



Installer manual

SL24.D

24 Vdc control unit for sliding gate

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1 - Product characteristics

Control unit for governing sliding gear motors at 24 Vdc with a maximum power of 80 W, equipped with an encoder interface to detect obstacles and control the speed, and an integrated 433 MHz receiver.

The control panel:

- can customize the slow-down distance and speed for both opening and closing
- has an obstacle detection system
- has LEDs input diagnostics and programming
- has a removable radio memory
- has an integrated receiver with a capacity of 200 remote controls (hard-coded or rolling-code)
- has current control to protect the electric motor

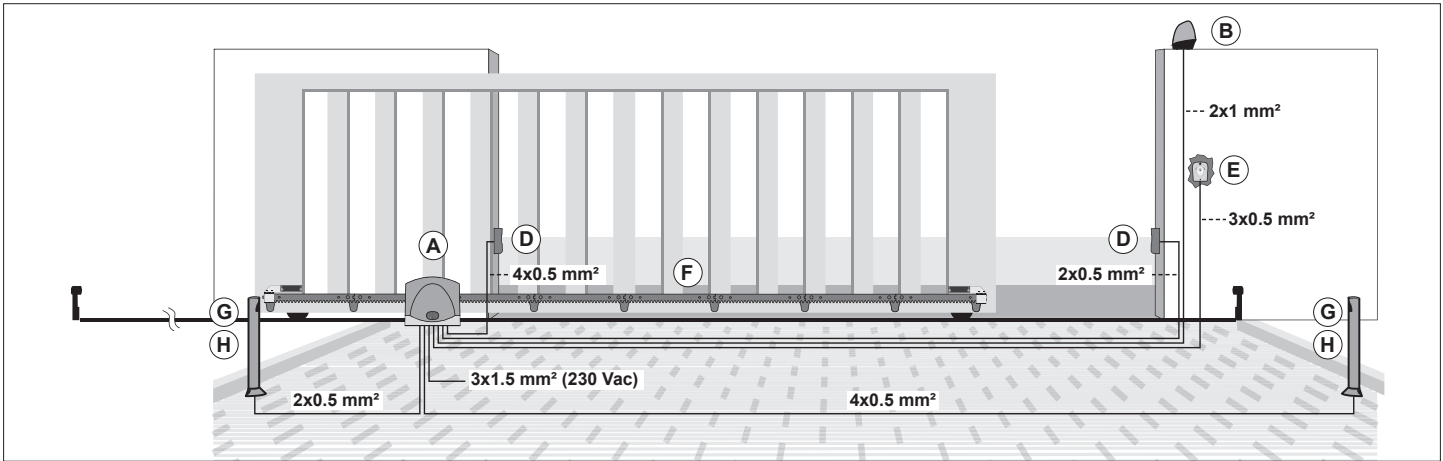
Tecnichal characteristics

Supply	230 Vac
Motor power supply	24 Vdc
Maximum motor power	160 W
Output for flashing light	24 Vdc 10 W max
Accessories power supply	24 Vdc 500 mA
Receiver memory	200 remote controls
Receiver frequency	433 MHz
Remote controls code	Rolling code or fixed
Fuse F1 (line protection)	ATO 15 A
Fuse F2 (accessory protection)	5x20 mm F3.15 A
Operating temperature	-10 ÷ +50°C

Controllable actuators

Ref.	Description
ESM2.D	ACTO 600D sliding operator 24 V 600 kg, display electronic control card

