D820M

Centrale con inverter per cancelli scorrevoli
Control unit with inverter for sliding gates

IT - Istruzioni originali

EN 12445 12453

MADE IN ITALY

CE

INDEX

1. WARNINGS

This manual is designed to assist qualified installation personnel only. It contains no information that may be of interest to final users. This manual is attached to the control unit, therefore it may not be used for different products!

Important warnings:

Disconnect the mains power supply to the board before accessing it.

The control unit is suitable for the control of a synchronous motor for sliding gates.

Any other use is considered improper and is consequently forbidden by current laws.

Please note that the automation system you are going to install is classifi ed as "machine construction" and therefore is included in the application of European directive 2006/42/EC (Machinery Directive).

This directive includes the following prescriptions:

- Only trained and qualified personnel should install the equipment;
- the installer must first make a "risk analysis" of the machine;
- the equipment must be installed in a correct and workmanlike manner in compliance with all the standards concerned;
- after installation, the machine owner must be given the "declaration of conformity".
- **Check that the gate slides freely on a horizontal plane (gates that open / close on sloping floors can affect the operation and duration of the control unit and the gearmotor).**

This product may only be installed and serviced by qualified personnel in compliance with current, laws, regulations and directives.

When designing its products, TAU observes all applicable standards (please see the attached declaration of conformity) but it is of paramount importance that installers strictly observe the same standards when installing the system.

Unqualified personnel or those who are unaware of the standards applicable to the "automatic gates and doors" category may not install systems under any circumstances.

Whoever ignores such standards shall be held responsible for any damage caused by the system!

Do not install the unit before you have read all the instructions.

2. LIMITS OF USE

This control unit is used to control 230 V AC three-phase synchronous motors, with a power not exceeding 1100 W.

3. CHARACTERISTICS OF THE CONTROL UNIT

• Programming and self-learning through keys (increase, decrease, selection) and a two-digit display
• Management of the safety devices: photocells, Stop, Safety Edge, Amperometric detection
• Potential-free contact signaling the automation status/alarm
• Universal power supply 110V AC ÷ 230V AC
• If single-phase motors are used, the starting capacitor is no longer necessary
• Advanced AMPEROMETRIC obstacle detection system that allows a precise and stable calibration by maximizing the intervention speed.
• Compliant with the relevant European Directives:
- Integrated mains filter
- Low Voltage Directive 2006/95 / EC

- Electromagnetic Compatibility (EMC) 2014/30 / UE

4. TECHNICAL DATA

Control unit power supply	230V AC - 50 Hz
Motors output	Three-phase: 230 V AC Single-phase: 230 VAC
Three-phase motors connection	Delta connection
Single-phase motors connection	No capacitor
Motor max. power	1500 W
Operating Temperature	-20°C / + 55 °C
Accessories power supply	12V DC - 500mA (6W) For higher powers, install an external transformer
Protections	- motors protected by fuse and electronic control - electronically protected circuits - self-protected switching power supply - L-C mains filters

