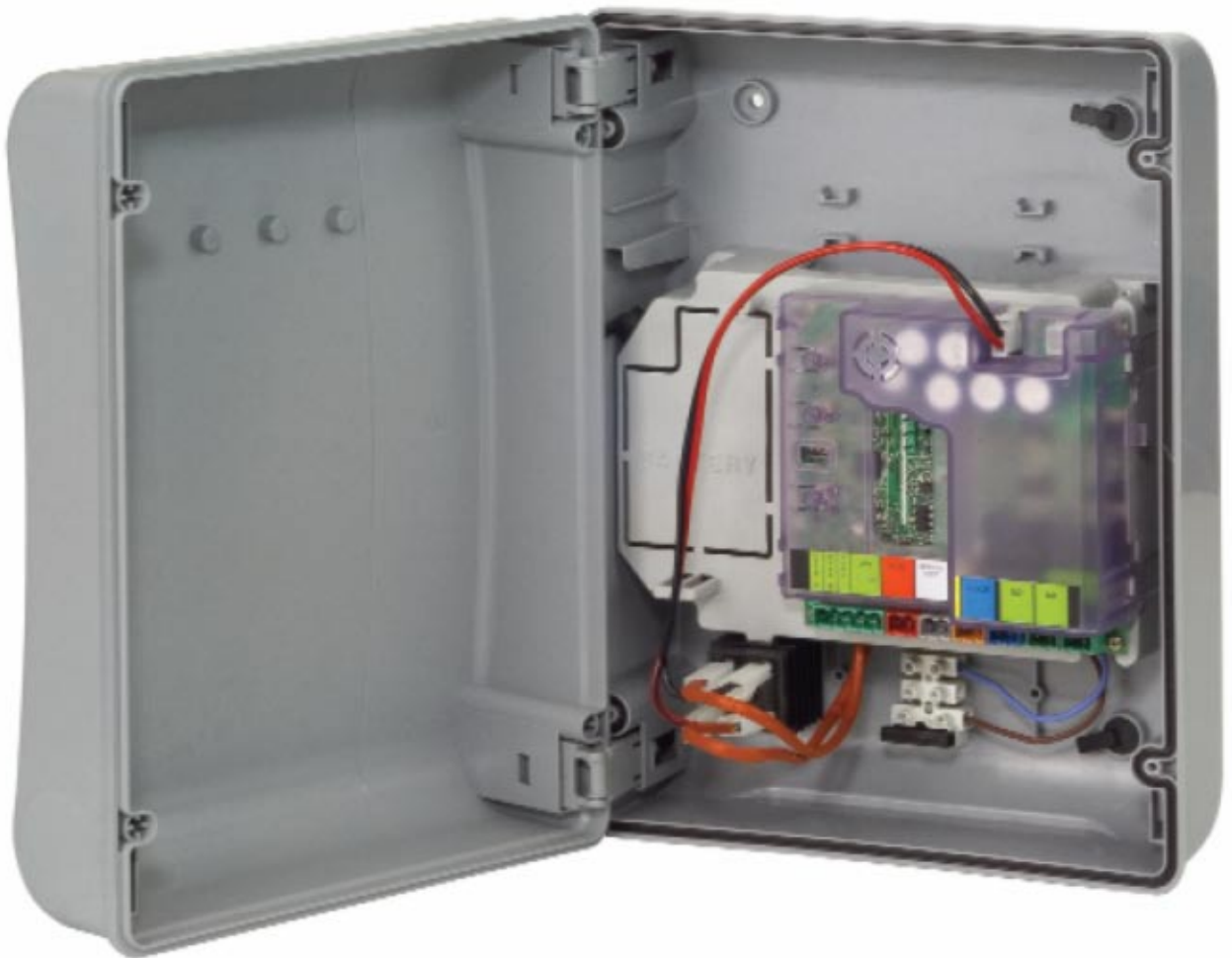


E024S



FAAC

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CE DECLARATION OF CONFORMITY

Manufacturer: FAAC S.p.A.
Address: Via Benini, 1 - 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 01-03-2009.