2 - Example of installation

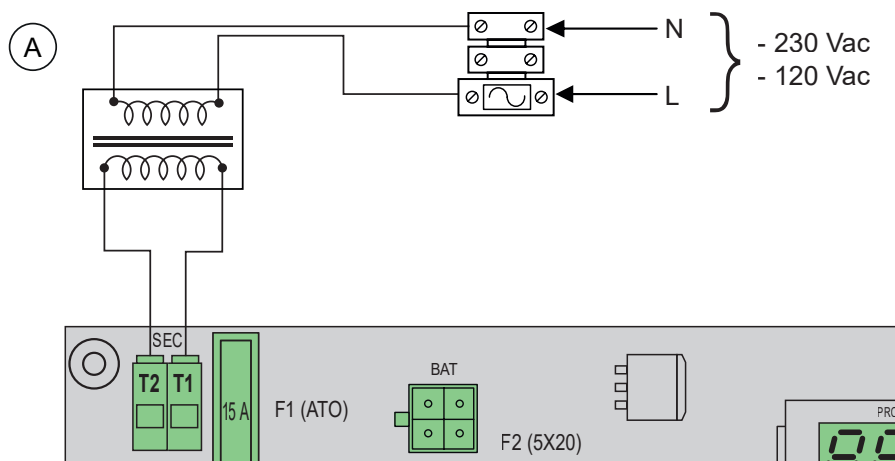
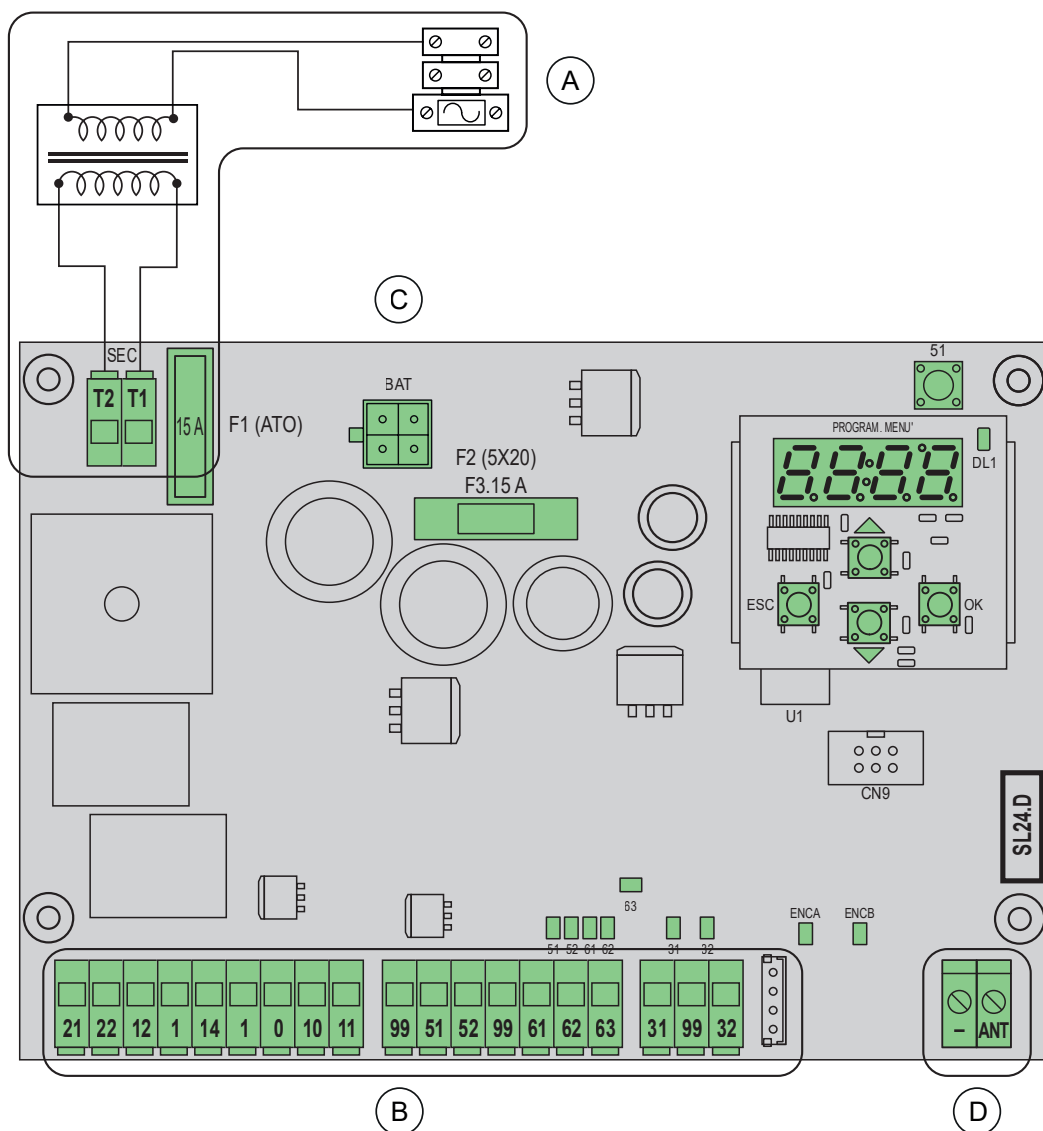


Components for implementing a complete system

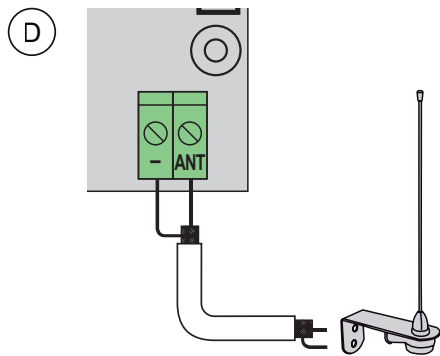
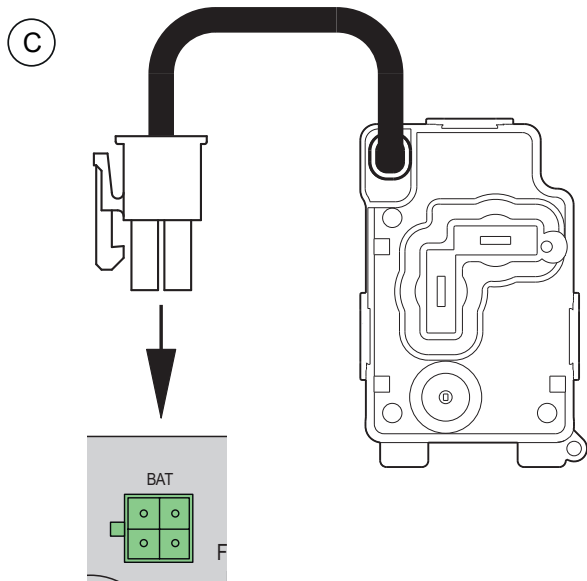
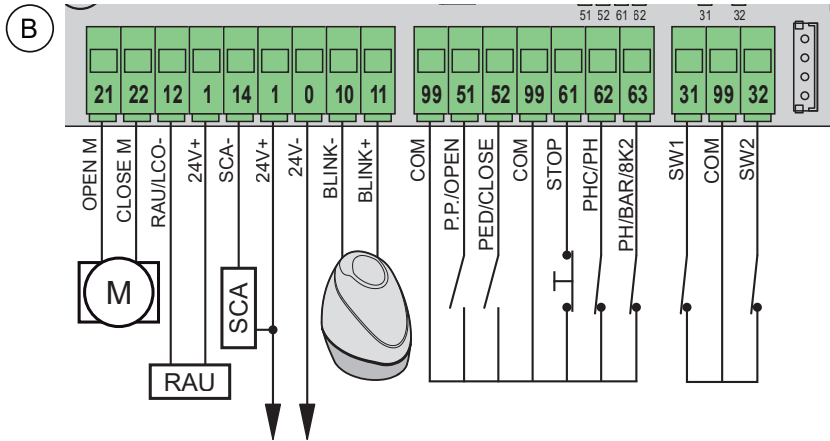
Main Components		Accessories (optional)	
Description	Ref.	Description	Ref.
Actuator	A	Post-mounted photocells	G
Blinking	B	Posts	H
Wall-mounted photocells	D		
Key selector	E		
Rack	F		