5. DESCRIPTION OF THE CONTROL UNIT
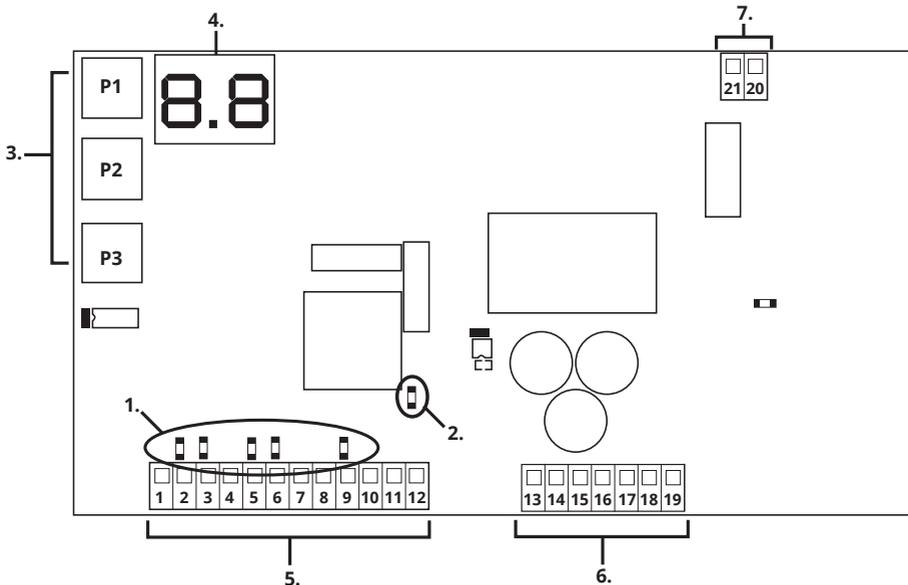
1. Inputs diagnostic LED

2. Mains voltage presence LED

5. Terminals for low voltage connections

6. Terminals for high voltage connections

3. Buttons for programming

4. Display*

7. Terminal for UPS connection

* DISPLAY LEGEND:

CH= Gate closed.

CL= Gate closing.

OP= Gate opening.

AP= Gate Open.

tE= Self-learning.

ST= Stop pressed.

AS= Amperometric Protection Intervention

6. ELECTRICAL SYSTEM DIAGRAM

7. ELECTRICAL CONNECTIONS

7.1 Power line connection
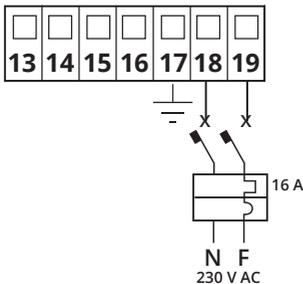
The power supply line must have a three-pole cable of at least 2.5 square meters per pole, it must be protected by a 16 A magnetothermic switch and a 30 mA differential.

7.2 Electric motor and flashing light connection
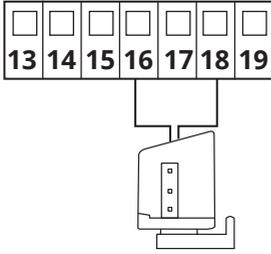
Maximum power: 50W and 230V AC
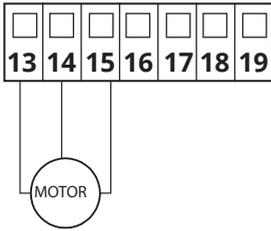
Three-phase 230 V AC or single-phase 230 V AC motor **(with single-phase observe the common connection on terminal 14 and do not connect the capacitor between 13-15).** Maximum power 1100 W.

7.3 Photocell connection
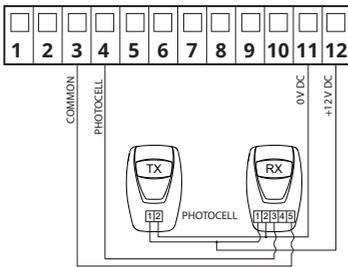
12 V DC power supply output for a maximum of 500 mA; if 500 mA is exceeded, an external transformer must be connected.

To view the status of the photocell, check DL6 LED, which remains ON when the photocell is not engaged.

If the photocell is not used, build a bridge between terminals 3-4.

7.4 Connection of stop buttons (for emergency STOP) and connection of sensitive edge
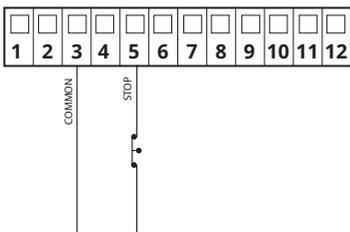
TOP INPUT:
The intervention of this input stops the movement of the gate both in opening and closing.

To view the status of the STOP input, check DL7 LED, which remains ON with STOP not engaged.

If the STOP input is not used, build a bridge between terminals 3-5.

7.5 External receiver connection
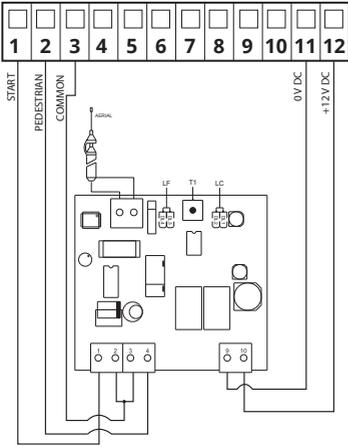
The intervention of the START input determines the total opening and closing of the gate. The intervention of the PEDESTRIAN input determines the partial opening and closing of the gate.

