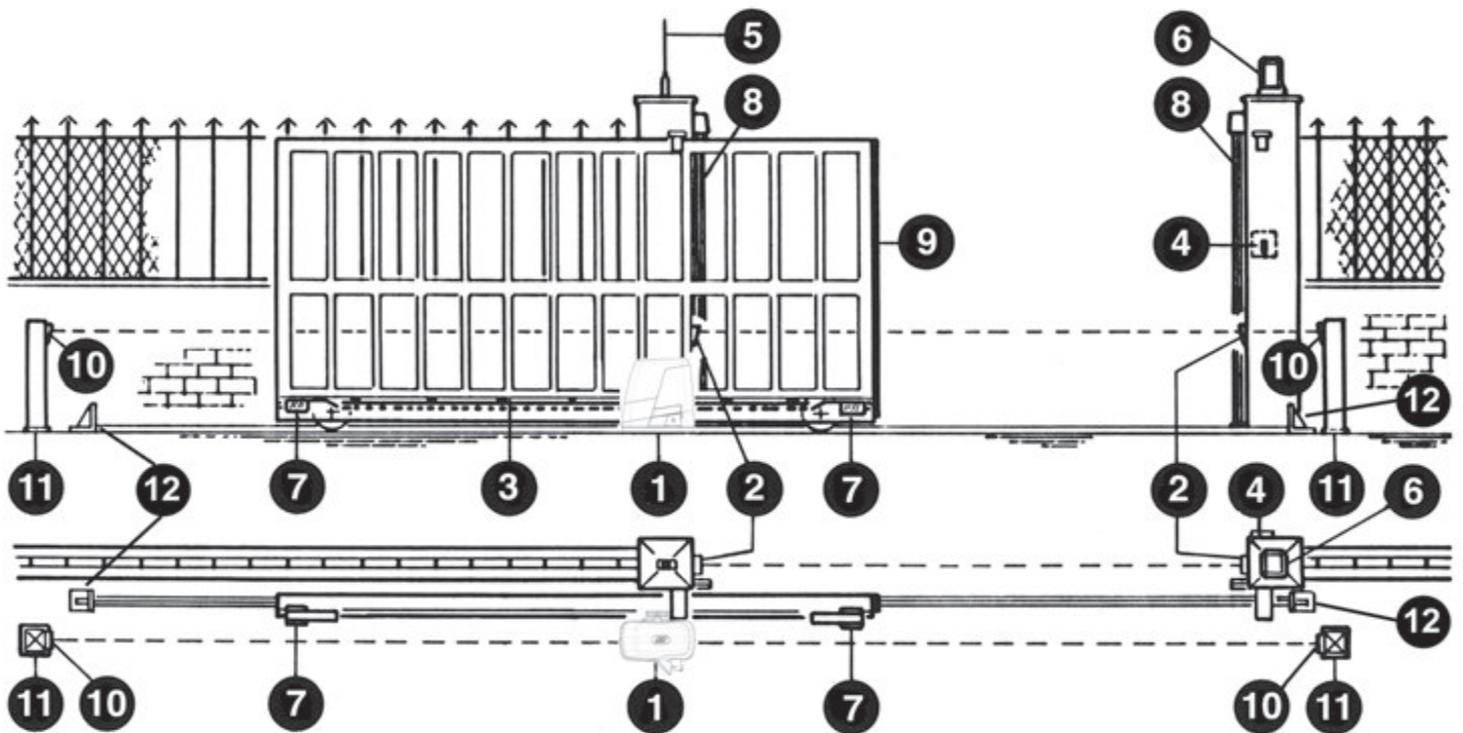


# K400



Operatore Opérateur Operator Torantrieb Operador	Alimentazione Alimentation Power Supply Stromspannung Alimentacion	Con quadro Avec coffret With control board Mit Steuerung Con panel electronico	Peso max cancello Poids maxi portail Max gate weight Max Torgewicht Peso máx verja	Spinta max Poussée maxi Max Thrust Max Schubkraft Max Empuje	Coppia max Couple maxi Max torque Max. Drehmoment Coppia max	Finecorsa Fins de course Limit switch Endschalter Final de carrera	Codice Code Code Code Codigo
K400	230V 50/60Hz	K 24V-CRX	400 kg / 881 lbs	434 N	14,7 Nm	elettromeccanici électromagnétiques electromechanical elektromechanisch electromecánicas	AA40900
						magnetici magnétiques magnetic magnetisch magnéticas	AA40905
	120V 60Hz					elettromeccanici électromagnétiques electromechanical elektromechanisch electromecánicas	AA40901
						magnetici magnétiques magnetic magnetisch magnéticas	AA40906



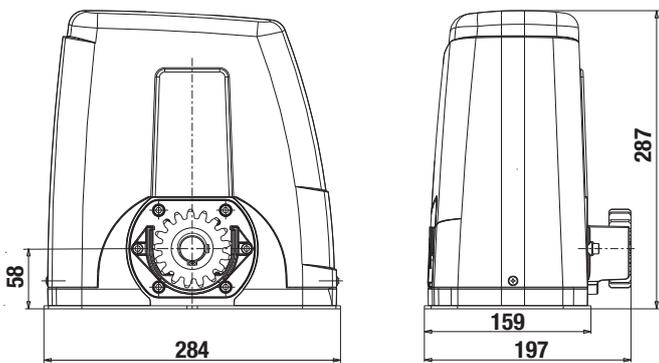
1

- 1 - K400 operating device
- 2 - External photocells
- 3 - Rack of Module 4
- 4 - Key selector
- 5 - Radio antenna
- 6 - Blinker
- 7 - Limit switch plate (cams)
- 8 - Mechanical strip
- 9 - Mechanical strip
- 10 - Internal Photocells
- 11 - Photocell columns
- 12 - Mechanical stops

## TECHNICAL FEATURES

**Irreversible operating devices for sliding gates with a maximum weight of 400 kg / 881 lbs.**

The irreversibility of this operating device allows you to avoid using any electric lock for an effective closing of the gate.



Measurements in mm/inch

TECHNICAL DATA		K400	
Max. leaf weight	kg	400	
Operating speed	m/s	0,15÷0,33	
torque	Nm	434	
Thrust force with constant turns	N	14,7	
Rack module	M	4	
Power supply		230V~ 50Hz	120V~ 60Hz
Motor capacity	W	70	
Power absorbed	A	1	2
Normative cycles	n°	∞ - 30s/2s	
Daily operations suggested	n°	78	
Service	%	100	
Guaranteed consecutive cycles	n°	16/5m	
Grease		COMLUBE LHITGREASE EP/GR.2	
Weight of electroreducer	kg	9,8	
Noise	db	<70	
Working temperature	°C	-10 ÷ +55	
Protection	IP	54	

## CHECKING BEFORE THE INSTALLATION

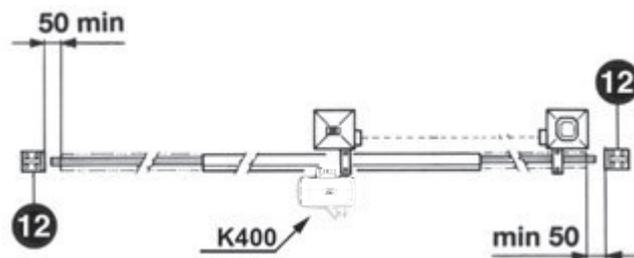
**!! THE GATE SHALL MOVE FRICTIONLESS !!**

**N.B.:** Gate features must be uniformed with the standards and laws in force. The door/gate can be automated only if it is in a good condition and its conditions comply with the EN 12604 norm.

