the product could cause serious harm to people.
- Carefully read the instructions before beginning to install the product and keep them for future reference.
- The symbol  indicates notes that are important for the safety of persons and for the good condition of the automated system.
- The symbol  draws your attention to the notes on the characteristics and operation of the product.

# ELECTRICAL BOX E024S

## BOX LAYOUT

**⚠ THE BOX CONTAINS THE E024S CONTROL UNIT AND THE DEVICES TO POWER IT. IT MUST THEREFORE BE HANDLED WITH CARE DURING ALL INSTALLATION STAGES, TO AVOID DAMAGING ITS COMPONENTS.**

The dimensions of the box are shown in Fig.A:

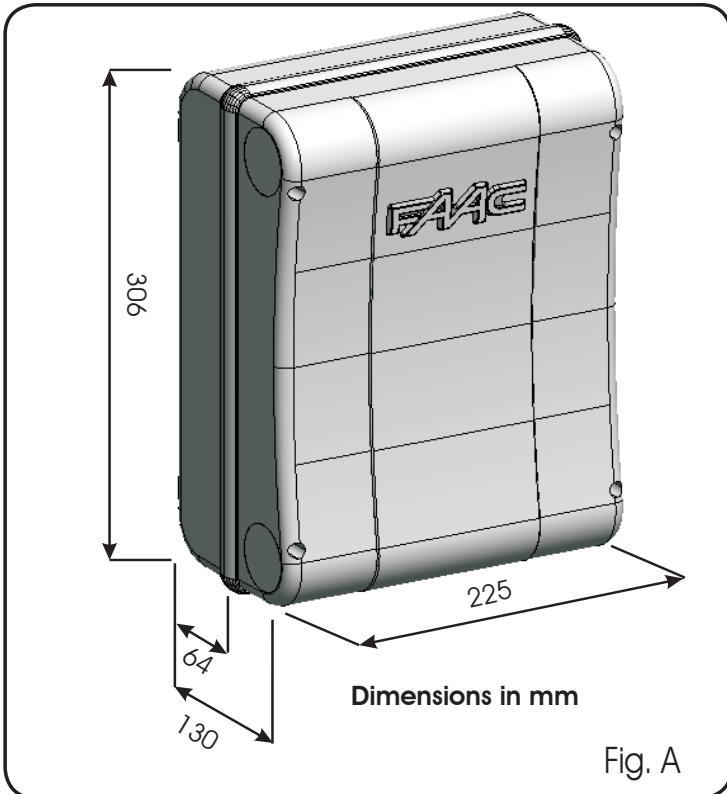
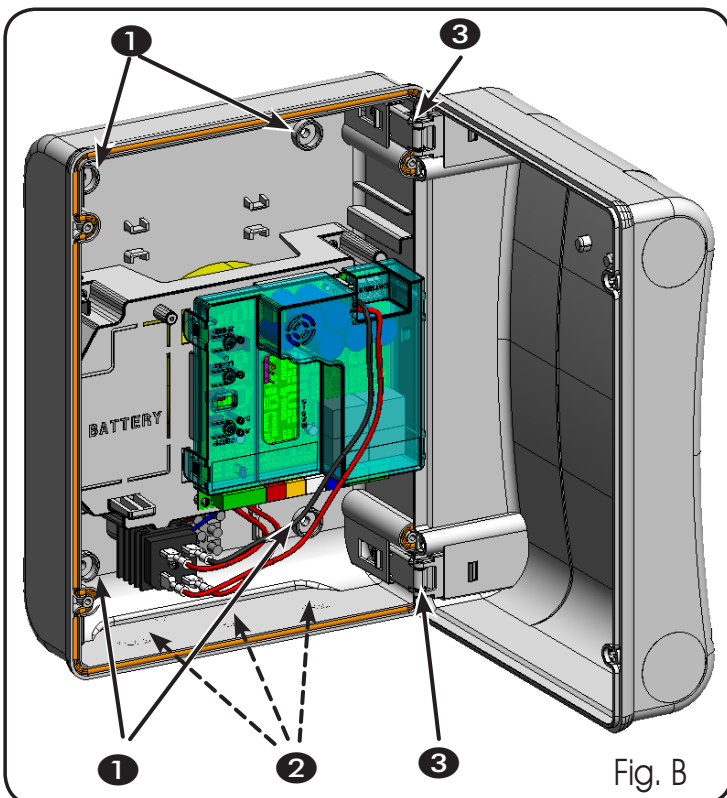
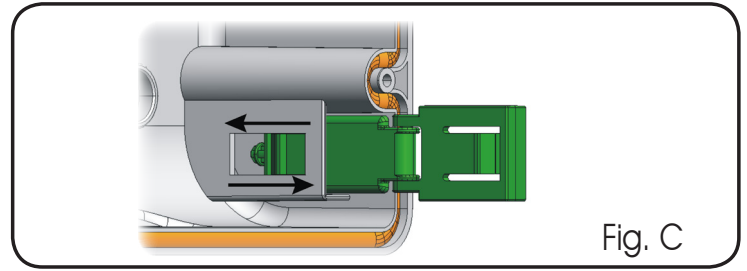


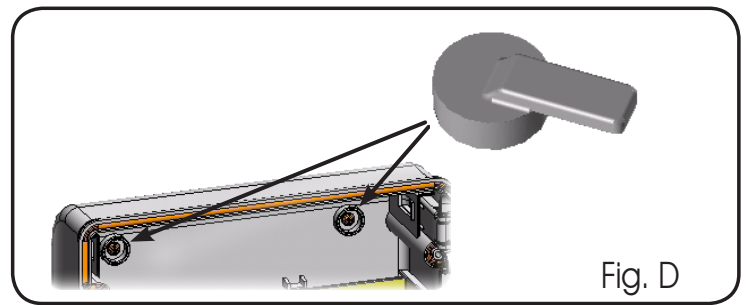
Fig. B shows the four 5 mm diam. holes for securing the box (ref.①) to the wall, the three facilities for installing the cable grippers M16/M20/M25 (ref.②) and the two cover hinges (ref.③).



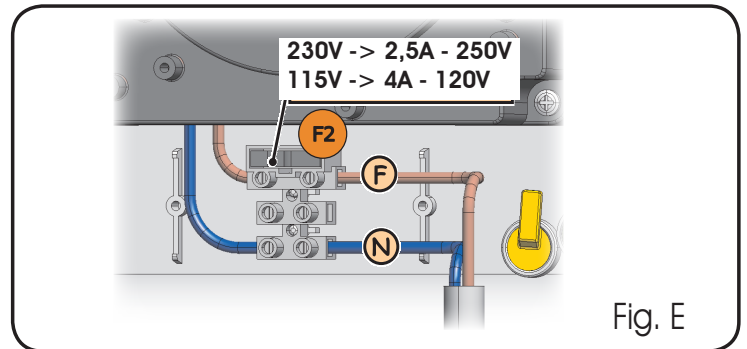
The cover hinges can be moved upward to allow opening the box housing (Fig. C); they can also be removed and re-positioned in order to enable the cover to open to the right or left.