The Managing Director

A. Macellari


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

0 BOX LAYOUT

⚠ THE BOX CONTAINS THE E024S ELECTRONIC 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:

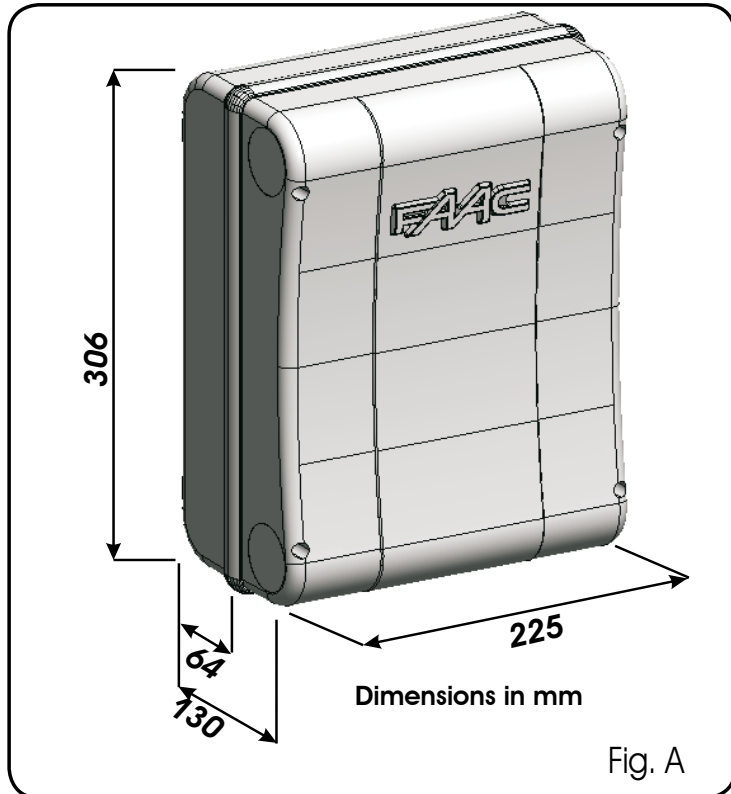
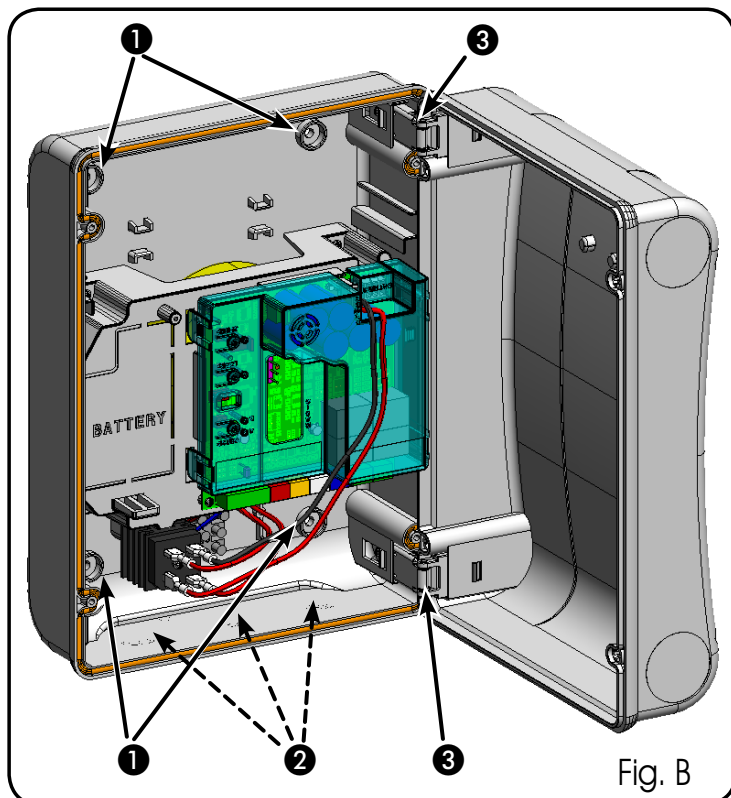
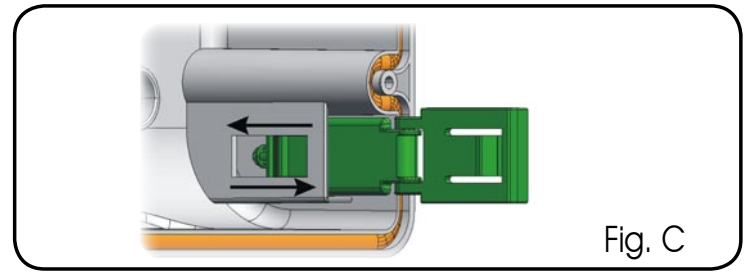


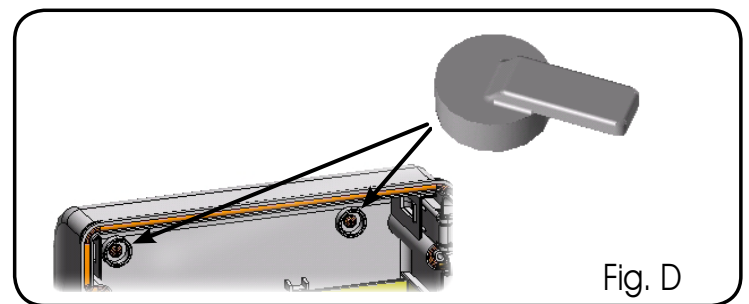
Fig. B shows the four 5 mm diam. holes for securing the box (ref.①) to the wall, the three fittings M16/M20/M25 for installing the cable grippers (ref.②) and the two lid hinges (ref.③).