- The door/gate leaf does not have a pedestrian door. In the opposite case it is necessary to take the appropriate steps, in accordance with EN 12453 norm (for instance; by preventing the operation of the motor when the pedestrian door is opened, by installing a safety microswitch connected with the control panel).
- Besides the electrical or mechanical limit switches available on the operators, there must be, on both ends of the installation, a fixed mechanical stopper which stop the gate in the unlikely event of ill functioning of limit switches on the operators. For this reason the fixed mechanical stopper must be of an adequate size to withstand the static and kinetic forces generated by the gate (12) (fig. 2).
- Gate columns shall have anti-derailment guides on their top (fig. 3), to avoid the unintentional gate release.

**N.B.:** Remove mechanical stops like the one in fig. 3.

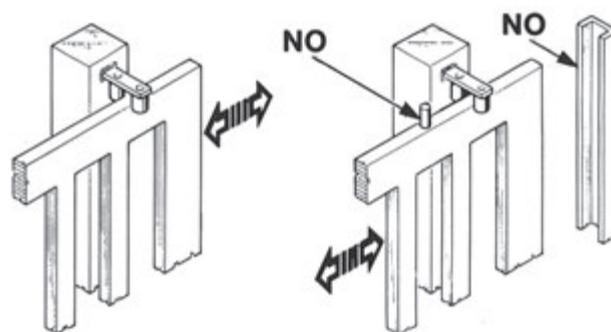
No mechanical stops shall be on top of the gate, since these mechanical stops are not safe enough.



2

Parts to install meeting the EN 12453 standard			
COMMAND TYPE	USE OF THE SHUTTER		
	Skilled persons (out of public area*)	Skilled persons (public area)	Unrestricted use
with manned operation	A	B	non possible
with visible impulses (e.g. sensor)	C or E	C or E	C and D, or E
with not visible impulses (e.g. remote control device)	C or E	C and D, or E	C and D, or E
automatic	C and D, or E	C and D, or E	C and D, or E

\* a typical example are those shutters which do not have access to any public way  
A: Command button with manned operation (that is, operating as long as activated), like code ACG2013  
B: Key selector with manned operation, like code ACG1010  
C: Adjustable power of the motor  
D: Safety strips and/or other safety devices to keep thrust force within the limits of EN12453 regulation - Appendix A.  
E: Photocells, like code ACG8026 (To apply every 60÷70cm for all the height of the column of the gate up to a maximum of 2,5m - EN 12445 point 7.3.2.1)



3

## RELEASE

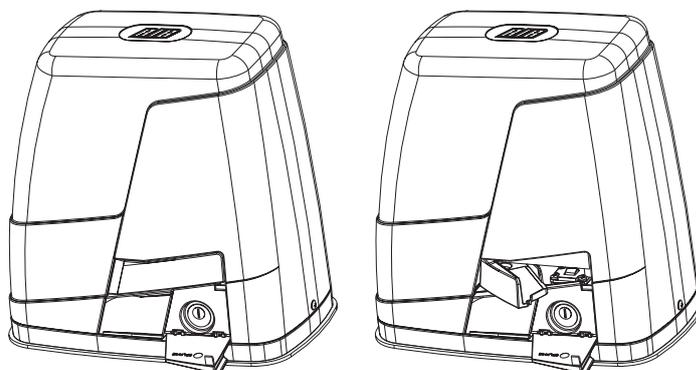
**To operated after the power supply to the motor has been interrupted.**

In order to operate the gate manually, simply open the door, insert the key, turn it clockwise and pull the lever (Fig. 4).

In order to carry out the manual operation of the gate leaf the followings must be checked:

- That the gate is endowed with appropriate handles;
- That these appropriate handles are placed so to avoid safety risks for the operator;
- That the physical effort necessary to move the gate leaf should not be higher than 225 N, for doors/gates for private dwellings, and, 390N for doors/gates for commercial and industrial sites (values indicated in 5.3.5 of the EN 12453 norm).

To re-lock the motor, turn the key counter-clockwise and press the lever in place.



4

### MOTOR AND RACK FITTING

Operator K400 comes with a base plate for vertical adjustment. Such adjustment proves to be useful to set a 1 mm clearance between the drive gear and the rack. Insert the two 4MA self-locking nuts which are needed to fix the cover of the K400 operator before securing the operator to its base plate using the nuts and flat washers 8MA 8x26 provided (see Pict. 5).

The base plate features two hooks that can be used to secure the system on the ground (Fig. 6).

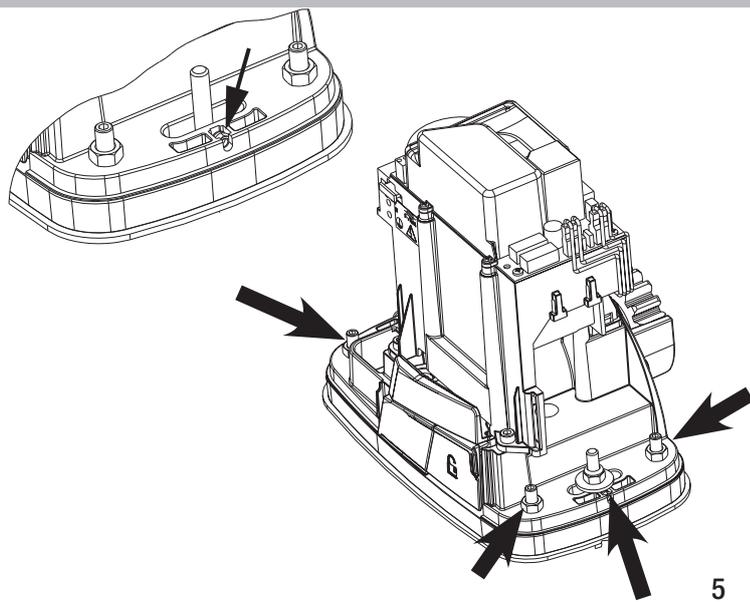
The rack shall be fitted over the motor support, at a certain distance from it. Its height can be adjusted thanks to the holes in the rack.

The towing gear must have at least 1 mm of backlash compared to the rack (Fig. 7).

The height is adjusted to prevent the gate from resting on the driving gear of the K as it moves.