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3 - Description of the terminal blocks



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Terminal	Description	Rated data
T1	Transformer secondary connection	24 Vac
T2	Transformer secondary connection	
21	Opening motor	24 Vdc 80 W
22	Closing motor	
12	Auxiliary radio/courtesy light negative output	24 Vdc 120 mA
1	Accessories positive	
14	Gate open warning light negative output	24 Vdc 120 mA
1	Accessories positive	
1	Accessories positive	24 Vdc 500 mA
0	Accessories negative	
10	Flashing light negative	24 Vdc 15 W max
11	Flashing light positive	
99	Common inputs	
51	Step by step/Open (N.O.)	
52	Pedestrian/Close (N.O.)	
99	Common inputs	
61	Stop (N.C.)	
62	Photocell when closing/Photocell (N.C.)	
63	Photocell/Safety edge (N.C.)	

Terminal	Description	Rated data
31	Limit switch 1	
99	Common inputs	
32	Limit switch 2	
-	Aerial earth	
ANT	Aerial signal	

SL24.D**3.1 - Description of output function**

0-1	Accessories power supply: 24 Vdc output Functions according to the P08 parameter setting. P08 = 0: Permanent power supply. P08 = 1, 2, 3: Photo-test active, the negative terminal (0) turns off for a few fractions of a second before the start of movement, so any accessories that require a permanent power supply (e.g. photocell receivers) must get the negative from an input common (terminal 99)
10-11	Blinking: 24 Vdc output powered when the gate is moving
12-1	Courtesy light (LCO) or Auxiliary Radio Output (RAU): 24 Vdc Courtesy Light or Auxiliary Radio output: With P20 = PED it is for a Courtesy Light: - it turns on when the gate is moving and remains on for 100 s after it has stopped. With P20 = 2CH it is an Auxiliary Radio Output: - it turns on upon pressing the button that was saved on the remote control as the 2nd radio channel for the amount of time set in parameter P21
14-1	Gate Open Indicator Output (SCA): 24 V DC output to indicate the gate movements operating according to the setting for parameter P07

Note:

Using the photo-test requires specific wiring of the safety devices (par. 4.3).

3.2 - Descrizione della funzione degli ingressi

51	Step by step (N.O.): Sequential control input, to control the full gate travel. Operating according to the setting for parameters P18 and P03: P18 = 0, P18 = 1 input 51 operating according to parameter P03. P18 = 2 input 51 only controls the opening. P03 = 1 collective, input 51 - not active in opening - in pause it reloads the pause time if automatic closing is active and suspends the pause if the input remains engaged (for connecting coils or a timer), re-closes if automatic closing is not active - in closing it re-opens. P03 = 2 sequential Opens, Stop, Closes, Stop, Opens. P03 = 3 sequential Opens, Closes, Opens
52	Pedestrian (N.O.): Control input to open the gate for pedestrians as input 51 but at pedestrian distance
61	Stop (N.C.): Stops the gate. If not used, jumper with the common (99)
62	Closing photocell - PHC (N.C.): Operating according to the setting for parameter P19: P19 - Photocell closing: - with the gate stopped, allows the gate to open - in opening does not intervene - with the gate open, does not allow closing and when released will reload the pause time - in closing, reopens the gate immediately P19 = 2 Photocell: - with the gate stopped, does not allow the gate to open - during opening stops the movement and when released proceeds with opening - with the gate open, does not allow closing and when released will reload the pause time - in closing stops the movement and when released reopens the gate If not used, jumper with the common (99)

63**Photocell - PH (N.C.):**

Operating according to the setting for parameter P06:

P06 = 1 Photocell:

- with the gate stopped, does not allow the gate to open
- during opening stops the movement and when released proceeds with opening
- with the gate open, does not allow closing and when released will reload the pause time
- in closing stops the movement and when released reopens the gate