To view the status of the START and PEDESTRIAN inputs, check DL4 and DL5 LEDs; these inputs remain OFF in standby.

7.6 Key selector connection
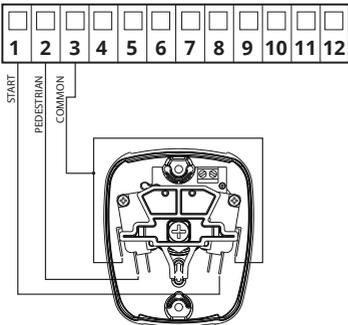
The intervention of the START input determines the total opening and closing of the gate. The intervention of the PEDESTRIAN input determines the partial opening and closing of the gate.

To view the status of the START and PEDESTRIAN input, check DL4 and DL5 LEDs, these inputs remain OFF in standby.

7.7 Sensitive edge connection on pedestrian input
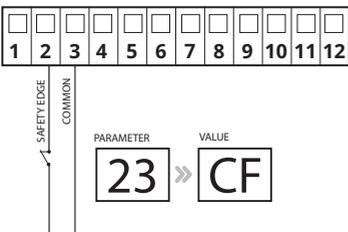
The intervention of the SENSITIVE EDGE input reverses the movement of the gate during opening for about 20 cm.
To view the status of the SENSITIVE EDGE input, check DL5 LED: this input remains ON when in standby.

NOTICE: to enable the sensitive edge on input no.2, enter parameter 23 and select the CF value

8. SUMMARY OF ELECTRICAL CONNECTIONS
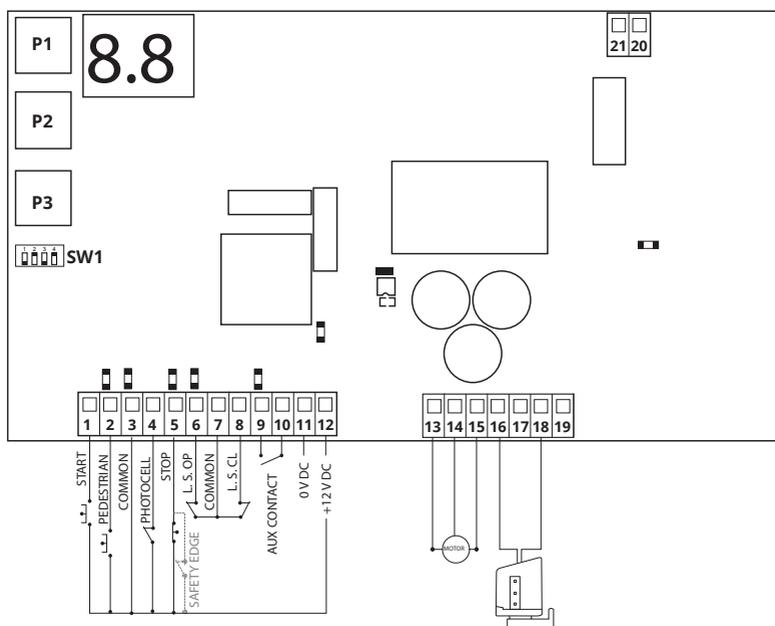
9. KEYS DESCRIPTION

P1   The P1 key has the function of decreasing the parameters and values by one unit.

P2   The P2 key has the function of increasing the parameters and values by one unit.

P3   The P3 key has the function of accessing the parameters menu and the stroke memorization menu and confirming the modified value.
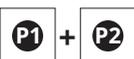
P1 + **P2**   The simultaneous pressure of the P1 and P2 keys has the function of going back to the previous setting.