When you have secured the box in the selected position, cover the securing holes (ref.① Fig.B) and the screws with the supplied plugs as shown in Fig.D.



Connect the power cable as shown in Fig.E. After having connected the control board to the different parts of the automated system, close the box by placing the cover on its seat with gasket.



Next, tighten the four supplied screws to guarantee the degree of protection against external agents (Fig.F).



# CONTROL UNIT E024S

## 1 WARNINGS E024S

- ⚠ Before attempting any work on the control unit (connections, maintenance), always turn off power.
- Install, upstream of the system, a differential thermal breaker with adequate tripping threshold,
- Always separate power cables from control and safety cables (push-button, receiver, photocells, etc.).
- To avoid any electrical disturbance, use separate sheaths or a shielded cable (with the shield earthed).

## 2 LAYOUT AND CONNECTIONS E024S

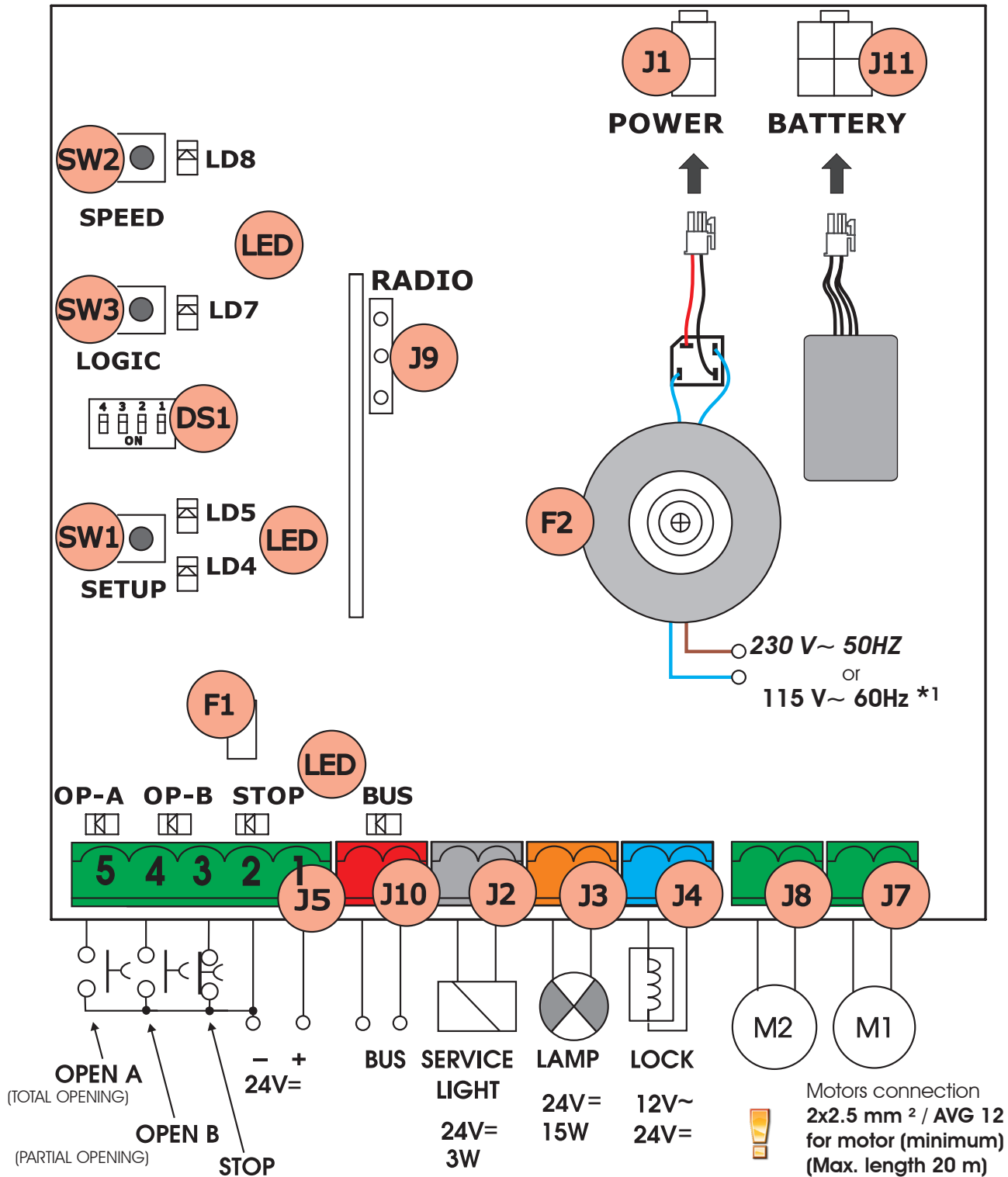


Fig. 1A

⚠ \*1 THE POWER SUPPLY IS RELATED TO THE E024S PURCHASED VERSION.

# CONTROL UNIT E024S fitted on 391

## 1 WARNINGS E024S FITTED ON 391

- ⚠ Before attempting any work on the control unit (connections, maintenance), always turn off power.
- Install, upstream of the system, a differential thermal breaker with adequate tripping threshold,
- Always separate power cables from control and safety cables (push-button, receiver, photocells, etc.).
- To avoid any electrical disturbance, use separate sheaths or a shielded cable (with the shield earthed).

## 2 LAYOUT AND CONNECTIONS E024S FITTED ON 391

ENGLISH

Motors connection  
2x2.5 mm<sup>2</sup> / AVG 12  
for motor (minimum)  
(Max. length 20 m)