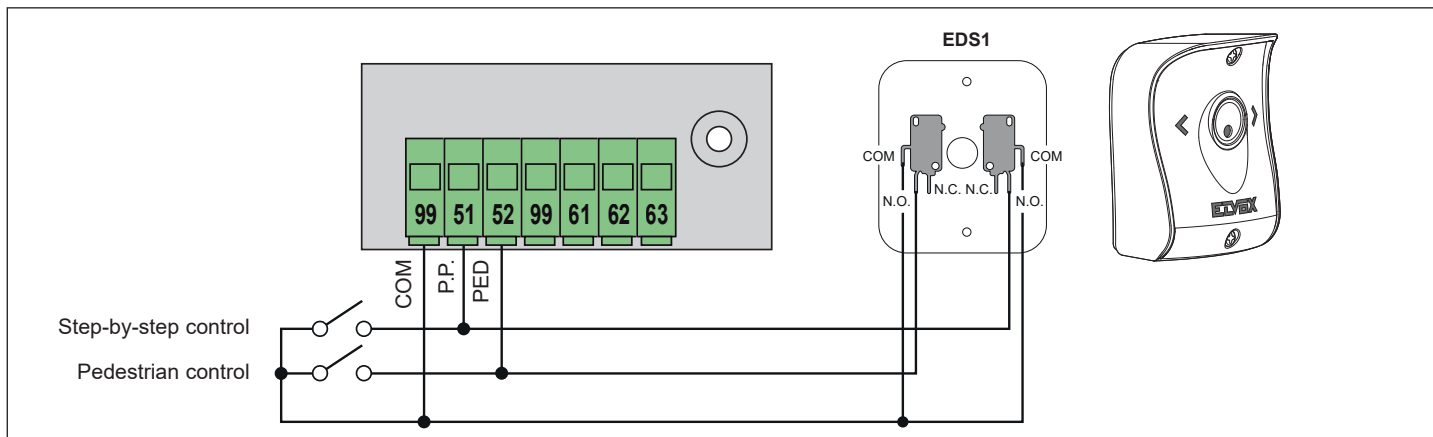
P06 = 2 Sensitive edge with NC clean contact:

- with the gate stopped, does not allow the gate to open
- in opening disengages, re-closes after the pause time if automatic closing is active
- with the gate open, does not allow closing and when released will reload the pause time
- in closing disengages and opens

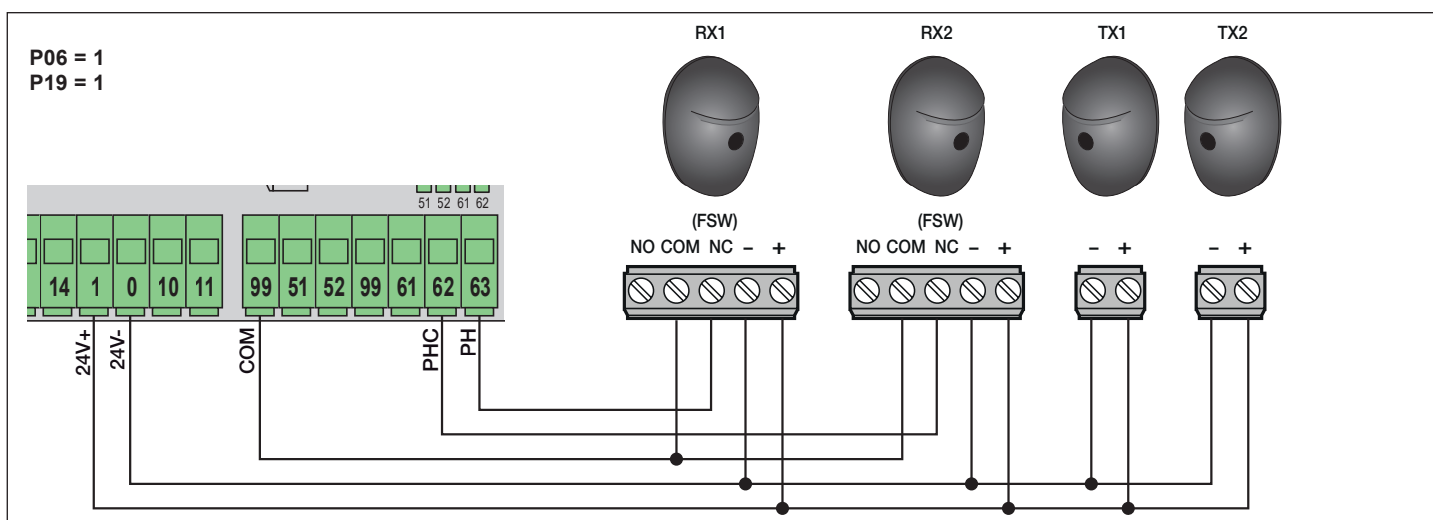
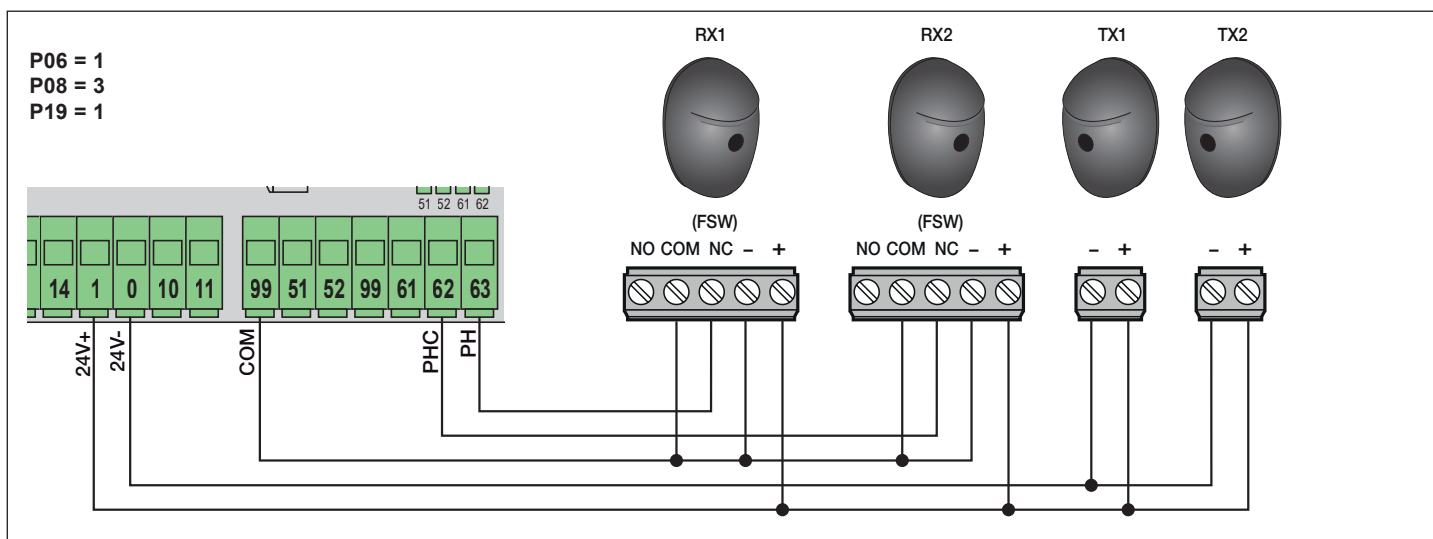
P06 = 3 8.2 K Ω balanced sensitive edge (8K2)