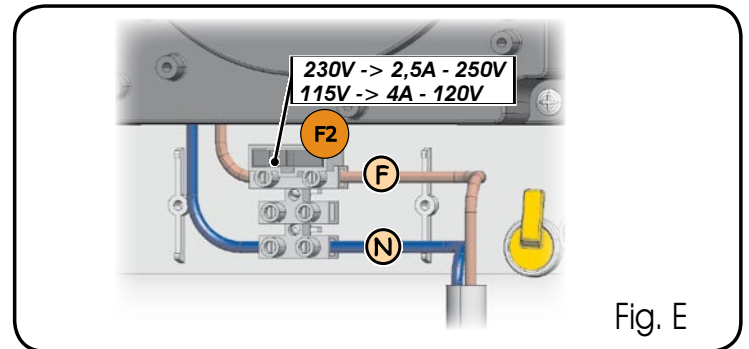
The lid hinges can be moved upward to allow opening the box housing (Fig. C); they can also be removed and re-positioned in order to enable the lid to open to the right or left.



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.



After you have finished the operations to connect the control board with the various parts of the automated system, close the box, positioning the lid in its seat with seal. Connect the supply as shown in Fig. E.



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



CONTROL UNIT E024S

1 WARNINGS

- ⚠** 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 screened cable (with the screen earthed).