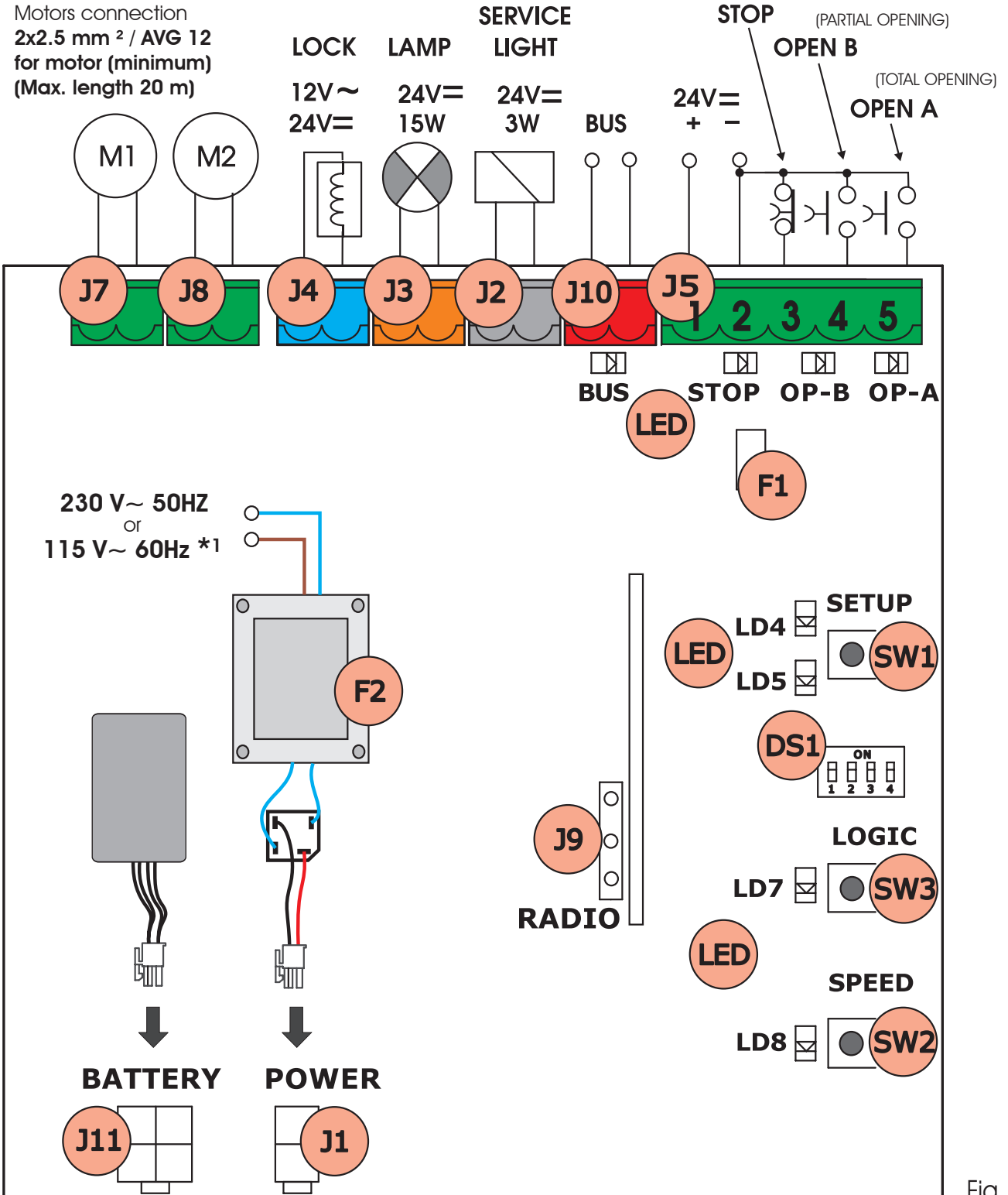


Fig. 1B

⚠ \*1 THE POWER SUPPLY IS RELATED TO THE E024S PURCHASED VERSION.

### 3 TECHNICAL SPECIFICATIONS

Power supply voltage *	230V~ (+6% -10%) - 50Hz 115V~ (+6% <sup>or</sup> -10%) - 60Hz
Absorbed power	4W
Motor max. load	150W x 2
Accessories max. current (+24V=)	250 mA
BUS Accessories max.current	400 mA
Operating ambient temperature	-20°C... +55°C
Fuses *	F1 = self-resetting; F2 = T2A-250V~ <b>or</b> T4A-120V~
Function logics	A, E, AP, EPA1,B,C
Work time (time-out)	5 minutes (fixed)
Pause time	Varies according to learning (max. 10 min.)
Terminal board inputs	Open A, Open B, Stop, BUS (I/O)
Connector inputs	Power supply, battery module XF 433 or XF 868
Terminal board outputs	Motors, flashing lamp, power supply to accessories, electric lock, service light contact (90 sec fixed)
Programmable functions	Speed (High - Low)
Learning functions	Pause time, leaf closing delay
Integrated radio channels type	DS, SLH (max 250 channels) LC -RC (max 250 channels )

\* The power supply and the fuse are related to the purchased version. The self-resetting fuse F1 stops the power supply to the accessories by opening a circuit if a current over 500 mA is detected. It automatically resets after 5 seconds.


#### 3.1 DESCRIPTION OF COMPONENTS

J1	POWER SUPPLY connector
J2	SERVICE LIGHT command terminal-board
J3	FLASHING LAMP terminal-board
J4	ELECTRIC LOCK terminal-board
J5	COMMANDS terminal-board
J7	MOTOR 1 terminal-board
J8	MOTOR 2 terminal-board
J9	Rapid connection for XF MODULE
J10	BUS terminal-board
J11	BATTERY connector
SW1	SET UP push-button
SW2	SPEED push-button
SW3	LOGIC push-button
DS1	Programming Dip-switch
F1	Accessories protective fuse
F2	Fuses protecting transformers and motors
LED	Signalling LEDs

### 3.2 DESCRIPTION OF TERMINAL-BOARDS

Terminal and/or terminal-board	Description	Device connected
1	+24V=	Power supply for accessories
2	GND	Negative
3	J5 STOP	Device with NC contact which causes the automated system to shut down
4	OPEN B	Device with N.O contact
5	OPEN A	
J10 RED terminal	BUS	Safety devices with BUS technology
J2 GREY terminal	SERVICE LIGHT (on for 90 sec. following movement)	Service Light control output (connect a relay coil at 24V= /100mA max)
J3 ORANGE terminal	LAMP	Flashing lamp 24V= / 15W
J4 BLUE terminal	LOCK	Electric lock 12V~ or 24 V= (to be installed on leaf 1)
J7	MOT1	Motor 1 (leaf 1)
J8	MOT2	Motor 2 (leaf 2)

 **Leaf 1 means the leaf which opens first during the opening operation.**

 **The service light control is active during the entire gate opening or closing movement and for the successive 90 seconds.**

#### 3.3 ANTI-CRUSHING FUNCTION

The electronic anti-crushing function is obtained by controlling the current consumption or the encoder of the motors connected to the E024S unit.

If the gate detects an obstacle during the opening or closing movement, the anti-crushing function activates and reverses the sense of direction of the operator, thus increasing the safety degree of the automated system.

#### 4 PROGRAMMING THE LOGIC

Repeatedly press the SW3 LOGIC push-button to select one of the 7 programming logics available.

The selected logic is signaled by the LD7 LED: the number of flashings corresponds to the number of the selected logic.

**See paragraph 6.3.3.**

#### 5 PROGRAMMING THE SPEED

The function SPEED can be adjusted at any time by pressing push-button SW2.

The selected speed is then displayed on LED LD8:

- LED on = HIGH speed
- LED off = LOW speed

## 6 START-UP

### 6.1 LEDS CHECK

Check the status of the inputs, from the LEDs on the board (Tab. 1).  
Tab. 1: input LED status  
(the condition of closed automation in standby is provided in bold)

LED STATUSES		
LED	ACTIVE CONTROL	NOT ACTIVE CONTROL
STOP	Off	<b>On</b>
OPEN A	On	<b>Off</b>
OPEN B	On	<b>Off</b>
BUS	See paragraph 7.2	

### 6.2 PROGRAMMING THE DIP-SWITCHES

The settings of the DS1 dip-switch for programming the force and the type of motor are shown in the following table.