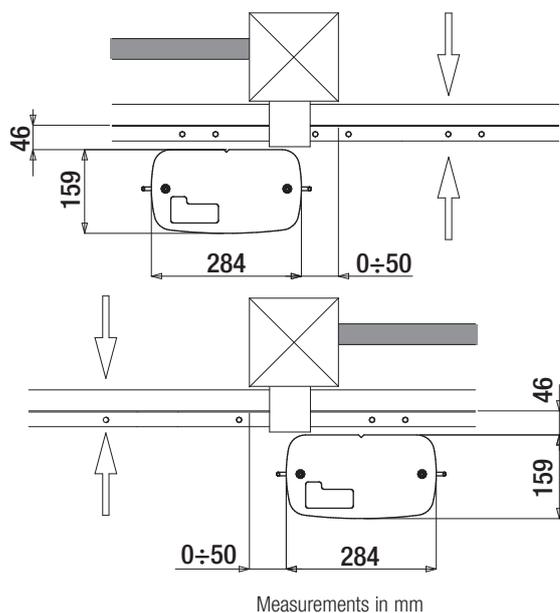
To fix the rack on the gate, drill some  $\varnothing 5$  mm holes and thread them using an M6 screw tap.

The driving gear needs some 1 mm clearance from the rack.



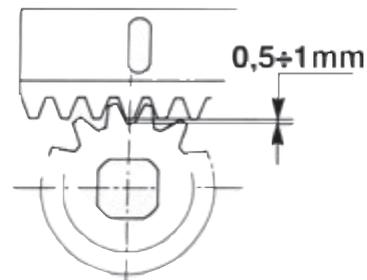
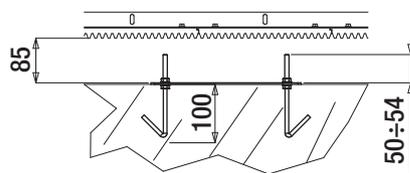
Measurements in mm

5



Measurements in mm

6



Measurements in mm

7

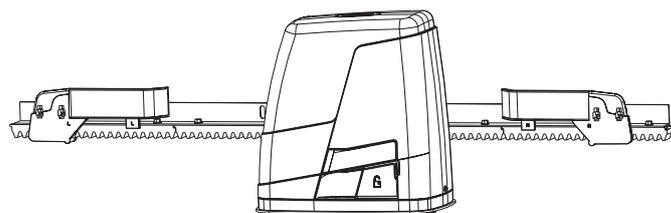
### LIMIT SWITCH FITTING

In order to determine the travel of the moving part, place two cams at the ends of the rack (Fig. 8, 9).

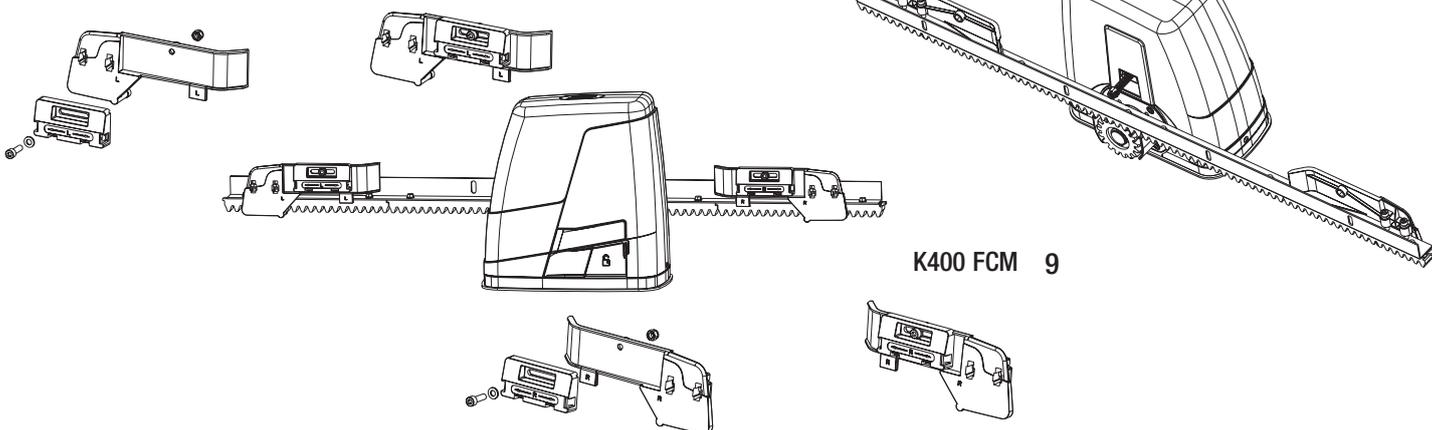
Move the cams on the rack teeth to adjust their opening and closing travel.

To fix the cams to the rack, tighten the screws issued.

N.B: In addition to the electric stop cams mentioned above, you must also install strong mechanical stops preventing the gate from sliding out of the top guides.



K400 FCE 8



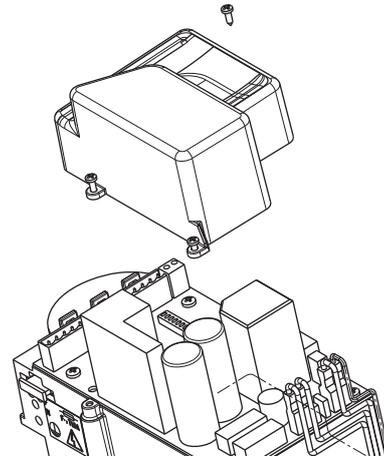
K400 FCM 9

**MAINTENANCE**

To be carried out exclusively by skilled persons after the power supply to the motor has been interrupted.

Periodically, when the gate is standstill, clean and keep the guide free from stones and dirt.