2 LAYOUT AND CONNECTIONS

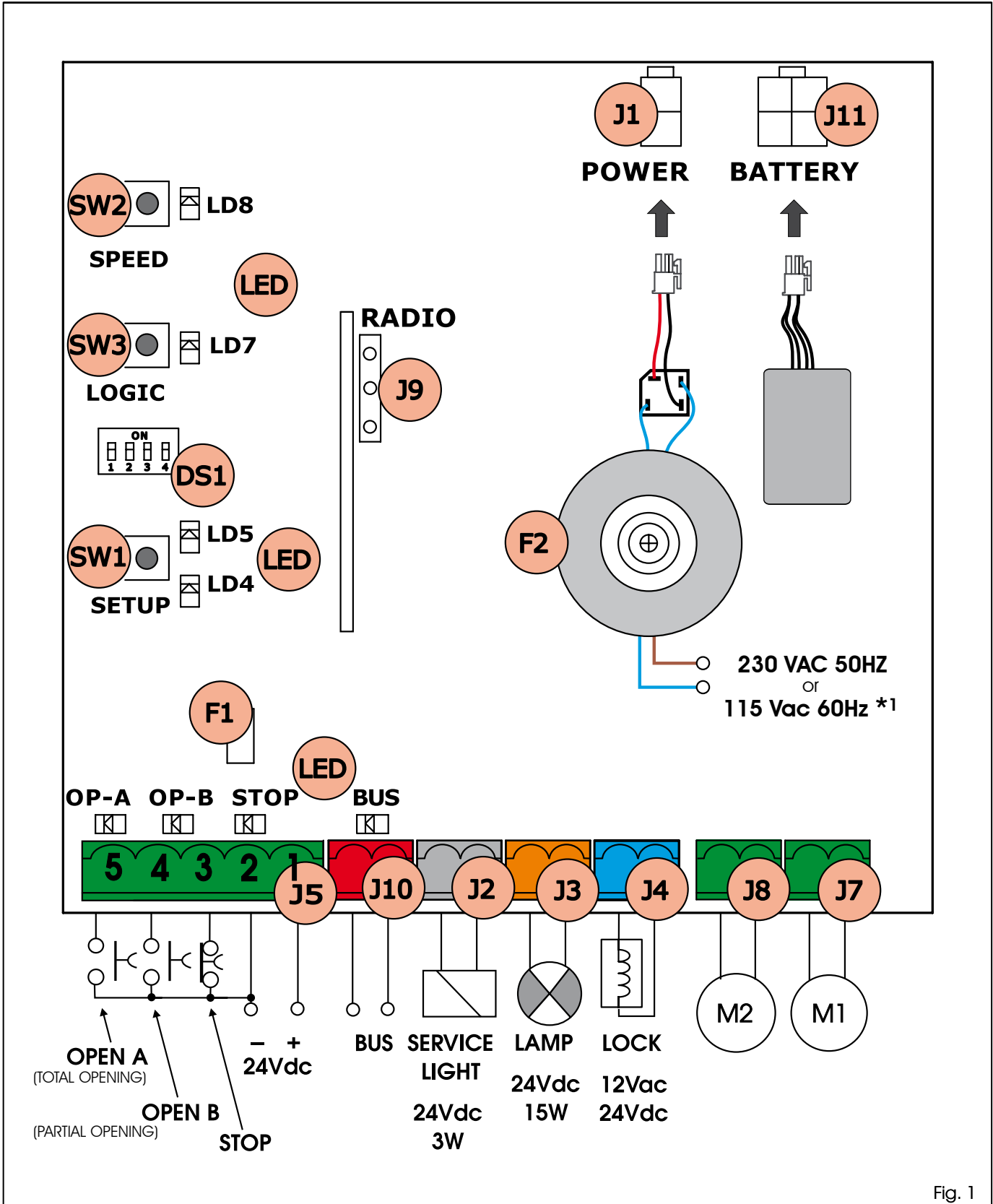


Fig. 1

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

3 TECHNICAL SPECIFICATIONS

| | |
|---------------------------------|---|
| Power supply voltage *2 | 230Vac (+6% -10%) - 50Hz or 115Vac (+6% -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 *2 | F1 = self-resetting; F2 = T2A-250V or T4A-120V |
| Function logics | A, E, AP, EPA1,B,C |
| Work time (time-out) | 5 minute (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 | Logic (A, E, AP, EPA1,B,C), Speed (High - Low) |
| Learning functions | Pause time, leaf closing delay |
| Integrated radio channels type | DS, SLH (max 250 channels) LC (max 250 channels - |

*2 The power supply and the fuse are related to the purchased version.


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 (see chap. FUNCTION LOGICS) |
| 5 | OPEN A | |
| J10 RED terminal | BUS | Safety devices with BUS technology |
| J2 GREY terminal | SERVICE LIGHT | Service Light control output (connect a relay coil at 24Vdc-100mA max) |
| J3 ORANGE terminal | LAMP | Flashing lamp 24Vdc - 15W |
| J4 BLUE terminal | LOCK | Electric lock 12Vac or 24 Vdc (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 equipment.

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 OF 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 blinkings 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

The following table shows that status of the LEDs in relation to the status of the inputs (the closed at rest automated system condition is shown in bold).

Check the status of the signalling LEDs as per table below:

Tab.1 – Operation of inputs status LEDs

| LED | ON (closed contact) | OFF (open contact) |
|--------|-------------------------|-------------------------|
| STOP | Command disabled | Command enabled |
| OPEN A | Command enabled | Command disabled |
| OPEN B | Command enabled | Command disabled |
| BUS | See par. 7.2 | |

6.2 PROGRAMMING THE DIPS-SWITCH

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

Tab. 2 - DS1 programming
(default settings in bold)



| DS1 | DS2 | DS3 | DS4 | Description |
|------------|------------|------------|------------|-----------------------------------|
| OFF | OFF | | | LOW FORCE |
| OFF | ON | | | MEDIUM - LOW FORCE |
| ON | OFF | | | MEDIUM - HIGH FORCE |
| ON | ON | | | HIGH FORCE |
| | | OFF | OFF | MOTOR 391 |
| | | OFF | ON | MOTOR 418 |
| | | ON | OFF | MOTOR 413-415-390-770 |
| | | ON | ON | HYDRAULIC MOTOR (*) S450H / S700H |

(*) If DS3-DS4 are set to ON, during the setup phase the EncS700 or EncS450 encoder automatically recognizes the S700H or S450H connected operator.

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

6.2.1 PRELIMINARY PHASE OF AUTOMATIC OR MANUAL SETUP

The Automatic or Manual SETUP phase is preceded by an initialisation phase: by pressing the SETUP push-button for automatic or manual setup, the leaves open, one at a time and from any position, until an obstacle or an Open impulse is detected. Then the leaves start closing, one at a time, until an obstacle or an Open impulse is detected. Then the procedure described in paragraph 6.3.1 or paragraph 6.3.2 starts.

At the end of a successful SETUP procedure the LEDs switch off.

Otherwise, the procedure ends with the request of a new SETUP signaled by blinking LEDs.

6.3 TIME - SETUP LEARNING

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.

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 and MANUAL

6.3.1 AUTOMATIC SETUP

To enter in 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 blink.

The Setup phase is preceded by a preliminary phase, 6.2.1.

Then the leaves start moving, one at a time, from the closed position.