10. LED DESCRIPTION ON THE BOARD
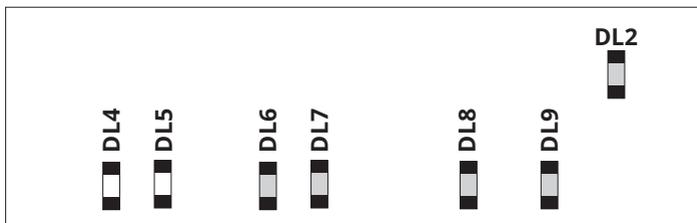
ABBRE-VIATIONS	DESCRIPTION	STATE
DL2	Low voltage presence led	ON
DL4	Displays the status of the START input	OFF
DL5	Displays the status of the PEDESTRIAN	OFF
DL6	Displays the status of the PHOTOCELLS	ON
DL7	Displays the status of the STOP input	ON
DL8	Displays the status of the opening limit switch	ON
DL9	Displays the status of the closing limit switch	ON

11. DIP SWITCH DESCRIPTION

1	AUTO LOCK	On	when opening is complete, the closure of the automation is automatic after the time set during programming has elapsed.
		Off	closing requires a manual command.
2	NO REVERSE	On	the automation ignores the closing commands during opening and the pause time.
		Off	it is possible to reverse the movement during closing.
3	2/4 TIMES	On	with the automation functioning, a sequence of opening/closing commands causes the automation to OPEN-CLOSE-OPEN-CLOSE, etc...
		Off	in the same conditions, the same sequence of commands causes the automation to OPEN-STOP-CLOSE-STOP-OPEN-STOP, etc...
4	NOT USED	On	not used.
		Off	not used

12. PROGRAMMING OF THE STROKE

⚠️ **During this phase the current absorption curve is detected for management of obstacle control (ampere-stop). In this phase is determined the behaviour that we want the automation has when it will be in the standard operation.**
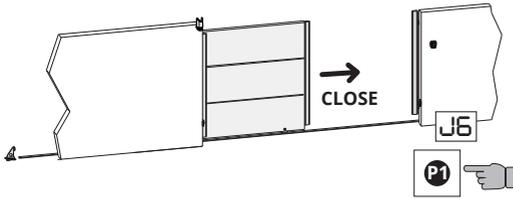
1. Check that:
- by pressing the P1 key, J6 appears on the display and the motor begins to close
- the DL9 LED turns off when closing is complete.

If the gate opens, invert the cable from terminal 13 - 15. Remember that in the case of a single-phase motor, the common cable must always be positioned in terminal 14.
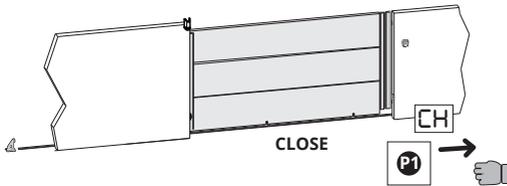
2. Make sure that the message **CH** = Door closed is shown on the display, and release the P1 key.
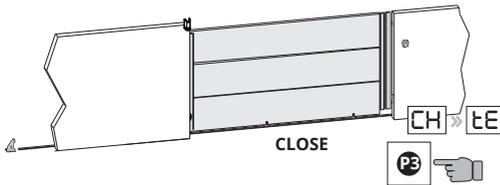
3. To reach the memorization of the stroke, press the P3 key until the message **tE** appears on the display. Release the P3 key.
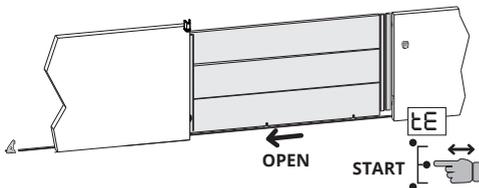
4. Press and release the START key. The gate begins to open at cycle speed.

SLOWING DOWN
RALLENTAMENTO

START tE
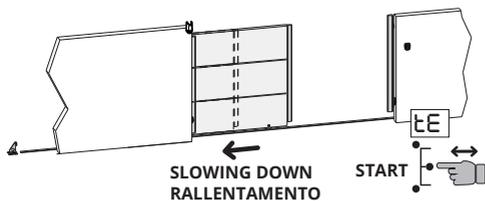
5. Press and release the START key. The gate memorizes the deceleration start point during opening.

OPEN OP

TCA
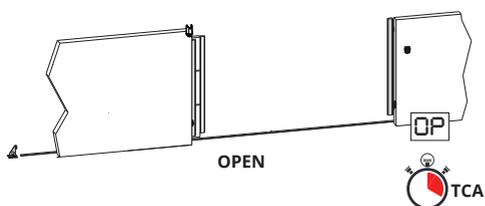
6. When the opening limit switch intervenes, the gate stops, the message **OP** appears on the display and the countdown for the automatic closing time starts from here.