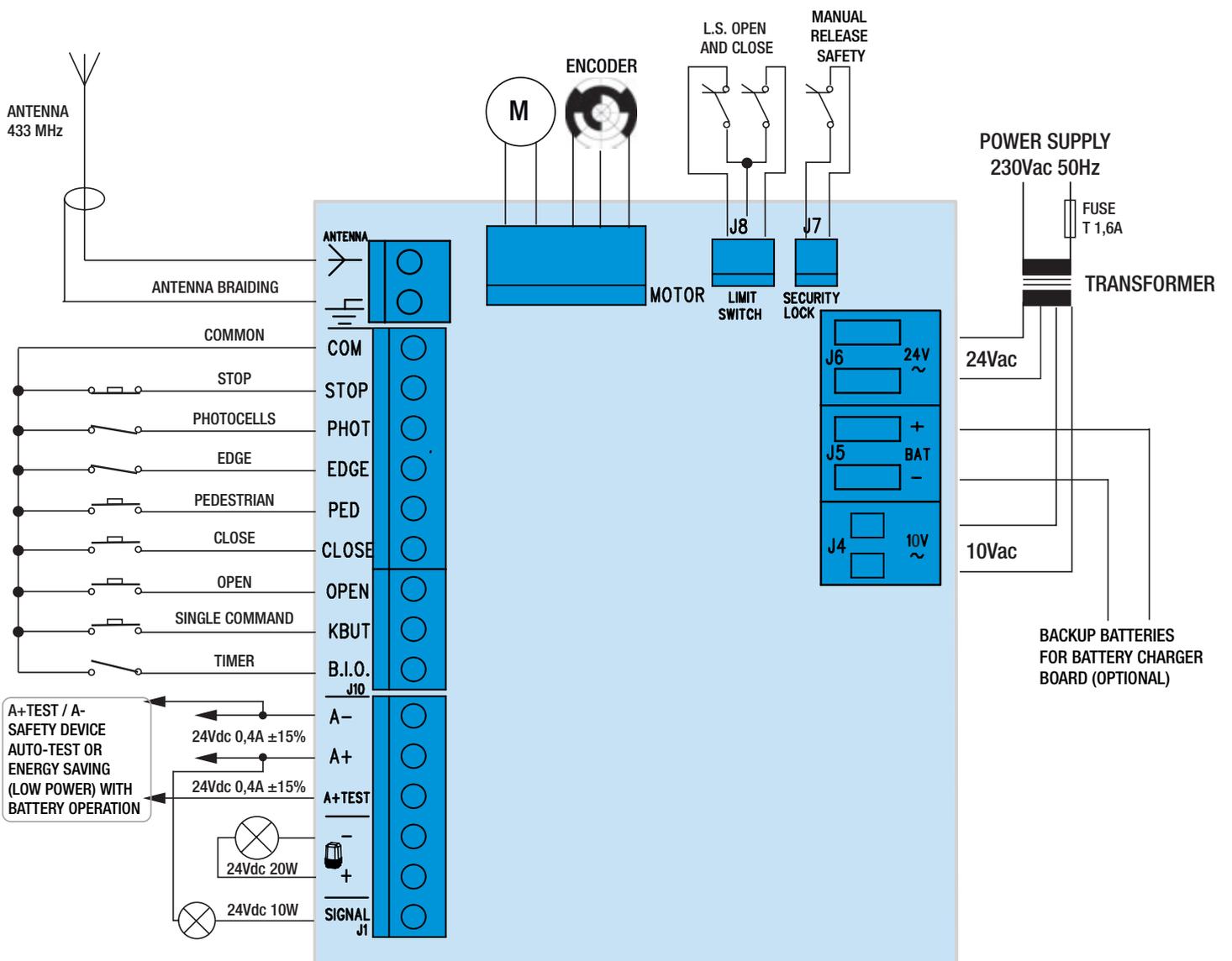
REMOVE THE TRANSPARENT COVER FROM THE TOP OF THE ELECTRONIC BOARD BY UNSCREWING ITS 3 SCREWS.



**ELECTRIC CONNECTIONS**

K 24V-CRX

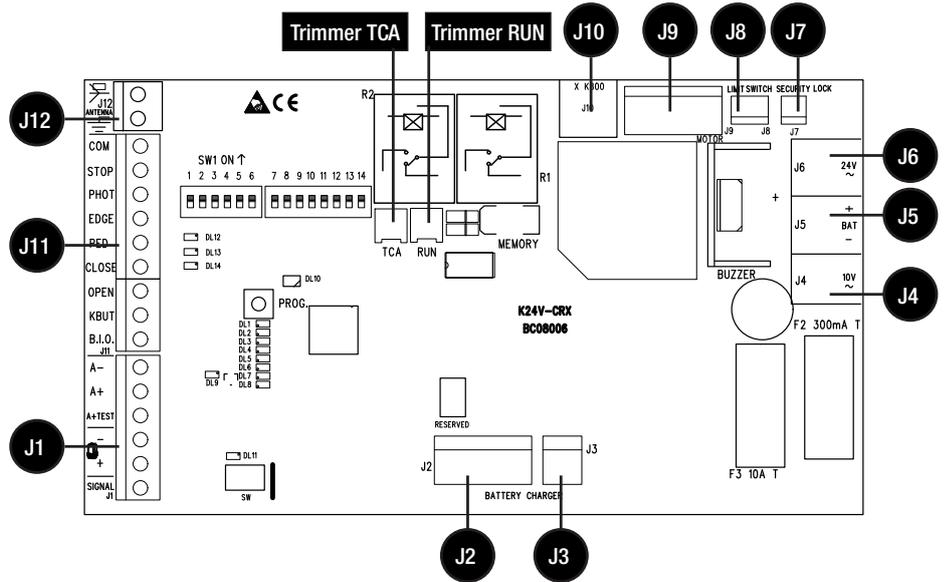
cod. AC08006



# POINT A - ELECTRIC CONNECTIONS

EXTERNAL MAINS POWER SUPPLY TO BOARD 230 Vac  
50/60 Hz (120 Vac 60 Hz on request)

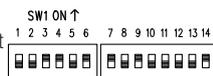
- F > PHASE
- N > NEUTRAL
-  > EARTH
- F1 T1,6A FUSE ON MAIN POWER TERMINAL



J1	A-	COMMON WIRE OF ACCESSORIES POWER SUPPLY AND EDGE AUTO-TEST	J8	LIMIT SWITCH	CONNECTOR FOR ELECTRICAL OR MAGNETIC LIMIT SWITCHES
	A+	POSITIVE FOR 24Vdc POWER SUPPLY TO ACCESSORIES	J9	MOTOR	CONNECTOR FOR 24Vdc MOTOR AND 5VDC ENCODER
	A+ TEST	POSITIVE FOR 24Vdc POWER SUPPLY TO EDGE AUTO-TEST	J10	X K800	CONNECTORS FOR MOTOR K800 CONNECTION (DO NOT USE)
		NEGATIVE FLASHER 24Vdc 20W	J11	COM	CONTACTS COMMON WIRE (GND)
		POSITIVE FLASHER 24Vdc 20W		STOP	STOP PULSE CONTACT (NC)
SIGNAL	OPEN GATE INDICATOR 24 Vdc MAX 10 W	PHOT	PHOTOCELLS CONTACT (NC)		
J2-J3	BATTERY CHARGER	EDGE	EDGE CONTACT (NC)		
J4	10V	PED	PEDESTRIAN OPENING PULSE CONTACT (NO)		
J5	BAT	CLOSE	CLOSE PULSE CONTACT (NO)		
J6	24V	OPEN	OPEN PULSE CONTACT (NO)		
J7	SECURITY LOCK	KBUT	SINGLE PULSE CONTACT (NO)		
		B.I.O.	CONTACT (NO) DEDICATED TO A CLOCK		
		J12	ANTENNA	TERMINALS DEDICATED TO CONNECTION OF A 433.92 MHz ANTENNA	

## B – SETTINGS

DIP 1 adjust stroke in line with electrical or magnetic limit switches (point C)



- DIP 2 programme full opening (point D)
- DIP 2-1 programme pedestrian opening times (point E)
- DIP 1-2 save/delete radio codes for full opening control (point F)
- DIP 1-2 save/delete radio codes for pedestrian opening control (point G)