- Once an opening stop or an "open" impulse is detected, they reach the open position and the setup is ended.

Slow-downs can not be set.

The pause time is fixed at 30 s.

Once the SETUP procedure is started, switch the motor supply cables if the leaves close instead of opening.

With the AUTOMATIC SETUP, the slow-down spaces, the closing leaf delays and the pause time (30 s, with A logic) are defined during the Setup phase. To change the opening/closing leaf delay and the pause time, use the second level menu.

6.3.2 MANUAL SETUP

To enter in Manual setup, 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 blink.


The Setup phase is preceded by a preliminary phase, 6.2.1.

Then the leaves start moving, one at a time, from the closed position with an "open" command or automatically.

- Open impulse ---> slowdown from leaf opening 1. If a stop is detected, an opening stop search is set. If Open is detected, a stop in the stored open position is set.
- Starting from leaf opening 2.

3. Open impulse ---> slowdown from leaf opening 2. If a stop is detected, an opening stop search is set. If Open is detected, a stop in the stored open position is set.
4. From now until the next Open impulse, the pause time is counted.
5. Open impulse ---> Pause time acquisition and start from leaf closing 2.
6. Open impulse ---> Slowdown from leaf closing 2. If a stop is detected, an closing stop search is set. If Open is detected, a stop in closed position is set (only with absolute encoder Enc450).
7. Starting from leaf closing 1.
8. Open impulse ---> slowdown from leaf closing 1. If a stop is detected, an closing stop search is set. If Open is detected, a stop in closed position is set (only with absolute encoder Enc450).

 **Once the SETUP procedure is started, switch the motor supply cables if the leaves close instead of opening.**

 **With the MANUAL SETUP the slow-down spaces and the leaf closing delays are set from the board during the Setup phase. As an alternative, the leaf opening/closing delay and the pause time can be changed in the second level programming without repeating the Setup.**

6.3.3 PROGRAMMING OF 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 blinkings corresponds to the number of the selected logic:

Logic A (Automatic)

SW3 pressed once - LD7 blinking once

Logic E (Semi-automatic)

SW3 pressed twice - LD7 blinking twice

Logic AP ("Stepped" automatic)

SW3 pressed three times - LD7 blinking three times

Logic EP ("Stepped" semi-automatic)

SW3 pressed four times - LD7 blinking four times

Logic A1 (Automatic 1)

SW3 pressed five times - LD7 blinking five times

Logic b (Semi-automatic "b")

SW3 pressed six times - LD7 blinking six times

Logic C (Dead man)

SW3 pressed seven times - LD7 blinking seven times



6.3.4 SECOND LEVEL PROGRAMMING - ADVANCED FUNCTIONS

To enter the second level menu, keep the SW2 SPEED push-button pressed for more the 2.5 seconds. The two SETUP LEDs are permanently lit. In this mode, the SPEED push-button is used to scroll the menus. The different menus are identified by the number of blinkings.

The parameter value is set with the LOGIC push-button. The menu is scrolled sequentially. Keep the SPEED push-button pressed for 2.5 seconds to exit the second level menu.

Menu 1 Wind-proof facility 1 SW2 pressed once LD8 blinking once

Wind-proof facility NO LD7 LED OFF

Wind-proof facility YES LD7 LED ON

Menu 2 Reverse Stroke SW2 pressed twice LD8 blinking twice

Reverse Stroke NO LD7 LED OFF

Reverse Stroke YES LD7 LED ON

Menu 3 Soft-touch SW2 pressed three times LD8 blinking three times

Soft-touch NO LD7 LED OFF

Soft-touch YES LD7 LED ON

Menu 4 Preliminary blinking SW2 pressed four times LD8 blinking four times

Preliminary blinking NO LD7 LED OFF

Preliminary blinking YES LD7 LED ON

Menu 5 Leaf opening delay SW2 pressed five times LD8 blinking five times

Leaf opening delay NO LD7 LED OFF

Leaf opening delay YES LD7 LED ON

Menu 6 Leaf closing delay SW2 pressed six times LD8 blinking six times


Leaf closing delay -- LD7 LED OFF

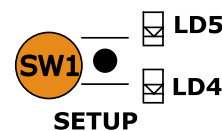
Leaf closing delay, count LD7 LED ON

Menu 7 Pause time SW2 pressed seven times LD8 blinking seven times

Pause time -- LD7 LED OFF

Pause time, count LD7 LED ON

 **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. The two SETUP LEDs are alternately lit ("level crossing" mode).
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, the two LD4 and LD5 LEDs blink.
6. The default configuration is reset and the new Setup can be started.