CLOSE CL
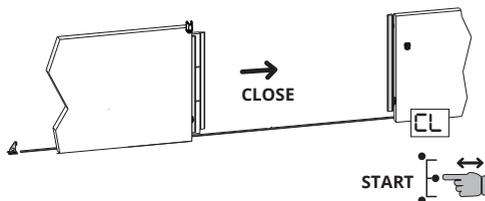
START

7. After the desired time for the automatic closing has passed, press and release the START key. The message **CL** appears on the display and the gate begins to close at cycle speed.

SLOWING DOWN CLOSE
RALLENTAMENTO **START** CL
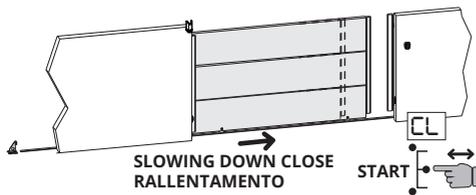
8. Press and release the START key. The gate memorizes the deceleration start point in closing.

CLOSE CH
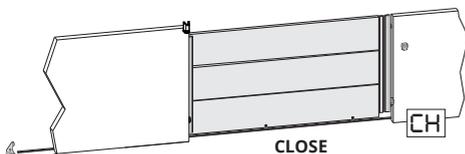
9. When the closing limit switch intervenes, the gate stops, the message **CH** appears on the display and the programming procedure ends.

If one or more settings are changed after the memorization, the procedure should be repeated.

13. PROGRAMMING OF THE PEDESTRIAN STROKE
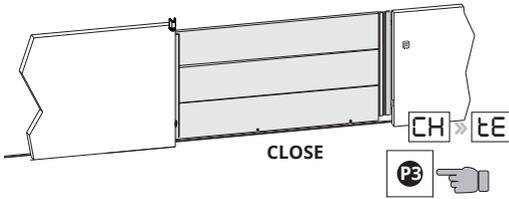
1. To enter pedestrian stroke memorization, press the P3 key until the message **tE** appears on the display. Release the P3 key.

CLOSE

CH » tE

P3
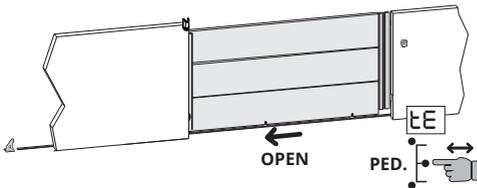
2. Press and release the PEDESTRIAN key. The gate begins to open at cycle speed.

OPEN   PED.

tE

3. Press and release the PEDESTRIAN key. The gate memorizes the pedestrian opening point.

PEDESTRIAN OPENING
APERTURA PEDONALE   PED.

tE
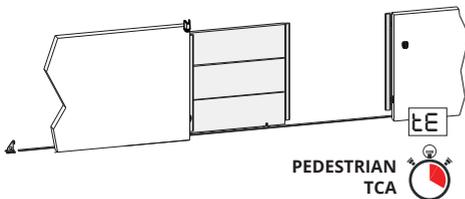
4. The countdown for the automatic closing time for pedestrian opening starts from here.

PEDESTRIAN
TCA

tE
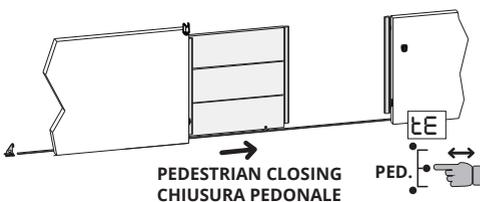
5. After the desired time for the automatic closing has passed, press and release the PEDESTRIAN key. The gate starts closing at cycle speed.

PEDESTRIAN CLOSING
CHIUSURA PEDONALE   PED.

tE

SLOWING DOWN CLOSE
RALLENTAMENTO
PED.
LE
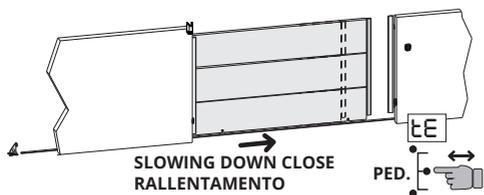
6. Press and release the PEDESTRI-AN key. The gate memorizes the deceleration start point in closing.