### CONTROL MICRO-SWITCHES

#### DIP 3

- ON - gradual start enabled
- OFF - gradual start disabled

#### DIP 4

- ON - photocells enabled only when closing
- OFF - photocells always enabled

#### DIP 5

- ON - heater enabled
- OFF - heater disabled

#### DIP 6

- ON - radio, k butt button and pedestrian control enabled in automatic mode
- OFF - radio, k butt button and pedestrian control enabled in step-by-step mode

#### DIP 7

- ON - current sensor enabled
- OFF - current sensor disabled

#### DIP 8

- ON - instant re-closing after transit on enabled photocell
- OFF - instant re-closing after transit on disabled photocell

#### DIP 9

- ON - mode on always, even with remote control enabled
- OFF - mode on always, even with control buttons enabled

#### DIP 10

- ON - edge auto-test enabled
- OFF - edge auto-test disabled

#### DIP 11

- ON - pre-flashing enabled
- OFF - pre-flashing disabled

#### DIP 12

- ON - available
- OFF - available

#### DIP 13

- ON - function dedicated to gear motor K800
- OFF - function dedicated to gear motor K400

#### DIP 14

- ON - enable SUN/MOON radio system
- OFF - enable SUN-PRO radio system

PROG. > PROGRAMMING KEY.

MEMORY > EXTRACTIBLE MEMORY CONTAINING FUNCTIONAL DATA AND RADIO CODES.

SW > CONNECTOR FOR SOFTWARE UPGRADE.

**RESERVED > CONNECTOR RESERVED TO FACTORY CONTROLS.****RUN > TRIMMER FOR MOTOR SPEED ADJUSTMENT.**

With this trimmer it is possible to adjust the motor speed (set by default at half the speed). The adjustment is quite useful to align the automation with the European standards on impacts.

**For gates weighing from 0 to 200 kg is recommended to set the RUN trimmer from 1/2 to MAX.**

**For gates weighing from 200 to 400 kg is recommended to set the RUN trimmer from MIN to 1/2.**

Note: the slow motion is not adjustable, as it is calculated automatically.

**TCA > FULL OR PEDESTRIAN AUTOMATIC CLOSING TRIMMER**

Not enabled by default and led DL3 off (trimmer rotated fully counter-clockwise).

With this trimmer it is possible to adjust the time before the full or pedestrian automatic closing.

Full or pedestrian automatic closing can be enabled only with the door fully (full) or partly (pedestrian) open and led DL3 on (with trimmer rotated clockwise).

The pause time can be adjusted from a minimum of 2 seconds to a maximum of 2 minutes.

**GRADUAL START**

If DIP 3 is ON, gradual motion for 1 second is enabled with every start.

**LED SIGNALS**

DL1	programming signal enabled	(red)
DL2	encoder status signal	(green)
DL3	automatic closing time signal	(red)
DL4	manual unlock micro-switch signal	(red)
DL5	closing gate signal	(red)
DL6	opening gate signal	(green)
DL7	closing limit switch signal	(red)
DL8	opening limit switch signal	(green)
DL9	3.3V micro-controller voltage presence signal	(yellow)
DL10	radio code programming signal	(two colours)
DL11	programmer connected signal	(red)
DL12	stop contact signal	(red)
DL13	photocell contact signal	(red)
DL14	edge contact signal	(red)

**Buzzer > signals various functions, see table of visual and sound signals.**

**Fuses**

F2	T 300 mA	functional logic safety fuse
F3	T 10 A	motor safety fuse

**C – ADJUST STROKE IN LINE WITH ELECTRICAL OR MAGNETIC LIMIT SWITCHES**

This control has the task of facilitating system commissioning or any subsequent adjustments for the installer.

- 1 - Unlock the operator using the manual release and position the limit switch cams on the rack, so as to define the gate stroke.
- 2 - Bring the gate to mid-stroke position and lock the operator.
- 3 - Set DIP 1 to ON mode => led DL1 starts flashing.
- 4 - Press and hold the PROG button (the command is operator-run, open-stop-close-stop-open-etc...) => the gate starts at high speed and then slows down until it reaches the limit stop. Check that the gate stops in the desired position. If not, move the limit switch cams and try again. Check the limit switch on the opposite side.
- 5 - You can adjust the high speed during the first 5 seconds of operation by rotating the RUN trimmer. Rotating the RUN trimmer clockwise, the speed increases. The RUN trimmer is set by default to mid-stroke.
- 6 - When done, reset DIP 1 to OFF. Led DL1 goes off signalling exit from the control.

**IMPORTANT: During this operation, the stop button, edges and photocells are not enabled.**

**D – PROGRAMME FULL OPENING\***

**Caution: If the inputs STOP, PHOT and EDGE are not connected, run jumpers between COM-STOP, COM-PHOT and COM-EDGE before you proceed with programming.**

**1 - IMPORTANT: TO PROPERLY PROGRAMME THE OPENING, YOU MUST POSITION THE**

**GATE AT ABOUT 20 CM FROM THE CLOSING LIMIT-SWITCH.**

- 2 - Set DIP 2 to ON mode => led DL1 starts flashing.
- 3 - Press the PROG button. The gate will begin a series of movements. DO NOT PASS IN FRONT OF THE PHOTOCELLS WHILE THE GATE IS MOVING.
- 4 - The programming stops when the gate is closed and led DL1 is off.
- 5 - Set DIP 2 to OFF.

**Note well: If at the end of the programming procedure the trimmer RUN is moved, the programming procedure must be repeated.**

Note: the starting point is calculated automatically by the control unit when programming the times and is enabled 50 ÷ 60 cm before reaching the opening or closing limit stop.

**To repeat the programming procedure, position the DIP 2 in the OFF mode, and by using the procedure “C – Adjust stroke in line with electrical or magnetic limit switches” close the gate almost completely, leaving it open for 20 cm. Then, repeat the programming procedure as described above.**

**D – PROGRAMME PEDESTRIAN OPENING\***

When the gate is closed:

- 1 - First, set DIP 2 to ON and then DIP 1 to ON. Led DL1 starts flashing.
- 2 - Press the pedestrian button (COM-PED) => The gate opens.
- 3 - Press the pedestrian button to stop the gate (the pedestrian opening stroke of the gate is now set). After 2 seconds the gate will automatically close..
- 4 - When done programming the pedestrian opening, set DIP 1 and 2 to OFF.