Same behaviour as the NC sensitive edge

If not used, jumper with the common (99) and set P06 = 1

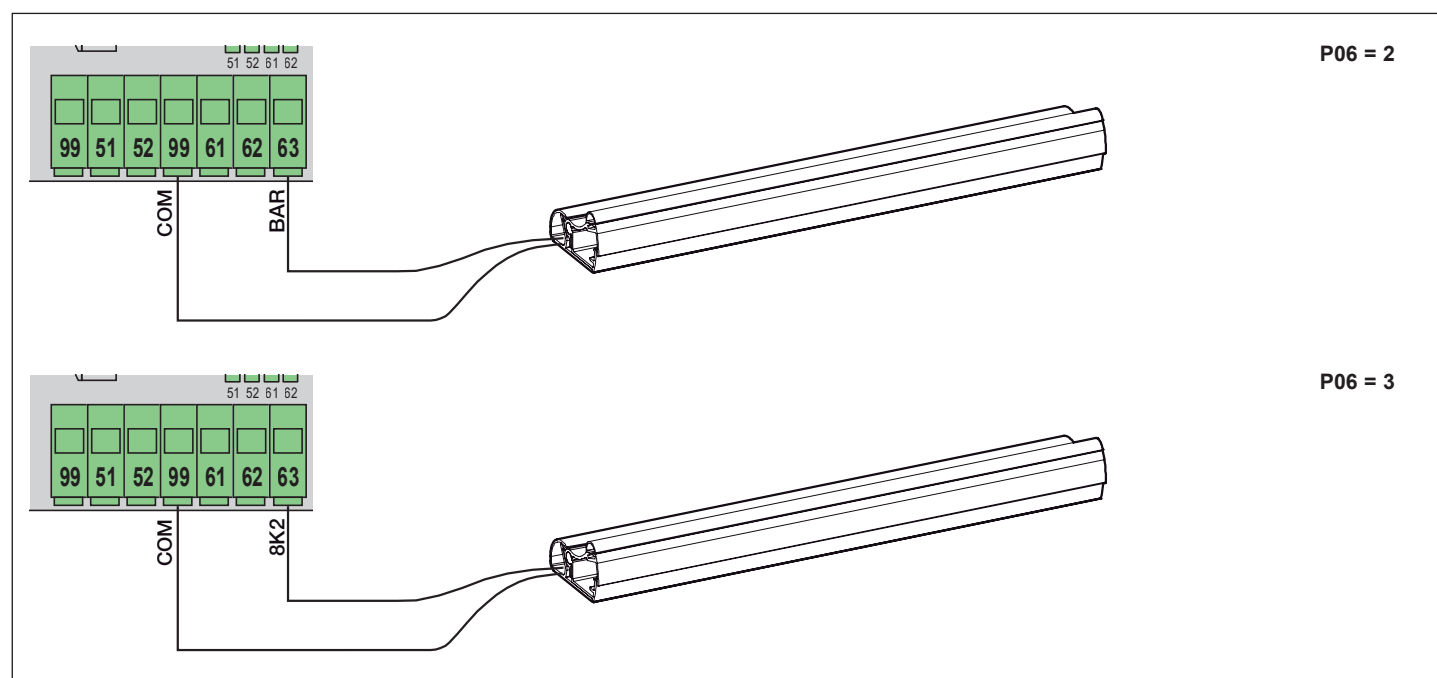
SL24.D**4 - Connecting accessories****4.1 - Key switch and control devices****4.2 - Photocells and photocells when closing**

Normally closed contact (when the photocells are not engaged the 62 and 63 LEDs must be on), if not used then jumper 62 to 99 and 63 to 99, you must observe the polarity of the power supply for the photocells:

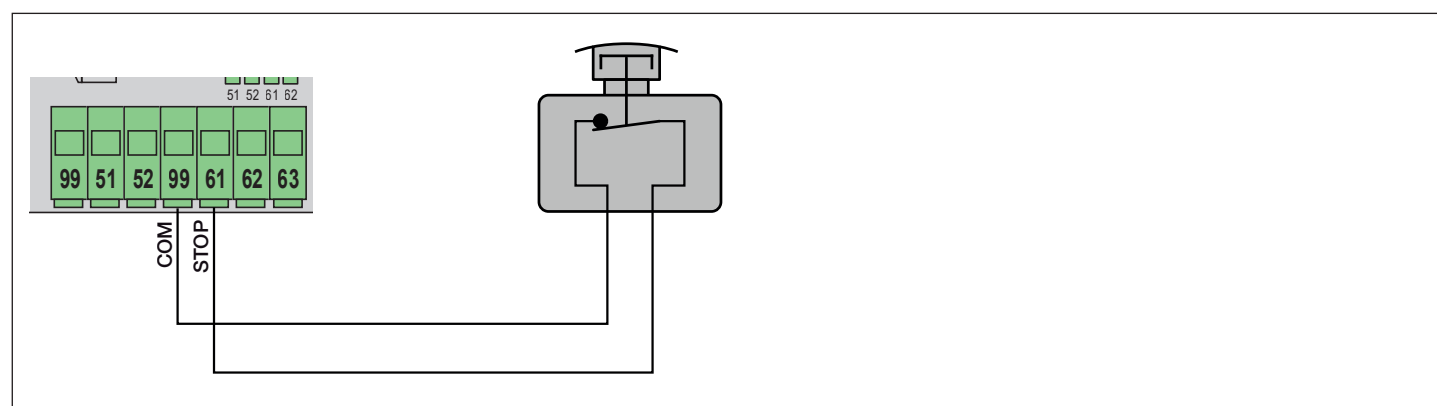
**4.3 - Photocells and photocells when closing with photo-test active**

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4.4 - Sensitive edge



4.5 - Stop push button



5 - Control panel programming

5.1 - Preliminary operations

After powering the control panel, the name of the control panel written as SL2.D, the firmware version FX.XX and 3 flashes with the word FLSH appear in the display, after which the display is turned off.

To function correctly, the control panel requires some minimum and essential settings and checks.

- Input status check:

Check the diagnostic LEDs of the inputs, the LEDs 61, 62, 63 must be on, if the limit switches are not engaged, LEDs 31 and 32 must also be on.

If one of the safety inputs (61, 62, 63) is not used, insert a bridge between the common (99) and the unused input.

If one of the safety inputs (61, 62, 63) is open, the dot at bottom right-hand corner of the display flashes to indicate a engaged/non-working safety that will prevent the gate from moving. It will therefore be necessary to check the connections and the correct functioning status of the safety devices.

- Gate travel calibration

The control panel must know some physical parameters of the gate in order to function correctly. The operation allowing the control panel to know these physical gate parameters is called travel calibration. If this is not done, the control panel may not perform slowdowns or detect obstacles correctly.

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5.2 - Using the display

Button	Description
OK	Button to turn on the display, to access the menu and to confirm the parameter value change. When the motor is moving, it displays the absorption in A of the electric motor
▲	Button to scroll up the menus and increase the parameter value
▼	Button to scroll down the menus and decrease the parameter value
ESC	Button to turn off the display, exit the menu and cancel the parameter value change
51	Step-by-step command button

5.3 - Menus

The control board programming is organized in menus and submenus that allow to access and edit the parameters and logics of the control board. The control board features the following first level menus:

Menu	Description
LRNE	Quick gate travel calibration
LRNA	Advanced gate travel calibration
PAR	Control board parameter setting menu
RAD	Remote controls management menu
DEF	Factory reset menu
CNT	Cycle counter menu
ALM	Board alarms menu
PASS	Board protection level setting menu

All submenus are described in the table below.

LRNE	Quick gate travel calibration. The calibration is fully self-performed and sets: <ul style="list-style-type: none"> - Opening slowdown to 50 cm from the complete opening - Slow closing at 75 cm from the complete closure - Pedestrian opening at 150 cm 		
	Button	Display msg	Phase description
	-	51	Wait for calibration procedure start
	51	CLOS	When button pressed: closing and search for closing limit switch
	-	OPEN	Opening travel measurement at slow down speed
	-	CLOS	Closing at normal speed
	-	SLO	Closing at slow down speed
	-	END	End of procedure
	Advanced gate travel calibration. Calibration allows the installer to set: <ul style="list-style-type: none"> - Opening slow down position - Closing slow down position - Pedestrian opening position 		
	Button	Display msg	Phase description
LRNA	-	51	Wait for calibration procedure start
	51	CLOS	When button pressed: closing and search for closing limit switch
	51	OPEN	Opening start. When button pressed: opening slow down position setting
	-	SLO	Continuation of opening at slow down speed up to opening limit switch
	51	CLOS	Closing start. When button pressed: closing slow down position setting
	-	SLO	Continuation of closing at slow down speed up to closing limit switch
	51	OPEN	Pedestrian opening start. When button pressed: pedestrian opening position setting
	-	CLOS	Gate closing from pedestrian opening position
	-	END	End of procedure

Self-calibration:

If the gate travel parameter is changed, there is no need for the installer to run new calibrations, however, when changing the travel parameters, the control panel needs to learn the current curve again, thus disabling the obstacle detection only during the self-calibration cycle. Self-calibration is appropriately highlighted on the display that shows 51, meaning that a command is required in order for the board to self-calibrate.

The events generating self-calibration are:

- change in parameters: P09-10-11-12-13-14-15-22-24-31.