**Tab. 2 - DS programming**  
(default settings in bold)

DS4	DS3	DS2	DS1	Description
<b>OFF</b>	<b>OFF</b>			<b>MOTOR 391</b>
ON	OFF			MOTOR 418
OFF	ON			MOTOR 412-413-415-390-770
ON	ON			HYDRAULIC MOTOR (*) S450H/S700H/S800H/S800H ENC
		<b>OFF</b>	<b>OFF</b>	<b>LOW FORCE</b>
		ON	OFF	MEDIUM - LOW FORCE
		OFF	ON	MEDIUM - HIGH FORCE
		ON	ON	HIGH FORCE



#### Important:

The dip-switch arrangement on the E024S board for 391 is overturned.



(\*) with the DS3-DS4 selection on ON the operator connected to the encoder is automatically recognized during the set-up phase



Before performing the Setup, select the operator connected to the E024S unit with the DS1(DS3-DS4) DIP switches.

### 6.3 TIME LEARNING – SETUP



Before any manoeuvre is executed, a SETUP cycle must first be run.



If the motor type is changed with the DS3 and DS4 dip-switches after the SETUP, a new SETUP is requested with flashing LD4 and LD5 LEDs.



If, after the start of the SETUP procedure, the leaves close instead of open, reverse the motor power cables

When the board is powered up and a SETUP cycle has never been executed, LEDs LD4 and LD5 begin to flash slowly to signal that a SETUP cycle must be executed. There are two possible types of SETUP:  
- AUTOMATIC SETUP  
- MANUAL SETUP

#### 6.3.1 AUTOMATIC SETUP

To enter the Automatic setup, press the SETUP push-button until the two LD4 and LD5 LEDs are permanently lit. Then release the SETUP push-button.

During the Setup phase both LEDs flash.

The leaves start to open one at a time, from any position, till they detect the opening limit stop. Next, the leaves start to close, one at a time, till they detect the closing limit stop.

Then, the leaves start again to move automatically one at a time from the closed position.

1. When the leaves detect the opening limit stop, they stop in the open position and the set-up is completed.

If the SETUP procedure is performed correctly, the LD4 and LD5 LEDs turn off at the end. Otherwise the procedure ends by asking a new SETUP with flashing LEDs.



With the AUTOMATIC SETUP, the deceleration spaces, the leaf closing delays and the pause time (30 s, with logic A) are automatically preset during setup.

#### 6.3.2 MANUAL SETUP

To enter the Manual setup, press the SETUP push-button until both LD4, press the SETUP push-button until the two LD4 and LD5 LEDs are permanently lit. Keep it pressed until the automated system starts moving automatically.

During the Setup phase both LEDs flash.



(\*) During SETUP, to set the stop point, the OPEN command must ONLY be used with SAFECODER

The leaves start to open one at a time, from any position till they detect the opening limit stop. Next the leaves start to close one at a time till they detect the closing limit stop.

Then the leaves start again to move automatically one at a time from the closed position.

1. Open impulse ---> leaf 1 decelerated opening and start of the search for leaf 1 opening limit stop
  - if the limit stop is detected, it is set as stop point for leaf 1 and leaf 2 starts to open.

(\*) if an open command is detected, it is set as opening stop point for leaf 1 and leaf 2 starts to open.

2. Open impulse ---> leaf 2 decelerated opening and start of the search for leaf 2 opening limit stop.
  - if the limit stop is detected, it is set as opening stop point for leaf 2.


(\*) if an open command is detected, it is set as opening stop point for leaf 2.




### 6.3.4 SECOND LEVEL PROGRAMMING

3. From now on, until next open impulse, the pause time is counted.
4. Open impulse ---> Pause time acquisition and start of leaf 2 closing movement.
5. Open impulse ---> leaf 2 decelerated closure and start of the search for leaf 2 closing limit stop.
  - if the limit stop is detected, it is set as leaf 2 stop point and leaf 1 starts to close.
- (\*) if an open command is detected, it is set as leaf 2 stop point and leaf 1 starts to close.
6. Open impulse ---> leaf 1 decelerated closure and start of the search for leaf 1 closing limit stop.
  - if the limit stop is detected, it is set as leaf 1 closing stop point.
- (\*) if an open command is detected, it is set as leaf 1 closing stop point.

If the SETUP procedure is performed correctly, the LD4 and LD5 LEDs turn off at the end. Otherwise the procedure ends by asking a new SETUP with flashing LEDs.

 **To eliminate decelerated opening and closing, send 2 consecutive open impulses to determine the opening and closing stop point, otherwise have the leaf find the opening and closing limit stop if you want to use the limit stop facility.**

 **With the MANUAL SETUP the decelerated spaces, the leaf closing delay and the pause time are manually set on the board during setup. You can modify them without repeating the setup procedure by using the 2nd level programming.**

### 6.3.3 PROGRAMMING THE LOGIC

Repeatedly press the SW3 push-button to select one of the 7 programming logics available. The selected logic is signaled by the LD7 LED. The number of flashings corresponds to the number of the selected logic:

(default settings in bold)

Logic	Description	SW3 pressing (LOGIC)	LD7 flashing
A	Logic A (Automatic)	once	Flashing once
<b>E</b>	<b>Semi-automatic</b>	twice	<b>Flashing twice</b>
AP	Step-by-step automatic	3 times	Flashing 3 times
EP	Step-by-step semi-automatic	4 times	Flashing 4 times
A1	Automatic 1	5 times	Flashing 5 times
b	Semi-automatic "b"	6 times	Flashing 6 times
c	Dead man	7 times	Flashing 7 times

To enter the 2nd level menu, press the SW2 SPEED push-button for more than 2.5 seconds.


Both SETUP LEDs light on with steady beam. In this mode, the SPEED key has the menu scrolling function. You can scroll the menu by pressing it the same number of times shown for the parameter.

The different menus are identified by the number of flashing of LD8.

The LOGIC key is used to set the parameter value. You can exit the 2nd level menu by pressing the SPEED key for 2.5 seconds.

(default settings in bold)

	Description	Pressing SW2 (Speed)	LD7 LED status (Logic)	LD8 LED flashing (Speed)
1	Windproof function (anti-crushing sensitivity)	Once	Enabled ON (low obstacle sensitivity) <b>Disabled OFF</b> (high obstacle sensitivity)	1 flash
2	Reversing stroke	twice	Enabled ON <b>Disabled OFF</b>	Flashing twice
3	Soft-Touch	3 times	Enabled ON <b>Disabled OFF</b>	Flashing 3 times
4	Pre-flashing	4 times	Enabled ON <b>Disabled OFF</b>	Flashing 4 times
5	Leaf opening delay	5 times	<b>Enabled ON (2 sec.)</b> Disabled OFF	Flashing 5 times
6	Leaf closing delay* (Default 5 s)	6 times	ON (SW3 pressing) OFF (no pressure)	Flashing 6 times
7	Pause time* (Default 30 s)	7 times	ON (SW3 pressing) OFF (no pressure)	Flashing 7 times
8	Stop point search space (function only active if SAFECODER available)	8 times	<b>HIGH (Short leaf) OFF</b> LOW (Long leaf) ON	Flashing 8 times

 **\* With menus 6 and 7, keep the LOGIC push-button pressed until reaching the time to be set. The time can be set between 0 and 4.25 minutes.**



### 6.3.5 RETURN TO DEFAULT SETTINGS

Restore the default settings as follows:

1. Keep the SETUP push-button pressed to switch the board ON.
2. Both SETUP LEDs are alternately lit
3. The board resets the parameters.
4. Until the SETUP push-button is pressed, movements are inhibited.
5. When the SETUP push-button is released, both LD4 and LD5 LEDs flash.
6. The default configuration is reset and the new Setup can be started.