CLOSE
CH
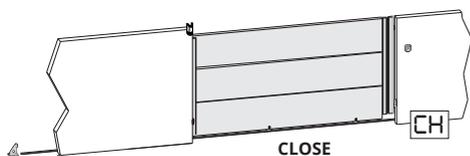
7. When the closing limit switch intervenes, the gate stops, the message **CH** appears on the display and the pedestrian programming procedure ends.

If one or more settings are changed after the memorization, the procedure should be repeated.

14. PARAMETERS PROGRAMMING

Example of menu operation.
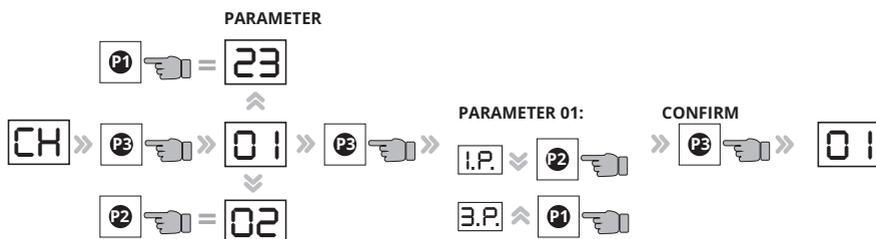
PAR. N°	PARAMETER NAME	DESCRIPTION	VALUE	DE-FAULT
01	Motor type selection: 1,5 KW or 0,75 KW	0.1 = 1,5 KW motor (BIG40QI) 0.2 = 0,75 KW motor (BIG25QI)	0.1 0.2	0.1
02	Automation weight selection	a. = LIGHTWEIGHT door/gate b. = MEDIUMWEIGHT door/gate c. = HEAVYWEIGHT door/gate	a. b. c.	c.
03	Change STOP time	Check the automatic closing time set during the stroke calibration procedure. This time can be changed from 1 to 99 s.	from 0.1. to 9.9. s	-

04	Torque adjustment max.	Motor force adjustment	from 0.1. to 9.9.	9.2.
05	Working speed adjustment in OPE-NING	Speed adjustment	from 0.1. to 9.9.	5.0
06	Working speed adjustment in CLO-SING	Speed adjustment	from 0.1. to 9.9.	5.0
07	Deceleration speed adjustment in OPE-NING	Adjustment of the deceleration speed during opening	from 0.1. to 9.9.	2.5
08	Acceleration speed adjustment in CLO-SING	Adjustment of the acceleration speed during closing	from 0.1. to 9.9.	2.5
09	Force adjustment on obstacle in OPENING	Adjustment of the impact force on any obstacle during opening	from 0.1. to 9.9.	3.5
10	Force adjustment on obstacle in CLOSING	Adjustment of the impact force on any obstacle during closing	from 0.1. to 9.9.	3.5
11	Force adjustment on obstacle during OPEN deceleration	Adjustment of the impact force on any obstacle during deceleration in opening	from 0.1. to 9.9.	3.5
12	Adjustment of force on obstacle during CLOSING deceleration	Adjustment of the impact force on any obstacle during the deceleration in closing	from 0.1. to 9.9.	3.5
13	Adjustment of the inversion time from photocell interven-tion	It adjusts the time that elapses between stopping and reversing after the intervention of the pho-tocell	from 0.3. to 2.0. (tenths of s)	3.5
14	Final kick in closing after limit switch	Time of inversion on the limit switch intervention to decrease inertia. (0.0. = Function not active from 0.1. To 2.0. = Inversion time expressed in tenths of a s.)	from 0.0. to 2.0.	0.0.
15	NOT USED	Set the value to 0.0.		0.0.