PAR	Parametri centrale		
	Sub menu	Description	Values (default)
	P01	Auto close	(ON)
		Auto close not active	OFF
		Auto close active	ON
	P02	Pause time	(30)
		2 s (minimum time)	2
		600 s (maximum time)	600
	P03	Command input n. 51	(1)
		Collective During the opening the command is not active. If P01 = ON when paused it restarts the pause time and if the input 51 remains engaged the control board suspends the count until the input is disengaged (for the connection of coils or timers). If P01 = OFF, when paused it closes back During the closing it opens again	1
		Step-bystep (4 steps logic) Cycle command Opens, Stops, Closes, Stops, Opens...	2
		Step-bystep (2 steps logic) Cycle command Opens, Closes, Opens...	3
		Pre-flash The flashing light flashes for 3 s before the gate starts to move	(OFF)
		Pre-flash not active	OFF
	P04	3 s pre-flash active	ON
		Immediate closing	(OFF)
		Immediate closing not active	OFF
	P05	If the closing photocell is engaged and released during the opening or the pause time, the control unit closes the gate, regardless of the pause time set, 3 s after the complete opening or 3 s after the release of the photocell (depending on whether the release takes place during opening or pause)	ON
		Safety input n. 63	(1)
	P06	Photocell (PH): - with the gate stopped, does not allow the gate to open - during opening stops the movement and when released proceeds with opening - with the gate open, does not allow it to close and when released will reload the pause time - on closing stops the movement and when released reopens the gate	1
		NC safety edge (BAR): - with the gate stopped, does not allow the gate to open - in opening disengages, closes after the pause time if auto close is active - with the gate open, does not allow closing and when released will reload the pause time - in closing disengages and opens	2
		8.2 KΩ balanced safety edge (8K2): same behaviour as the NC safety edge	3

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PAR	P07	Output 14 type of open gate warning loght (SCA)	(1)
		Gate closed: not active	1
		Gate not closed: active fixed	
		Gate closed: not active	2
	P08	Gate in opening: slow flash	
		Gate not closed: active fixed	
		Closing gate: quick flash	
		Gate stopped: active fixed	3
	P09	Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	
	P10	Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	
		Closing gate: quick flash	
	P11	Gate stopped: active fixed	
		Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
	P12	Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	
	P13	Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	
		Closing gate: quick flash	
	P14	Gate stopped: active fixed	
		Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
	P15	Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	
	P16	Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	
		Closing gate: quick flash	
	P17	Gate stopped: active fixed	
		Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
	P18	Gate in opening: slow flash	
		Closing gate: quick flash	
		Gate stopped: active fixed	
		Gate in opening: slow flash	

PAR	P19	Safety input n. 62	(1)
		Photocell on closing (PHC)	
		- with the gate stopped, allows the gate to open	1
		- during the opening does not intervene	
	P20	- with the gate open, does not allow it to close	
		- and when released will reload the pause time	
		- on closing, reopens the gate immediately	
		Photocell (PH):	2
	P21	- with the gate stopped, does not allow the gate to open	
		- during opening stops the movement and when released proceeds with opening	
		- with the gate open, does not allow it to close	
		- and when released will reload the pause time	
	P22	- on closing stops the movement and when released reopens the gate	
		2nd radio channel function	(PED)
		The remote control button associated with the 2nd radio channel activates output 12 as an auxiliary radio output (RAU) for the time set in parameter P21	12
		The remote control button associated with the 2nd radio channel activates the pedestrian opening. The output 12 functions as a courtesy light (LCO): it is activated when the gate moves and remains active for 100 s after the gate stops	PED
	P23	Output 12 as auxiliary radio output timer (RAU)	(1)
		1 s (shortest time)	1
		60 s (longest time)	60
		Pedestrian opening position (cm)	(150)
	P24	Shortest pedestrian opening position	0
		Longest pedestrian opening position	311
		Acceleration	(1)
		Acceleration ramp until normal speed is reached	
	P25	Maximum acceleration	1
		Minimum acceleration	5
		Deceleration ramp	(8)
		Deceleration ramp between normal and slow down motor speed	
	P26	Soft ramp (minimum acceleration)	1
		Steep ramp (maximum acceleration)	8
		Flashing light during battery operation	(OFF)
		Flashing light not active in battery operation	OFF
	P27	Flashing light active during battery operation	ON
		Battery operation mode	(0)
		Normal operation	0
		After an opening command the gate remains open	1
	P28	After the power goes off, the gate opens and stays open	2
		Dead-man operation	(0)
		Dead-man not active	0
		Emergency dead-man:	
	P29	- In regular operating conditions, standard operation	
		- If safeties are engaged, dead-man operation only on input 51 as a cycle command (open-close-open) no matter the setting for parameters P03 and P18. Remote controls are disabled	1
		Dead-man active:	
		- step-by-step command disabled, remote controls disabled. The board accepts open and close maintained commands only	2

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PAR	P31	Direction	(OFF)
		Left-hand actuator (the gate, seen from the side of the gate where the actuator is located opens to the left)	OFF
		Right-hand actuator (the gate, seen from the side of the gate where the actuator is located opens to the right)	ON

RAD	Remote control management		Msg display ex.
	1CH	Remote control button programming on 1st channel (step-by-step or open, see P18)	
		Waiting the code (press the remote control button), the receiver is empty	oooo
		Waiting the code (press the remote control button), the receiver is set as rolling code	rc
		Waiting the code (press the remote control button), the receiver is set as fixed code	fc
		Remote control button programmed on 1st channel as 1st code in the memory	1001
	2CH	Remote control button programmed on 1st channel as 55th code in the memory	1055
		Memorizzazione di un tasto sul 2° canale (pedonale o uscita 12, vedere P20)	
		Waiting the code (press the remote control button), the receiver is empty	oooo
		Waiting the code (press the remote control button), the receiver is set as rolling code	rc
		Waiting the code (press the remote control button), the receiver is set as fixed code	fc
		Remote control button programmed on 2nd channel as 1st code in the memory	2001
	CTRL	Remote control button programmed on 2nd channel as 55th code in the memory	2055
		Remote control button memory position check	
		Waiting the code (press the remote control button), the receiver is empty	none
		Waiting the code (press the remote control button), the receiver is set as rolling code	rc
		Waiting the code (press the remote control button), the receiver is set as fixed code	fc
		Remote control button in position n.1 in the memory on 1st channel	1001
	ERAS	Remote control button in position n.99 in the memory on 2nd channel	2099
		Button not in the memory	no
		Remote control deletion	
		Use ▲ ▼ buttons to select the n. of the remote control code to be deleted.	-
		Code stored in position 3 in the memory as 1st channel. Press OK to delete	1003
		Code stored in position 3 in the memory as 2nd channel. Press OK to delete	2003
		Memory position n. 3 free	3
		Deletion of all remote controls code from the memory of the receiver. Press OK and hold for 5 s to confirm	ALL