### 6.3.6 PARAMETER DEFINITION

- **Anti-wind:** the anti wind function enables the gate to operate even if there are gusts of wind. The obstacle detection time is set to 5 s and commands the reversal of motion.
- **Reversing stroke:** when the gate is closed, the reversing stroke function makes it possible that before the opening movement, the motors push to close for approx. 3 s to facilitate uncoupling the electric lock.
- **Soft-touch:** the soft touch function makes it possible that, after touching the closing limit stop, the leaves reverse and then rest gently. This function can be useful to observe the impact curve as requested by current standards.
- **Pre-flashing:** it activates approx. 3 s before every opening and closing movement
- **Leaf delay at opening:** it delays the leaf 2 start at opening with respect to leaf 1, avoiding thus any interference between the leaves.
- **Leaf delay at closure:** it delays leaf 1 at closure with respect to leaf 2.
- **Pause time:** In logic A it is the time set for the leaf re-closure after the opening.
- **Stop point search space:** this parameter adjusts the mechanical stop search angle within which the board stops the movement without reversing if an obstacle is encountered or the mechanical stop itself can be adjusted.


## 7 INSTALLATION OF BUS ACCESSORIES


This board is supplied with a BUS circuit enabling easy connection of a high number of BUS accessories (e.g. up to 16 photocells pairs), appropriately programmed, using only two cable without polarity.


Below we describe the addressing and memory storage of the BUS photocells.

For other future accessories, refer to the specific instructions.

### 7.1 SETTING THE BUS PHOTOCELLS

 **Important to give both the transmitter and the receiver the same address.**

 **Make sure that there are not two or more pairs of photocells with the same address.**

 **If no BUS accessory is used, leave the BUS connector free (J10 - fig. 1).**

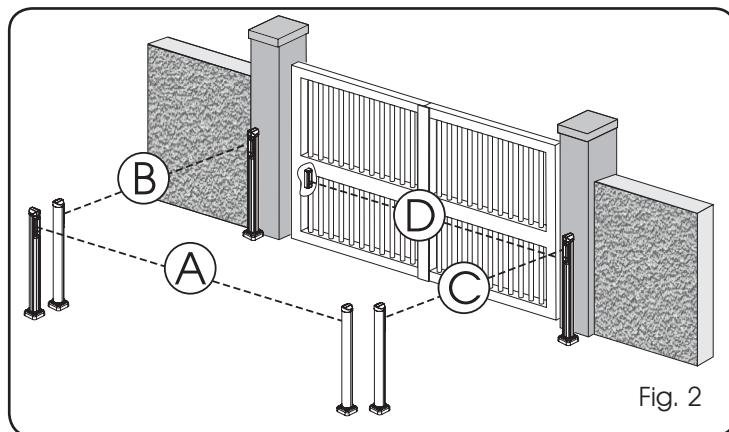


Fig. 2

A maximum of 16 BUS photocell pairs can be connected to the board.

The photocells are split into groups:

Opening photocells:	max 6
Closing photocells:	max 7
Opening /Closing photocells:	max 2
Photocell used as an OPEN pulse:	max 1

Fig. 2 shows a 2-swing leaf automated system indicating the coverage beams of the photocells:

- A: Photocells with OPENING and CLOSING action.
- B: Photocells with OPENING action
- C: Photocells with OPENING action
- D: Photocells with CLOSING action

Table 3 shows the programming operations of the dip-switch inside the transmitter and of the BUS Photocells receiver.

Tab. 3 - Setting of bus photocells

PAIR	Dip1	Dip2	Dip3	Dip4	Ref.	Type
1	OFF	OFF	OFF	OFF	B - C	OPENING
2	OFF	OFF	OFF	ON		
3	OFF	OFF	ON	OFF		
4	OFF	OFF	ON	ON		
5	OFF	ON	ON	OFF		
6	OFF	ON	ON	ON		
7	ON	OFF	OFF	OFF	D	CLOSING
8	ON	OFF	OFF	ON		
9	ON	OFF	ON	OFF		
10	ON	OFF	ON	ON		
11	ON	ON	OFF	OFF		
12	ON	ON	OFF	ON		
13	ON	ON	ON	OFF	A	OPENING and CLOSING
14	OFF	ON	OFF	OFF		
15	OFF	ON	OFF	ON		
16	ON	ON	ON	ON	/	OPEN PULSE

## 7.2 MEMORY STORAGE OF BUS ACCESSORIES

It is possible to add BUS accessories to the system at any time by simply saving them on the board, in the following manner:

1. Install and program the accessories using the required address (see paragraph 7.1)
2. Cut power to the board.
3. Connect the two accessories cables to the red terminal-board J10 (any polarity will do).
4. Power up the board, taking care to first connect the main power supply (transformer output) and then any batteries and wait for the BUS LED to light on.
5. Quickly press once only the SW1 (SETUP) push-button, to execute learning. The BUS LED flashes.
6. Give an OPEN impulse, leaves will move and the BUS learning procedure is over.

The board has memory stored the BUS accessories. Follow the instructions in the table below to check if the BUS connection is correct.

Tab. 4 - Description of BUS LED

<b>Steady light</b>	Normal operation (LED ON even in the absence of photocells)
<b>Slow flashing lamp</b> (flash every 0.5 sec)	At least one input engaged: photocell engaged or not aligned, Open A or Open B or Stop input engaged
<b>Light OFF</b> (flash every 2.5 sec)	BUS line short circuited
<b>Fast flashing lamp</b> (flash every 0.2 sec)	If you have detected a BUS connection error, repeat the acquisition procedure. If the error is repeated, make sure that there is no more than one accessory with the same address in the system (also see the accessories instructions)

## 8 MEMORY STORING THE RADIO CODE

The control unit has an integrated 2-channel decoding system (DS, SLH, LC) named OMNIDEC. This system makes it possible to memory-store both total opening (OPEN A) and partial opening (OPEN B) of the automated system - this is made possible by an additional receiver module (fig.3A ref. ①) and Fig.3B ref. 1 for E024S for 391) and radio controls on the same frequency.