**\* When programming, the safety devices are enabled and their intervention stops the programming (led DL1 shifts from flashing to on steady).**

**To repeat the programming procedure, position DIP 1 and DIP 2 to OFF and by using the procedure “C – Adjust stroke in line with electrical or magnetic limit switches” close the gate completely. Then, repeat the programming procedure as described above.**

**F - FULL OPENING RADIO CODES PROGRAMMING (MAX 1000 CODES)**

**CAUTION: before you save the remote controls, use DIP 14 to choose which remote controls to use:**

DIP 14 set to OFF: you can save remote controls with variable code SUN-PRO:  
 SUN-PRO 2CH dual channel - red keys and white led code ACG6210  
 SUN-PRO 4CH quadruple channel - red keys and white led code ACG6214  
 SUN-PROX 2CH dual channel - red keys and yellow led code ACG6220  
 SUN-PROX 4CH quadruple channel - red keys and yellow led code ACG6224

DIP 14 set to ON (default): you can save remote controls with fixed code SUN and MOON:  
 SUN 2CH dual channel - blue keys and white led code ACG6052  
 SUN 4CH quadruple channel - blue keys and white led code ACG6054  
 SUN CLONE 2CH dual channel - blue keys and yellow led code ACG6056  
 SUN CLONE 4CH quadruple channel - blue keys and yellow led code ACG6058  
 MOON 2CH dual channel - black keys and yellow led code ACG6081  
 MOON 4CH quadruple channel - black keys and yellow led code ACG6082

**CAUTION: You cannot save remote controls with fixed code and remote controls with variable code simultaneously.**

The remote controls can be programmed only when the gate is at a standstill.

- 1 - First, set DIP 1 to ON and then DIP 2 to ON. Programming led DL10 flashes red for 10 seconds.
- 2 - Within these 10 seconds, press the remote control button (normally channel A). If the remote control has been saved correctly, two-tone led DL1 turns green and a buzzer tone confirms the saved entry. The 10 seconds for programming the codes are reset automatically with two-tone led DL10 that flashes red to save the next remote control.
- 3 - To finish programming, let the 10 sec pass or press briefly the PROG. button. Programming led DL10 stops flashing.
- 4 - Reset DIP 1 to OFF and DIP 2 to OFF.
- 5 - End of sequence.

**DELETING ALL RADIO CODES RESERVED TO FULL OPENING**

The codes can be deleted only when the gate is at a standstill.

- 1 - Set DIP 1 to ON and subsequently DIP 2 to ON.
- 2 - Programming led DL10 flashes red for 10 seconds.
- 3 - Within these 10 seconds, press and hold the PROG button for 5 seconds. Code deletion is indicated by two green flashes of the two-tone led DL10 and 2 tones of the buzzer to confirm the deleted entry. Subsequently, programming two-tone led DL10 flashes red for 10 seconds, and you can enter new codes as shown in the following procedures.
- 4 - Reset DIP 1 to OFF and DIP 2 to OFF.
- 5 - End of sequence.

**RADIO CODE MEMORY FULL SIGNAL**

The signal will only be given when the gate is at a standstill.

- 1 - First, set DIP 1 to ON and then DIP 2 to ON.
- 2 - Led DL10 flashes green 6 times to signal that the memory is full (1000 codes saved). Subsequently, programming two-tone led DL10 flashes red for 10 seconds, allowing (if necessary) to delete all the codes.
- 4 - Reset DIP 1 to OFF and DIP 2 to OFF.
- 5 - End of sequence.

**G - PEDESTRIAN OPENING RADIO CODES PROGRAMMING (MAX 1000 CODES)**

The codes can be programmed only when the gate is at a standstill.

- 1 - First, set DIP 1 to ON and then DIP 3 to ON. Programming two-colour led DL10 flashes green for 10 seconds.
- 2 - Press the remote control button (normally channel B) within the pre-set 10 seconds. If the remote control has been saved correctly, two-tone led DL1 turns red for an instant, and a buzzer tone confirms the saved entry. The 10 seconds for programming the codes are reset automatically with two-tone led DL10 that flashes green to save the next remote control.
- 3 - To finish programming, let the 10 sec pass or press briefly the PROG. button. Programming led DL10 stops flashing.
- 4 - Reset DIP 1 to OFF and DIP 3 to OFF.
- 5 - End of sequence.

**DELETING ALL RADIO CODES RESERVED TO PEDESTRIAN OPENING**

The codes can be deleted only when the gate is at a standstill.

- 1 - First, set DIP 1 to ON and then DIP 3 to ON. Programming led DL10 flashes green for 10 seconds.
- 2 - Within these 10 seconds, press and hold the PROG button for 5 seconds. Code deletion is indicated by two red flashes of the two-tone led DL10 and 2 tones of the buzzer to confirm the deleted entry.
- 3 - Subsequently, programming two-tone led DL10 flashes green steady for 10 seconds, and you can enter new codes as shown in the following procedures.
- 4 - Reset DIP 1 to OFF and DIP 3 to OFF.
- 5 - End of sequence.

**RADIO CODE MEMORY FULL SIGNAL**

The signal will only be given when the gate is at a standstill.

- 1 - First, set DIP 1 to ON and then DIP 3 to ON.
- 2 - Led DL10 flashes green 6 times to signal that the memory is full (1000 codes saved). Subsequently, programming two-tone led DL10 flashes red steady for 10 seconds, allowing (if necessary) to delete all the codes.
- 3 - Reset DIP 1 to OFF and DIP 3 to OFF.
- 4 - End of sequence.

**OPERATION OF CONTROL ACCESSORIES****OPENING BUTTON (COM-OPEN)**

When the gate is at a standstill, the button controls the opening movement. If pressed during closing, the gate will re-open.

**CLOSING BUTTON (COM-CLOSE)**

When the gate is at a standstill, the button controls the closing movement.

**SINGLE CONTROL BUTTON (COM-K BUT)**

If DIP 6 is set to OFF => it runs a command sequence open-stop-close-stop-open etc.

If DIP 6 is set to ON => it opens the closed gate. If operated while the gate is opening, the button has no effect. If operated with the gate open, it closes the gate. If operated while the gate is closing, it re-opens the gate.

**REMOTE CONTROL FOR BOTH FULL AND PEDESTRIAN OPENING**

If DIP 6 is set to OFF => it runs a cyclical command sequence open-stop-close-stop-open etc.

If DIP 6 is set to ON => it opens the closed gate. If operated while the gate is opening, the button has no effect. If operated with the gate open, it closes the gate. If operated while the gate is closing, it re-opens the gate.

**CLOCK FUNCTION - B.I.O. CONTROL (COM-B.I.O.)**

The clock function is useful during rush hours, when vehicle traffic is slow (e.g. entrance/exit of workers, emergencies in residential areas, parking lots, etc.).

**ENABLING THE CLOCK FUNCTION**

By connecting a switch and/or a daily/weekly clock to the "COM-B.I.O." terminals, you can open the gate (and keep it open) until the switch or clock remain enabled.

All command functions are inhibited with open automation.

When releasing the switch, or once the set time has lapsed, the automation will shut down instantly.

**PEDESTRIAN OPENING BUTTON (COM-PED.BUT)**

Command reserved to partial opening and re-closing of the gate.

When opening, closing or pausing the pedestrian command, you can control the full opening using any command connected on the board.

Using the DIP switches 6, you can choose the operating mode of the pedestrian control button.

If DIP 6 is set to OFF => it runs a cyclical command sequence open-stop-close-stop etc.

If DIP 6 is set to ON => it opens the closed gate. If operated while the gate is opening, the button has no effect. If operated with the gate open in pedestrian mode, it closes the gate. If operated while the gate is closing, it re-opens the gate.