6.3.6 DEFAULT PARAMETERS

Here the default parameters:

- Logic: A
- Wind-proof facility: NO
- Reverse Stroke: NO
- Soft-touch: NO
- Preliminary blinking: NO
- Leaf opening delay: YES
- Leaf closing delay: 10 s
- Pause time: 30 s

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 ADDRESSING THE BUS PHOTOCELLS

Important: the same address must be given to both transmitter and receiver.

Make sure that there are no two or more photocells pairs with the same address.

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

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

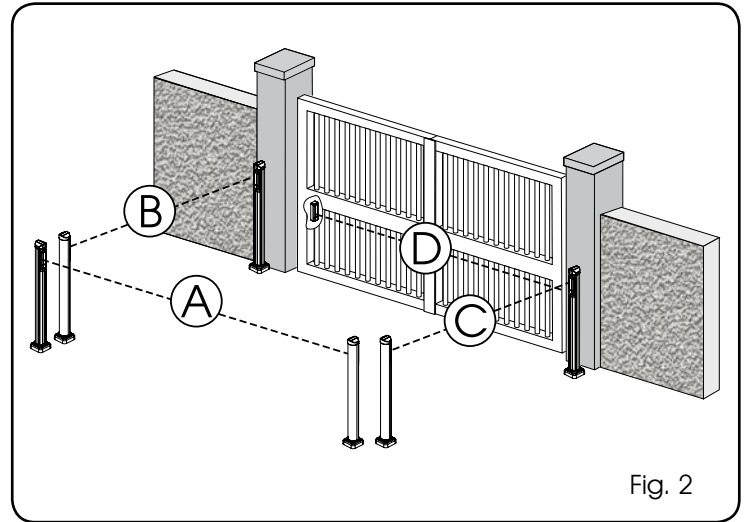


Fig. 2

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 - Addressing of BUS Photocells

| Dip1 | Dip2 | Dip3 | Dip4 | Ref. | Type |
|------|------|------|------|-------|---------------------|
| OFF | OFF | OFF | OFF | B - C | OPENING |
| OFF | OFF | OFF | ON | | |
| OFF | OFF | ON | OFF | | |
| OFF | OFF | ON | ON | | |
| OFF | ON | ON | OFF | | |
| OFF | ON | ON | ON | | |
| ON | OFF | OFF | OFF | D | CLOSING |
| ON | OFF | OFF | ON | | |
| ON | OFF | ON | OFF | | |
| ON | OFF | ON | ON | | |
| ON | ON | OFF | OFF | | |
| ON | ON | OFF | ON | | |
| OFF | ON | OFF | OFF | A | OPENING and CLOSING |
| OFF | ON | OFF | ON | | |
| ON | ON | ON | ON | / | OPEN PULSE |

7.2 MEMORY STORAGE OF BUS ACCESSORIES

You can add the BUS photocells to the system at any time, simply by memory-storing them on the board, observing the following procedure:

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.
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

| | |
|---|--|
| Steady light | Normal operation (LED ON even in the absence of photocells) |
| Slow flashing lamp (flash every 0.5 sec) | At least one input engaged: photocell engaged or not aligned, Open A or Open B or Stop input engaged |
| Light OFF (flash every 2.5 sec) | BUS line short circuited |
| Fast flashing lamp (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 not more than one accessory with the same address in the system (also see the accessories instructions) |

8 MEMORY STORING THE RADIO CODE

The control board 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.3 ref. ①) and radio controls on the same frequency.

The 3 types of radio codes (DS, LSH, LC) cannot coexist. Only one radio code can be used at a time. To change over from one code to another, you must delete the existing one (see paragraph on deletion), and repeat the memory-storage procedure.