**The 3 types of radio codes (DS, LSH, RC) cannot coexist.  
Only one radio code can be used at a time.**

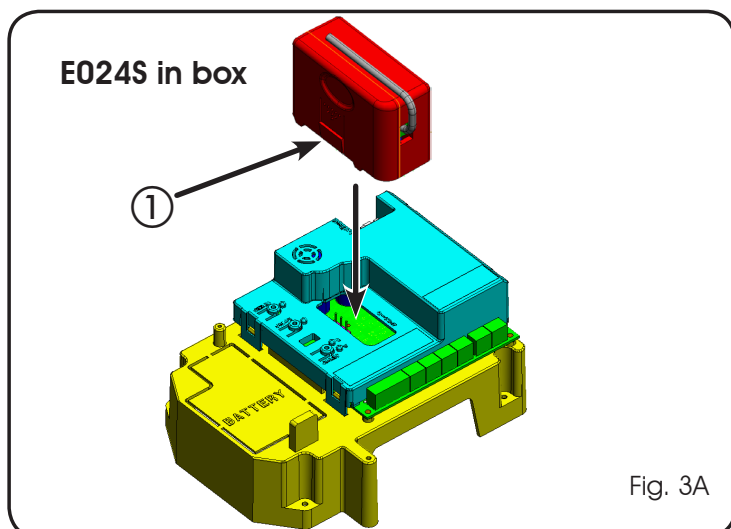


Fig. 3A

**!** To change over from one code to another, you must delete the existing one (see paragraph on deletion), and repeat the memory-storage procedure.

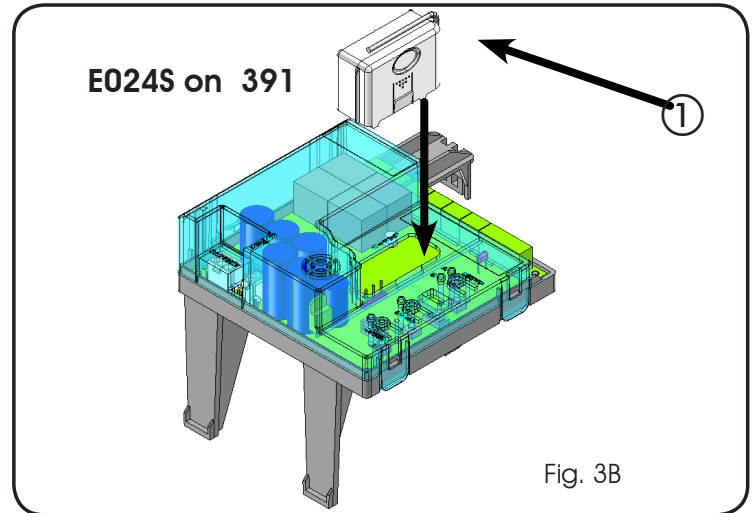


Fig. 3B

## 8.1 MEMORY STORAGE OF DS RADIO CONTROLS

**A maximum of two codes can be stored. One on the OPEN A channel and one on the OPEN B channel.**

1. On the DS radio control, select the required ON-OFF combination for the 12 dip-switches.
2. Press the LOGIC (SW3) or SPEED (SW2) push-button, to memory store respectively total opening (OPEN A) or partial opening (OPEN B), and as you hold it down, also press the SETUP (SW1) push-button. The relevant LED starts to flash slowly for 5 sec.
3. Release both push-buttons.
4. Within these 5 sec., press the appropriate push-button on the radio control.
5. The relevant LED lights up on steady beam for 1 second and then goes OFF, indicating that storage was executed.
6. To add other radio controls, set the same ON-OFF combination used in point 1.

## 8.2 MEMORY STORAGE OF SLH-SLH LR RADIO CONTROLS

**A maximum of 250 codes can be memory stored, split between OPEN A and OPEN B.**

1. On the SLH radio control, simultaneously press and hold down push-buttons P1 and P2.
2. The radio control LED begins to flash.
3. Release both push-buttons.
4. Within 5 s, while the radio control LED is still flashing, press and hold down the selected push-button on the radio control (the radio control LED lights on with steady beam).
5. Press the LOGIC (SW3) or SPEED (SW2) push-button to respectively memory store total opening (OPEN A) or partial opening (OPEN B) and, by holding it down, press the push-button SETUP (SW1)
6. The LED on the board lights up on steady beam for 1 second and then goes OFF, indicating that storage was executed.
7. Release the radio control push-button.
8. Quickly press twice the memory stored radio control push-button.

**The automated system performs one opening operation. Make sure that the automated**

**⚠ system is free of any obstacle created by persons or things.**

To add other radio controls, transfer the code of the memory-stored push-button of the radio control to the relevant push-button of the radio controls to be added, observing the following procedure.

- On the memory stored radio control, simultaneously press and hold down push-buttons P1 and P2.
- The radio control LED begins to flash.
- Release both push-buttons.
- Press the memory stored push-button and hold it down (the radio control LED lights up on steady beam).
- Bring the radio controls near, press and hold down the push-button of the radio control to be added, releasing it only after the double flash of the radio control LED, which indicates memory storage executed.
- Quickly press twice the push-button of the memory stored radio control.

**⚠ The automated system performs one opening operation. Make sure that the automated system is free of any obstacle created by persons or things.**

### 8.3 MEMORY STORAGE OF RC/LC RADIO CONTROLS

**👉 A maximum of 250 codes can be memory stored, split between OPEN A and OPEN B.**

1. Use RC/LC remote controls only with receiver module at 433 MHz.
2. Press the LOGIC (SW3) or SPEED (SW2) push-button, to memory store respectively total opening (OPEN A) or partial opening (OPEN B), and as you hold it down, also press the SETUP (SW1) push-button. The relevant LED starts to flash slowly for 5 sec.
3. Release both push-buttons. Within these 5 sec., press the appropriate push-button on the RC or LC remote control.
4. The LED lights up on steady beam for 1 second, indicating memory storage executed, and then resumes flashing for another 5 sec., during which another radio control (point 4) can be memory stored.
5. When the 5 sec. have elapsed, the LED goes OFF indicating the end of the procedure.
6. To add other radio controls, repeat the operation at point 1.

#### 8.3.1 REMOTE MEMORY STORAGE OF RC/LC RADIO CONTROLS

Other radio controls can be remotely stored only with the RC/LC radio controls, i.e. without using the LOGIC-SPEED-SETUP push-buttons, but using a previously stored radio control.

1. Get a radio control already stored on one of the 2 channels (OPEN A or OPEN B).
2. Press and hold down push-buttons P1 and P2 simultaneously until both the LEDs flash slowly for 5 sec.
3. Within 5 sec. press the push-button of the radio control that had been memory stored to enable learning on the selected channel.

4. The LED on the board relating to the channel being learned flashes for 5 sec., within which time the code of another radio control must be transmitted.
5. The LED lights up on steady beam for 2 seconds, indicating memory storage executed, and then resumes flashing for 5 sec., during which other radio controls can be memory stored, and then goes OFF.

### 8.4 RADIO CONTROLS DELETION PROCEDURE

1. To delete **ALL** the input radio control codes, press push-button LOGIC (SW3) or SPEED (SW2) and, while holding it down, also press push-button SETUP (SW1) for 10 sec.
2. The LED relating to the pressed push-button flashes for the first 5 sec, and then flashes more quickly for the next 5 sec.
3. Both LEDs light up on steady beam for 2 sec and then go OFF (deletion completed).
4. Release both push-buttons.