**FULL OR PEDESTRIAN AUTOMATIC CLOSING TRIMMER (TCA) - Not enabled by default and led DL3 off (trimmer rotated fully counter-clockwise).**

With this trimmer it is possible to adjust the time before the full or pedestrian automatic closing.

The gate can be closed automatically only with the door open, by operating the full or pedestrian control and with led DL3 on (trimmer rotated clockwise to enable the function).

Once the gate has been fully opened the pause time can be adjusted from a minimum of 2 seconds to a maximum of 2 minutes.

Once the gate has performed the pedestrian opening, the pause time can be adjusted from 2 seconds till a maximum of 30 seconds.

This time setting before the automatic closing can be done by adjusting the TCA trimmer and will be in relation to its position.

For instance, with the trimmer positioned half way, the pause time after the complete open position would be 1 minute, whilst it will be 15 seconds after the pedestrian opening.

**MANUAL RELEASE (LED DL4)**

The position of the unlocking lever is controlled electronically, so if you unlock the operator, the micro-switch contact will open (led DL4 turns off) and the controls are not enabled.

**When you reposition the release lever, and after running a command, the first movement will take place at slow speed. Only after completing this first movement, the operator will resume work at the set speed.**

**OPERATION AFTER BLACK-OUT**

At the time of the blackout, gate status is saved in the memory.

When mains voltage is restored:

**If the gate is located on the opening or closing limit switch, operating the control will close or open the gate with the saved data.**

**If the gate is in intermediate position, operating the control will open the gate slowly until it reaches the opening limit switch. After completing this first movement, the operator will resume work at the set speed.**

**OPERATION OF SAFETY DEVICES****PHOTOCELL (COM-PHOT)**

With the photocell enabled, the buzzer emits 1 tone.

DIP 4 OFF => with gate closed, if an obstacle stops the photocell beam, the gate does not open. During operation, the photocells intervene both during opening (with the gate opening only after freeing the photocell beam), and closing (with reverse motion recovery only after freeing the photocell beam).

DIP 4 ON => with the gate closed, if an obstacle is in front of the photocell beam and the control to open the gate is operated, the gate opens (during opening the photocells will not intervene). The photocells will intervene only during closing (with the gate opening after 1 second, even if the photocells are still engaged).

**IMMEDIATE GATE CLOSURE AFTER TRANSIT ON PHOTOCELLS**

DIP 8 ON and DIP 4 OFF => while the gate opens, passing in front of the photocells, the gate will stop. Once it is done transiting, after 1 second the gate closes.

DIP 8 ON and DIP 4 ON => while the gate opens, passing in front of the photocells, the gate will continue to open. Once it is done transiting, the gate will stop and after a pause of 1 second, close.

If during closing you have a rapid transit (e.g. Pedestrian), the gate will reopen for two seconds and then close again.

8 OFF => immediate gate closure after transit on photocells disabled.

#### EDGE (COM-EDGE)

With the edge enabled, the buzzer emits 2 tones.

**If the edge intervenes while the gate is opening**, it will cause the gate to stop for 2 seconds and then come to a complete stop.

**If the edge intervenes while the gate is closing**, it will cause the gate to open for 2 seconds and then come to a complete stop.

**If the edge remains engaged** (contact NO), no automatic movement is allowed.

**If the edge not installed**, jumper connect the COM-EDGE terminals.

**IMPORTANT: It is recommended to check that the edges are working properly at least once every 6 months.**

#### ALARM FROM EDGE

After an inversion following intervention of the edge, the gate stops and the control unit signals the alarm by activating the flasher for 1 minute and the buzzer for 1 minute (with a 2-tone sound signal every 5 seconds).

During or after the alarm minute, you can reset the gate by pressing any control button.

#### SAFETY EDGE "AUTO-TEST" MONITORING (A+/A- TEST)

Via the A+ TEST input and with DIP 10 set to ON, you can monitor the edge(s) equipped with its/their own power unit connected to the A+/A- TEST terminals (24Vdc).

The monitoring consists of a functional test of the edge performed at the end of a complete gate opening.

After every opening, closing of the gate is only allowed if the edge(s) has passed the functional test.

Caution: Edge entrance monitoring can be enabled with DIP 10 set to ON, or disabled with DIP 10 set to OFF.

A mechanical edge cannot be monitored, therefore DIP 10 must be set to OFF.

#### FAILED AUTO-TEST ALARM

If the edge auto-test fails, the buzzer will sound for a minute (with 4 tones every 5 seconds) to signal the alarm, and will not allow closure of the gate until you have solved the problem. The alarm is reset with a closing command.

#### CURRENT SENSOR (DIP 7 - ON)

The K 24V control unit features a self-calibrating current sensor which reverses the gate's movement if this bumps against things or people (in compliance with the applicable standards - always check with the aid of the tool that the values are within the standard limits).

With sensor enabled, in the event of impact, the buzzer emits 3 tones.

**If the sensor intervenes while the gate is opening**, it will invert the gate's closing movement for 2 seconds and then come to a complete stop.

**If the sensor intervenes while the gate is closing**, it will invert the gate's opening movement for 2 seconds and then come to a complete stop.

#### CURRENT SENSOR ALARM

After an inversion following intervention of the current sensor, the gate stops due to an alarm, which is signalled by the flasher turning on for 1 minute and the buzzer for 1 minute (with a 3-tone sound signal every 5 seconds).

During or after the alarm minute, you can reset the gate by pressing any control button.

#### STOP BUTTON (COM-STOP)

During the movement, the stop button will stop the gate.

If the STOP button is pressed when the gate is fully open (or partially using the pedestrian command) the automatic closure will be temporarily excluded (if enabled via trimmer ACT with led DL3 on). It is therefore necessary to give a new command to close the gate.

Closing the gate will re-enable automatic closing (if enabled via trimmer ACT with led DL3 on).

#### "ON STEADY" MODE IN THE EVENT OF A SAFETY DEVICE FAILURE.

**DIP 9 - OFF:** If the edge is faulty or engaged for more than 5 seconds, or if the photocell is faulty or engaged for more than 60 seconds, the OPEN, CLOSE, K-BUTTON and PEDESTRIAN controls will work if operator-run.

Programming led DL1 will flash to signal that the function has been enabled.

This mode allows opening or closing of the gate only if the control buttons are held pressed. The radio control and automatic closing are excluded.

When the safety contact is restored, after 1 second, the automatic or step mode are automatically re-enabled, and therefore also the remote control and automatic closing will work again.

**DIP 9 - ON:** You can control the gate also with the remote control by pressing and holding the key on the remote control until the power saver system is activated (approximately 8

seconds).

Note 1: during this mode, if the edges (or photocells) experience a fault, they will continue to work, interrupting the command in progress.

Note 2: the stop button is not considered a safety to be bypassed in this mode, therefore if it is pressed or broken, it does not allow any command.

The operator-run command is exclusively an emergency that must be run only for short periods and with the visual safety of the automatism. Repair/replace the faulty safety devices as soon as possible, in order to restore correct system operation.

#### HEATER FUNCTION (DIP 5-ON)

Allows the operator to always operate at a temperature suitable for the operation.