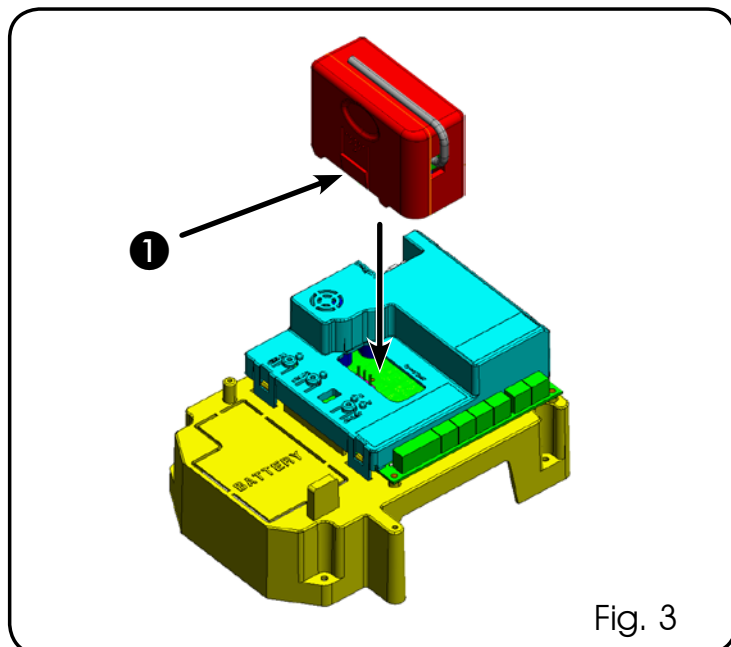


Fig. 3

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 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. 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.
5. Release both push-buttons.
6. Within these 5 sec., while the radio control LED is still flashing, press and hold down the required push-button on the radio control (the radio control LED lights up on steady beam).
7. The LED on the board lights up on steady beam for 1 second and then goes OFF, indicating that storage was executed.
8. Release the radio control push-button.

- 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 RADIO CONTROLS

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

- Use RC remote controls only with receiver module at 433 MHz.
- 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.
- Release both push-buttons. Within these 5 sec., press the appropriate push-button on the RC remote control.
- 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.
- When the 5 sec. have elapsed, the LED goes OFF indicating the end of the procedure.
- To add other radio controls, repeat the operation at point 1.

8.3.1 REMOTE MEMORY STORAGE OF RC RADIO CONTROLS

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

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

- 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.
- 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

- 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.
- The LED relating to the pressed push-button flashes for the first 5 sec, and then flashes more quickly for the next 5 sec.
- Both LEDs light up on steady beam for 2 sec and then go OFF (deletion completed).
- Release both push-buttons.

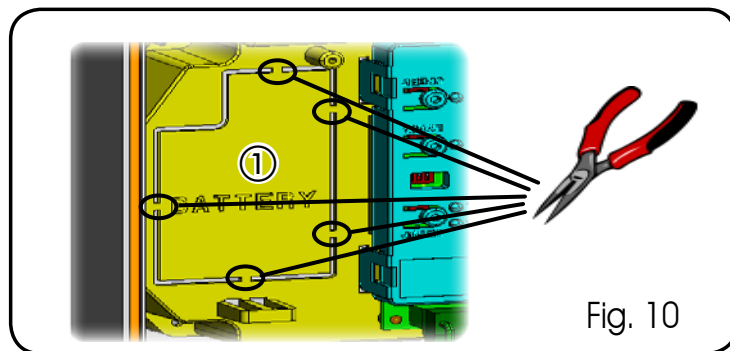
⚠ This operation is NOT reversible. All codes of radio controls stored as OPEN A and OPEN B will be deleted.

9 BATTERY KIT (OPZIONALE)

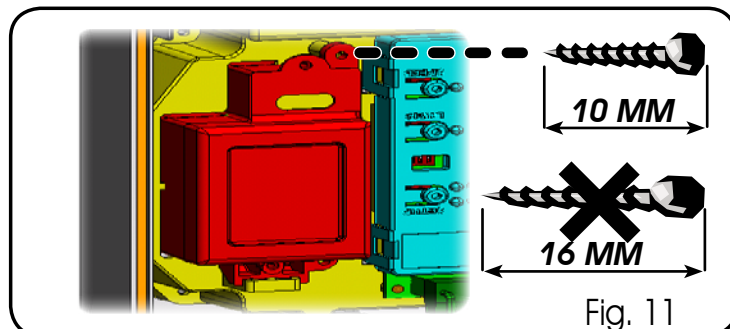
The buffer battery kit was built for insertion inside the control board support.

This support (Fig.10 ref.①) was pre-moulded to permit the battery housing to be opened.

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



- Insert the battery in the housing you have just created, and secure it on the anchoring supports (Fig.11).



- To correctly fasten and connect the kit to the control unit, consult the instructions enclosed with the battery kit.

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 S700H: ADDRESSING BUS ENCODER

Connection of the BUS input to the control board is via the bipolar cables which come out of the encoders.

Unlike the case of the photocell devices, the polarity of the BUS line connection determines whether the encoder belongs to one leaf rather than the other.

This is why you must pay great attention to the indications of the status LEDs on the body of each encoder (Fig. 1).