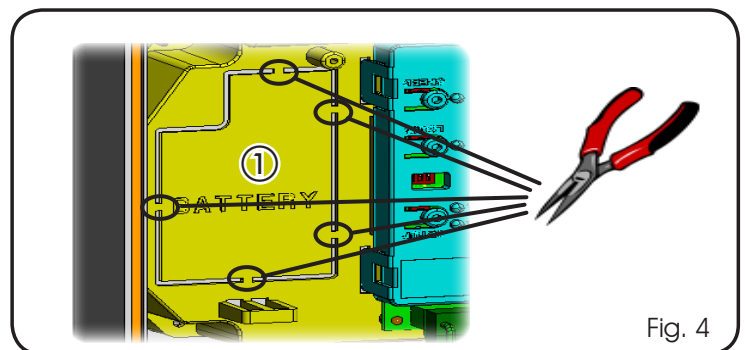
**⚠ This operation is NOT reversible. All codes of radio controls stored as OPEN A and OPEN B will be deleted.**

## 9 BATTERY KIT OF E024S (OPTIONAL)

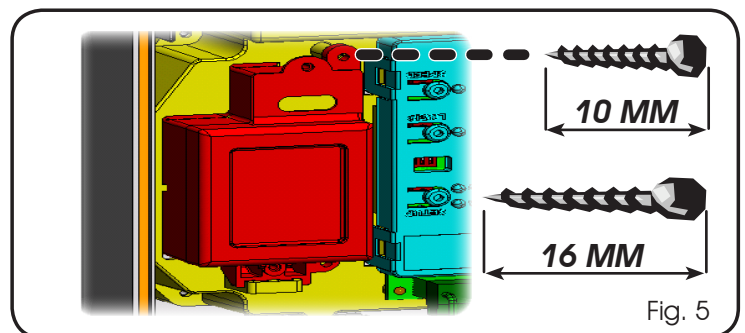
The buffer battery kit was built for insertion inside the control board support.

This support (Fig.4 ref.①) was pre-moulded to permit the battery housing to be opened.

1. Remove the board support material covering the battery housing, cutting the material connections along the perimeter.



2. Insert the battery in the housing you have just created, and secure it on the anchoring supports (Fig.5).




3. To correctly fasten and connect the control unit to the J11 connector, refer to the instructions enclosed with the battery kit.

## 9.1 BATTERY KIT OF E024S ON 391 (OPTIONAL)

The battery kit enables you to activate the automated system even in the event of a mains power fault. The batteries are housed in a specific compartment inside the operator (see sequence in fig. 6).

To install, refer to the specific instructions.

 **The batteries start operating when mains voltage fails.**

## 10 AUTOMATED SYSTEM TEST

When you have finished programming, check if the system is operating correctly. In particular, check if the safety devices are operating correctly.

## 11 BUS ENCODER WIRING

E024S is used to control bus encoders. Any encoders connected to the red bus terminal are recognised during bus device acquisition (chapter 7.2).

The use of this type of encoder offers precise and constant information on leaf position, guaranteeing reverse movement in case of obstacles.

The encoder is compulsory on hydraulic operators (S450H, S700H, S800H, S800H ENC) and optional on electromechanical operators.

 **Leaf 1 opens as first and closes as second**



Fig. 7

1. Connect the 2 encoder cables to the BUS input (red terminal) on the electronic board.
2. Ensure that the encoder LEDs light up as reported in the table. The LEDs must be checked with the leaf stopped.

	Leaf 1 (DL1, DL2 on)	Leaf 2 (DL1 on)
<b>S450H, 412, 413, 415, 770, 770N</b> <b>SAFECODER</b> Absolute encoder		
<b>S700H/S800H</b> Relative encoder		
<b>S800H ENC</b> Relative encoder (It only works as a relative encoder on E024S)		

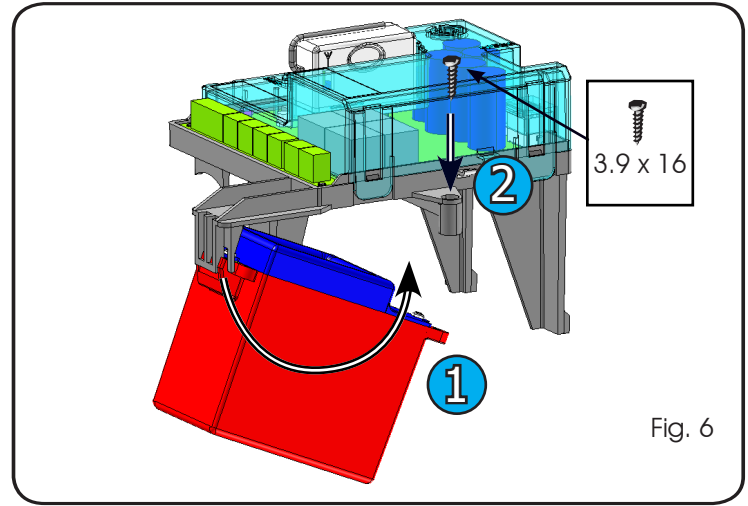


Fig. 6

LED	ON	FLASHING	OFF
DL 1	Power supply on and BUS connected to board	Power supply on but BUS not connected	No power supply or BUS communication
DL 2	Leaf 1 encoder	--	Leaf 2 encoder
DL 3	--	Pulse reading during leaf movement	--

 *If necessary, swap the 2 connecting wires to obtain the correct coupling of the encoder with the leaf as indicated in the following figure.*