Setting the operating mode of the receiver of the control board:

The receiver of the control board operates in Rolling code mode or Fixed code according to the first programmed remote control button:

- if the first programmed remote control button is Rolling Code, the receiver only accepts Rolling Code remote controls
- if the first programmed remote control button is Fixed Code, the receiver only accepts Fixed Code remote controls

To change the receiver operating mode it is necessary to delete all the remote controls in the memory (ERAS-ALL) and program the first remote control according to the desired type

DEF	Factory reset		
	Button	Display Msg	Description
	OK	oooo	Waiting to press OK for 5 s to load factory settings
Note: Factory reset does not require performing a new gate travel calibration as it does not reset parameters P09-10-11-12-13-14-15-22-25-31			

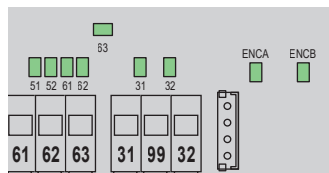
CNT	Counters		
	Button	Display Msg	Description
	-	A025	First number of absolute cycles (multiplied by 10000)
	▼	4075	Second number of absolute cycles
	In the example above, the gate has performed: $025 \times (10000) + 4075 = 254075$ total cycles		
	▼	P019	First number of partial cycles (multiplied by 10000)
	▼	1234	Second number of partial cycles
	In the example above, the gate has performed: $019 \times (10000) + 1234 = 191234$ partial cycles		
	OK	oooo	By pressing OK for more than 5 s the control board resets the count of the number of partial cycles

ALM	Alarms history		
	Button	Display Msg	Description
	▲ ▼	X.FYY	Use ▲ ▼ keys to scroll the alarms of the control board in chronological order (last 9 memorized alarms, 1 most recent alarm, 9 oldest alarm). X indicates the position of the alarm, YY the type of alarm (see the alarm list table)
	-	1.F03	In position 1 alarm 03 is present (see the alarm list table)
	-	2. no	In position 2 there is no alarm
	OK	oooo	Press OK until the display shows "oooo" to clear the list of memorized alarms

PASS	Protection level of the control board (default = OFF)	
	OFF	No protection
	1	Protection of menus PAR, DEF, LRNE and LRNA
	2	Protection of menu RAD
	3	Full protection of the control board

Note:

- The password must be entered in the control panel each time you wish to access a protected menu. If the password entered is incorrect access to the menu is denied.
- A new password must be saved in the control panel each time you change the protection level from OFF to any one of the 3 protected levels. The new password must be entered twice, the second time to confirm it has been entered correctly.
- Use buttons ▲ ▼ to change the password digits and OK to confirm and move to the next digit

SL24.D**6 - LED functions****REACH (EU) Regulation no. 1907/2006 – Art.33.**

The product may contain traces of lead.

LED	Status	Description
DL1	OFF	Power supply not present
	ON	Power supply present
ENCA	OFF	When the motor is running: encoder first channel signal absent (encoder not working)
	ON	When the motor is running: encoder first channel signal present (it appears as a very rapid flashing according to the rotation speed of the motor)
ENCB	OFF	When the motor is running: encoder second channel signal absent (encoder not working)
	ON	When the motor is running: encoder second channel signal present (it appears as a very rapid flashing according to the rotation speed of the motor)
31	OFF	Limit switch 1 (DX bracket - right hand) open (limit switch engaged)
	ON	Limit switch 1 (DX bracket - right hand) closed (limit switch not engaged)
32	OFF	Limit switch 2 (SX bracket - left hand) open (limit switch engaged)
	ON	Limit switch 2 (SX bracket - left hand) closed (limit switch not engaged)
51	OFF	Step-by-step input (terminal 51) not engaged
	ON	Step-by-step input (terminal 51) engaged
52	OFF	Pedestrian input (terminal 52) not engaged
	ON	Pedestrian input (terminal 52) engaged
61	OFF	Stop contact (terminal 61) open (engaged)
	ON	Stop contact (terminal 61) closed (not engaged)
62	OFF	Photocell on closing engaged (terminal 62 open)
	ON	Photocell on closing not engaged (terminal 62 closed)
63	OFF	Photocell or safety edge engaged (terminal 63 open)
	ON	Photocell or safety edge not engaged (terminal 63 closed)

7 - List of alarms

Alarm	Description
F01	Motor power supply error
F02	Obstruction on opening
F03	Obstruction on closing
F04	Contact on terminal 62 open
F05	A condition leading to the stopping of the motor has occurred
F06	Contact on terminal 63 open
F07	Faulty EEPROM memory
F08	Encoder error
F09	Time-out exceeded error
F10	Fuse blown or not present
F11	Excessive absorption on the motor power output
F13	Incorrect motor wiring, reverse the motor power cables



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