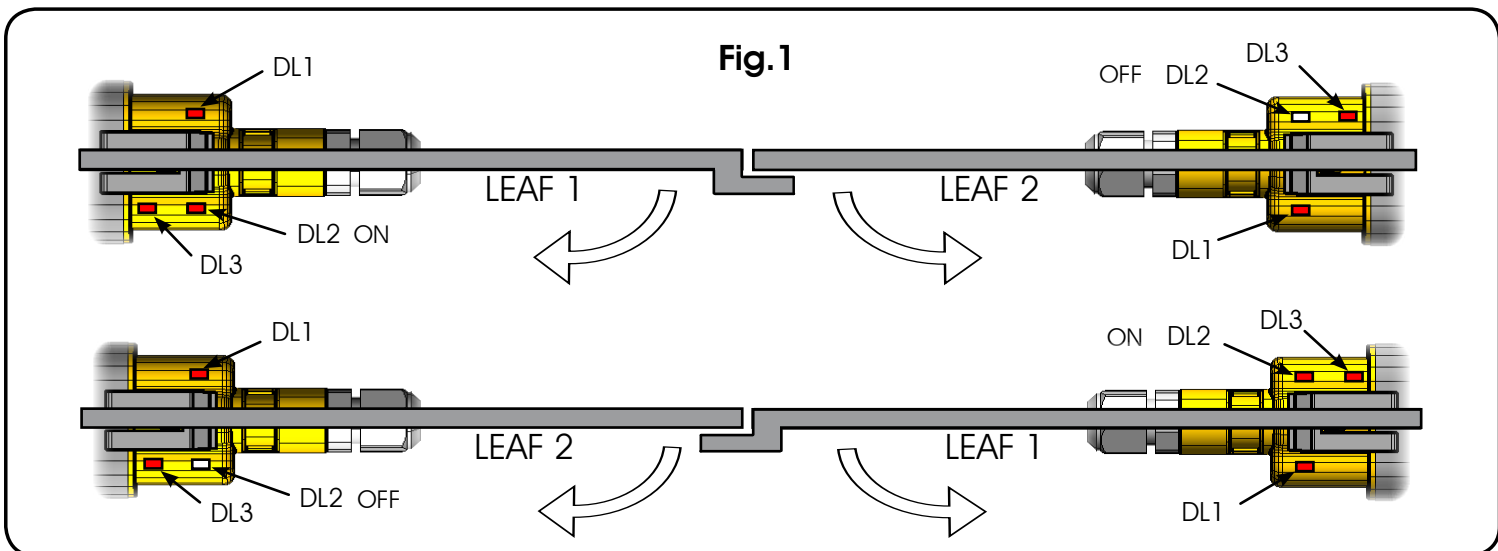
Below we list the functions of LEDs LD1, DL2, and DL3, and their statuses:

TAB. 1 - Encoder connection and LED status

| LED | LIGHTED | FLASHING | OFF |
|------|---|------------------------------------|-------------------------------|
| DL 1 | Power ON and BUS communicating with board | Power ON but BUS not communicating | No Power or BUS communication |
| DL 2 | Leaf 1 encoder | / | Leaf 2 encoder |
| DL 3 | Leaf not moving | Pulses read while leaf moving | Leaf not moving |

- **DL 1** must always be lighted to guarantee correct connection between encoder and board.
- **DL 2** determines the leaf on which the encoder is installed. Providing the configuration is correct, the automated system will show: an encoder with DL 2 lighted in the leaf 1, and an encoder with DL 2 OFF in the leaf 2. If there is an incorrect connection, i.e. indicating two encoders with the same status of the DL 2 LEDs, during the learning procedure of the BUS accessories, the DL 1 LEDs of both encoders show the FLASHING status. In this situation, refer to the configuration in TAB.3 to define which encoder connection to rotate.
- **DL 3** indicates, on a steady flashing beam, the reading of the pulses while the leaf is moving. When the leaf is motionless, DL 3 can be either lighted or OFF.

N.B. in particular motionless leaf positions, DL3 may flutter considerably. This signal must not be considered a fault.



12 FUNCTION LOGICS

Tab. 5

| LOGIC "A" | PULSES | | | | | |
|----------------------|-----------------------------------|---|---------------------------------|---------------------------|---------------------------------------|--|
| | OPEN A | OPEN B | STOP | FWS OP | FWS CL | FWS CL/OP |
| CLOSED | 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) |
| OPENING | no effect (1) | no effect | stops operation | reverses at closure | no effect | stops and opens at release (saves CLOSE) |
| OPEN IN PAUSE | recharges pause time (1) | recharges pause time of released leaf | stops operation | no effect | recharges pause time (CLOSE disabled) | recharges pause time (CLOSE disabled) |
| CLOSING | reopens leaves immediately | reopens leaves immediately | stops operation | no effect | reverses at opening | stops and opens at release (saves CLOSE) |
| BLOCKED | 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

Tab. 6

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

Tab. 7

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

Tab. 8

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

Tab. 9

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

Tab. 10

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

Tab. 11

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

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