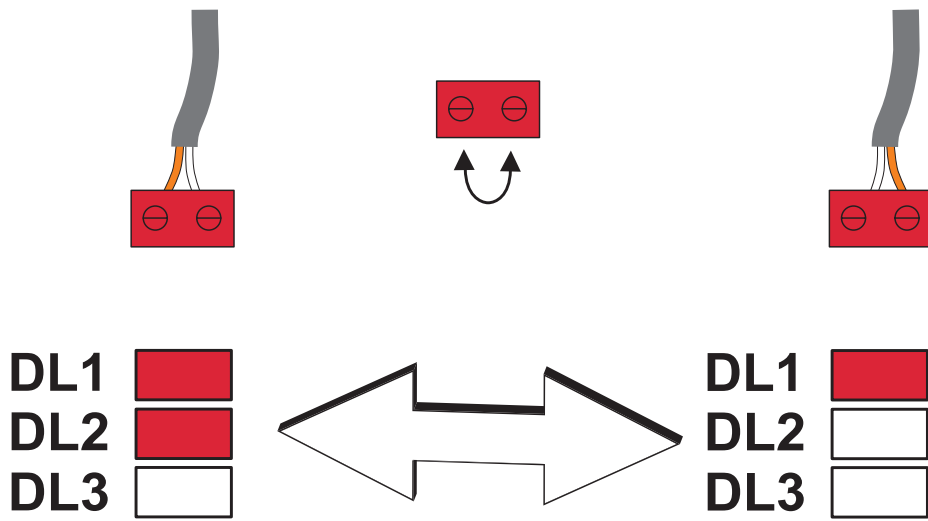


Fig. 8

LOGIC		Automation status: stopped	Automation status: moving	Status: triggered photocell
<b>A</b>	Automatic	an OPEN pulse opens the gate and closes automatically after the pause time	An OPEN pulse is ignored when the gate opens, is reapplied during the pause and reopens when the gate closes	The closing photocells reapply the pause
<b>E</b>	Semiautomatic	an OPEN pulse opens the gate and the following one closes it	An OPEN pulse stops the gate when opening and reopens when the gate is closing	The photocells invert during motion
<b>EP</b>	Semi-automatic, Step-by-Step	an OPEN pulse opens the gate and the following one closes it	An OPEN pulse blocks during motion	The photocells invert during motion
<b>A1</b>	Automatic 1	an OPEN pulse opens the gate and closes automatically after the pause time	An OPEN pulse is ignored when the gate opens, is reapplied during the pause and reopens when the gate closes	The closing photocells close the gate once again during the pause; they memorise closure when the gate opens and immediately invert when closing
<b>AP</b>	Automatic, Step-by-Step	an OPEN pulse opens the gate and closes automatically after the pause time	An OPEN pulse blocks when the gate opens and during the pause and inverts when it closes	The closing photocells reapply the pause
<b>b</b>	Semi-automatic "b" (OPEN-B inputs become CLOSE)	logic with two separate commands: OPEN-A pulse opens; CLOSE pulse closes	An OPEN-A pulse opens when the gate closes, a CLOSE pulse closes when it opens	The photocells invert during motion
<b>C</b>	Dead-man (OPEN-B inputs become CLOSE)	logic with two separate commands: pressed OPEN-A opens; pressed CLOSE closes	An OPEN-A pulse opens when the gate closes; a CLOSE pulse closes when it opens	The photocells invert during motion

LOGIC "A"	PULSES						
	AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens and closes after pause time	opens released leaf and closes after pause time	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect	no effect (OPEN disabled)
<b>OPENING</b>	no effect (1)	no effect	stops operation	reverses at closure	no effect	stops and opens at release (saves CLOSE)	
<b>OPEN IN PAUSE</b>	recharges pause time (1)	recharges pause time of released leaf	stops operation	no effect	recharges pause time (CLOSE disabled)	recharges pause time (CLOSE disabled)	
<b>CLOSING</b>	reopens leaves immediately	reopens leaves immediately	stops operation	no effect	reverses at opening	stops and opens at release (saves CLOSE)	
<b>BLOCKED</b>	closes leaves	closes leaves	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)	

(1) if the cycle began with OPEN-B (released leaf), both leaves are activated at opening

LOGIC "E"	PULSES					
AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens the leaves	opens released leaf	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect (OPEN disabled)
<b>OPENING</b>	stops operation (1)	stops operation	stops operation	immediately reverses at closure	no effect	stops and opens at release (OPEN stops - saves CLOSE)
<b>OPEN</b>	recloses leaves immediately (1)	recloses leaves immediately	no effect (OPEN/CLOSE disabled)	no effect	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)
<b>CLOSING</b>	reopens leaves immediately	reopens leaves immediately	stops operation	no effect	reverses at opening	stops and opens at release (OPEN stops - saves CLOSE)
<b>BLOCKED</b>	closes leaves	closes leaves	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN stops - saves CLOSE)

(1) if the cycle began with OPEN-B (released leaf), both leaves are activated at opening

LOGIC "AP"	PULSES					
AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens and closes after pause time	opens released leaf and closes after pause time	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect (OPEN disabled)
<b>OPENING</b>	stops operation (1)	stops operation	stops operation	reverses at closure (saves OPEN)	no effect	stops and opens at release (OPEN stops - saves CLOSE)
<b>OPEN IN PAUSE</b>	stops operation (1)	stops operation	stops operation	no effect	recharges pause time (CLOSE disabled)	recharges pause time (CLOSE disabled)
<b>CLOSING</b>	reopens leaves immediately	reopens leaves immediately	stops operation	no effect	reverses at opening	stops and opens at release (OPEN stops - saves CLOSE)
<b>BLOCKED</b>	closes leaves	closes leaves	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)

(1) if the cycle began with OPEN-B (released leaf), both leaves are activated at opening

LOGIC "EP"	PULSES					
AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens the leaves	opens released leaf	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect (OPEN disabled)
<b>OPENING</b>	stops operation (1)	stops operation	stops operation	immediately reverses at closure	no effect	stops and opens at release (OPEN stops - saves CLOSE)
<b>OPEN</b>	recloses leaves immediately (1)	recloses leaves immediately	no effect (OPEN/CLOSE disabled)	no effect	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)
<b>CLOSING</b>	stops operation	stops operation	stops operation	no effect	reverses at opening	stops and opens at release (OPEN stops - saves CLOSE)
<b>BLOCKED</b>	restarts moving in opposite direction. Always closes after STOP	restarts moving in opposite direction. Always closes after STOP	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN stops - saves CLOSE)

(1) if the cycle began with OPEN-B (released leaf), both leaves are activated at opening



LOGIC "A1"	PULSES					
AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens and closes after pause time	opens released leaf and closes after pause time	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect (OPEN disabled)
<b>OPENING</b>	no effect (1)	no effect	stops operation	reverses	continues to open and re-closes after 5 s	stops and opens at release (saves CLOSE)
<b>OPEN IN PAUSE</b>	recharges pause time (1)	recharges pause time (1)	stops operation	no effect	stops and closes on release after 5 s	recharges pause time (CLOSE disabled)
<b>CLOSING</b>	reopens leaves	reopens leaves	stops operation	no effect	reverses at opening	stops and opens at release (saves CLOSE)
<b>BLOCKED</b>	closes leaves	closes leaves	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)

(1) if the cycle began with OPEN-B (released leaf), both leaves are activated at opening

LOGIC "B"	PULSES					
AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens the leaves	no effect	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect (OPEN disabled)
<b>OPENING</b>	no effect	stops operation	stops operation	stops operation	no effect	stops operation
<b>OPEN</b>	no effect	closes leaves	no effect (OPEN/CLOSE disabled)	no effect	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)
<b>CLOSING</b>	opens the leaves	no effect	stops operation	no effect	stops operation	stops operation
<b>BLOCKED</b>	opens the leaves	closes leaves	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)

LOGIC "C"	MAINTAINED COMMANDS		PULSES			
AUTOMATED SYSTEM STATUS	OPEN A	OPEN B	STOP	FSW OP	FSW CL	FSW CL/OP
<b>CLOSED</b>	opens the leaves	no effect	no effect (OPEN disabled)	no effect (OPEN disabled)	no effect	no effect (OPEN disabled)
<b>OPENING</b>	no effect	closes leaves	stops operation	stops operation	no effect	stops operation
<b>OPEN</b>	no effect	closes leaves	no effect (OPEN/CLOSE disabled)	no effect	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)
<b>CLOSING</b>	opens the leaves	no effect	stops operation	no effect	stops operation	stops operation
<b>BLOCKED</b>	opens the leaves	closes leaves	no effect (OPEN/CLOSE disabled)	no effect (OPEN disabled)	no effect (CLOSE disabled)	no effect (OPEN/CLOSE disabled)

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