16	Operation counter	It indicates the total number of automation maneuvers. By entering function 16, the figures corresponding to the hundred-thousand and ten-thousand will be presented; by pressing the P2 key, it will go to the thousands and hundreds; by pressing P2 again, it will display the digits corresponding to the tens and units.	n. maneuvers	
17	NOT USED			
18	OPEN/CLOSE function selection	By enabling the function, the START input becomes OPEN and the PEDESTRIAN START becomes CLOSE. (yes = enable/no = disable)	YES and NO	NO
19	NOT USED			
20	Steady flashing function selection	By enabling the function, the flashing light will output a steady light, without flashing. (yes = enable/no = disable)	YES and NO	NO
21	Re-closing after photocell intervention	With the gate open with the automatic reclosing function active, after an intervention of the photocells the gate closes after 3 s. (yes = enable/no = disable)	YES and NO	NO
22	Dead man	The gate only works by keeping the START key pressed to open and the PEDESTRIAN key to close (yes = enable/no = disable)	YES and NO	NO
23	Selection of the sensitive edge on the pedestrian input	YES = use in pedestrian input to connect a sensitive edge No = use of the pedestrian input to control the pedestrian opening.	YES and NO	NO

15. MALFUNCTIONS: POSSIBLE CAUSES AND REMEDIES

ERROR	ERROR NAME + DESCRIPTION	REMEDY
E1	**Both limit switches pressed simultaneously** The only non-blocking error. It happens when both limit switches are pressed at the same time; a situation that is impossible to occur during the correct operation of the automation. (DL8 and DL9 off)	Check the operation of the limit switches (N.C.)
E2	**Short circuit of the motor**	Check that the motor1 phases are not short-circuited and that the power of the motor doesn't exceed 1Kwatt
E3	**Wrong writing to memory** Problem writing parameters in memory	Turn off the card and try again. If the problem occurs again, replace the card; the memory is damaged
E4	**Failure to charge capacity**	Check that the power supply voltage is not too low
E5	**Motor piloting over temperature.** Maximum working temperature reached	To improve operation, increase the stand-by time on reclosing
E6	**Motor Instantaneous overcurrent**	Check the ascent ramps; they could be too fast and also make sure that the motor used doesn't exceed 1Kwatt
E7	**Motor delayed overcurrent**	Check the ascent ramps; they could be too fast and also make sure that the motor used doesn't exceed 1Kwatt
E8	**Overvoltage on the BUS**	Make sure the engine doesn't regenerate during the stop maneuvers; if this happens, in order to decrease the regeneration, prolong the deceleration/stop ramps.

* DISPLAY LEGEND:

CH= Gate closed.

CL= Gate closing.

OP= Gate opening.

AP= Gate Open.

tE= Self-learning.

ST= Stop pressed.

AS= Amperometric Protection Intervention

MANUFACTURER'S DECLARATION OF INCORPORATION
(in accordance with European Directive 2006/42/EC App. II.B)

Manufacturer: TAU S.r.l.
Address: Via E. Fermi, 43 - 36066 Sandrigo (Vi) -
ITALY

Declares under its sole responsibility, that the product: *Electronic control unit*
designed for automatic movement of: *Sliding gates*
for use in a: *Residential / Communities / Industrial*

Model: *D820M*   Type: *D820M*
Serial number: *see silver label*
Commercial name: *Control panel for 1 230 V AC three-phase gearmotor*

Has been produced for incorporation on an access point (*sliding gate*) of for assembly with other devices used to move such an access point, to constitute a machine in accordance with the Machinery Directive 2006/42/EC.

Also declares that this product complies with the essential safety requirements of the following EEC directives:
- 2014/35/EU Low Voltage Directive   - 2014/30/EU Electromagnetic Compatibility Directive

Also declares that **it is not permitted to start up the machine** until the machine in which it is incorporated or of which it will be a component has been identified with the relative declaration of conformity with the provisions of Directive 2006/42/EC.

The following standards and technical specifications are applied:
EN 61000-6-2; EN 61000-6-3; EN 60335-1; ETSI EN 301 489-1 V1.9.2; ETSI EN 301 489-3 V1.6.1; EN 300 220-2 V2.4.1; EN 12453:2000; EN 12445:2000; EN 60335-2-103.

The manufacturer undertakes to provide, on sufficiently motivated request by national authorities, all information pertinent to the quasi-machinery.

Sandrigo, 29/09/2021   Legal Representative
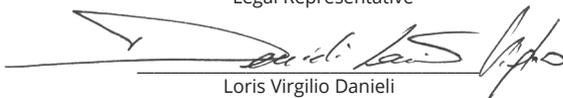
                                                Loris Virgilio Danieli

Name and address of person authorised to draw up all pertinent technical documentation:
Loris Virgilio Danieli - via E. Fermi, 43 - 36066 Sandrigo (Vi) Italy