This device automatically turns on only when the gate is at a standstill and the opening or closing limit-switch engaged, at an ambient temperature of the motor of 0° C, detected by the sensor mounted on the board.

When the motor is in motion, the heater is turned off.

After 10 seconds that the gate remains stationary, the heater is activated (if the motor ambient temperature is less than or equal to 0° C).

When the motor reaches a temperature of 3° C, the heater shuts down, maintaining the environmental conditions at a constant temperature.

#### VISUAL AND SOUND SIGNALS

##### FLASHER

**IMPORTANT:** This electronic panel can power only one flasher with flashing circuit (ACG7061) with a 24V and 20W (maximum) lamp. **If you exceed 20W, the electronic panel's logic will be compromised, with the system possibly stopping.**

##### PRE-FLASHING FUNCTION

**DIP 11 - OFF =>** the motor and flasher start simultaneously.

**DIP 11 - ON =>** the flasher starts 3 seconds before the motor.

##### GATE OPEN 24Vdc INDICATOR LIGHT (A+ SIGNAL)

The light signals that the gate is open, partly open or not completely closed. Only when the gate is completely closed does the light turn off.

During programming, this signal is enabled.

**IMPORTANT: Max. 10 W. If you pass the limits with the lights, the electronic panel's logic will be compromised, with the system possibly stopping.**

##### BUZZER

Signals that the safety devices have triggered an alarm, alarm status and codes saved/ deleted in memory.

## TABLE SUMMARISING ALARMS AND VISUAL AND SOUND SIGNALS

### SIGNALS DURING PROGRAMMING SEQUENCE

EVENT	BUZZER STATUS	FLASHER STATUS	PROGRAMMING LED DL1 STATUS
DIP 1 ON (HOLD MODE) OR FAILURE OF A SAFETY DEVICE (ON STEADY MODE)	OFF	OFF	FLASHES ON-OFF 250 MS
DIP 2 ON (FULL STROKE PROGRAMMING)	OFF	OFF	FLASHES ON-OFF 500 MS
DIP 2>1 ON (PEDESTRIAN STROKE PROGRAMMING)	OFF	OFF	FLASHES ON-OFF 500 MS
PROGRAMMING SEQUENCE STOPPED DUE TO INTERVENTION OF A SAFETY DEVICE	OFF	OFF	ON STEADY
EVENT	BUZZER STATUS	FLASHER STATUS	TWO-COLOUR DL10 LED STATUS (FOR REMOTE CONTROL PROG.)
NO REMOTE CONTROL CODE ENTERED	OFF	OFF	FLASHES INTERMITTENTLY RED/GREEN
DIP 1 > 2 - FULL OPENING REMOTE CONTROL CODE PROGRAMMING	OFF	OFF	FLASHES RED FOR 10 SECONDS
DIP 1 > 3 - PEDESTRIAN OPENING REMOTE CONTROL CODE PROGRAMMING	OFF	OFF	FLASHES GREEN FOR 10 SECONDS
FULL OPENING REMOTE CONTROL CODE PROGRAMMING, OUTCOME OK	1 TONE	OFF	URNS GREEN ONCE
PEDESTRIAN OPENING REMOTE CONTROL CODE PROGRAMMING, OUTCOME OK	1 TONE	OFF	URNS RED ONCE
REMOTE CONTROL CODE NOT PRESENT IN MEMORY	OFF	OFF	RED FLASH
MEMORY SATURATED BY REMOTE CONTROL CODES (1000 CODES SAVED)	OFF	OFF	RUNS 6 GREEN FLASHES
FULL OPENING CODE DELETION	2 TONES	OFF	RUNS 2 RED FLASHES
PEDESTRIAN OPENING CODE DELETION	2 TONES	OFF	RUNS 2 GREEN FLASHES

### WARNING SIGNALS DURING OPERATION

EVENT	BUZZER STATUS	FLASHER STATUS	LED STATUS AND SIGNAL OUTPUT
STOP BUTTON PRESSED	OFF	OFF	LED DL12 TURNS OFF
PHOTOCELL INTERVENTION	1 TONE	OFF	LED DL13 TURNS OFF
EDGE INTERVENTION	2 TONES	OFF	LED DL14 TURNS OFF
CURRENT SENSOR ENABLED	3 TONES	OFF	NO LED COMBINED
FAILURE OF A SAFETY DEVICE OR SAFETY DEVICE ENGAGED FOR TOO LONG	OFF	OFF	LED DL1 FLASHES ON-OFF 250 MS
RUNNING WITH EMERGENCY BATTERIES (24 Vdc)	OFF	CURRENTLY ENABLED	SIGNAL OUTPUT FLASHES ON-OFF TWICE FOR 250 MS FOLLOWED BY A PAUSE OF 2 SECONDS
EMERGENCY BATTERIES LOW SIGNAL	1 TONE EVERY 5 SECONDS FOR 1 MINUTE (RESET BY ACTIVATING A CONTROL)	OFF	SIGNAL OUTPUT FLASHES CONTINUOUSLY ON-OFF FOR 500 MS
ALARM FROM EDGE	2 TONES EVERY 5 SECONDS FOR 1 MINUTE (RESET BY ACTIVATING A CONTROL)	ENABLED FOR 1 MINUTE (FLASHING)	NO LED COMBINED
CURRENT SENSOR ALARM	3 TONES EVERY 5 SECONDS FOR 1 MINUTE (RESET BY ACTIVATING A CONTROL)	ENABLED FOR 1 MINUTE (FLASHING)	NO LED COMBINED
FAILED AUTO-TEST ALARM	4 TONES EVERY 5 SECONDS FOR 1 MINUTE (RESET BY ACTIVATING A CONTROL)	OFF	NO LED COMBINED
ENCODER FAILURE ALARM	5 TONES EVERY 5 SECONDS FOR 1 MINUTE (RESET BY ACTIVATING A CONTROL)	OFF	LED DL2 OFF
MEMORY NOT INSERTED ALARM	3 SECONDS ON - 3 SECONDS OFF TURNS OFF ONLY WHEN THE MEMORY IS INSERTED	OFF	NO LED COMBINED
INCORRECT SELF-DIAGNOSTIC ALARM	CONTINUOUS TONE FOR 10 SECONDS WITH A PAUSE OF 2 SECONDS OFF TURNS OFF ONLY IF DIP 2 IS SET TO OFF	OFF	LED DL1 ON STEADY
FUNCTIONAL BLOCK	OFF	OFF	TWO-TONE LED DL10 IS ON STEADY (ORANGE).

**TECHNICAL SPECIFICATIONS**

- Temperature range -10 ÷ +55°C
- Humidity < 95% without condensation
- Power supply 230V~ ±10% (120V 60Hz on request)
- Frequency 50/60 Hz
- Transformer power 150VA - main 230Vac  
1st secondary 24Vac  
2nd secondary 10Vac
- Maximum absorption 100 mA
- Network micro-switch 100ms
- Maximum power gate open led (SIGNAL) 24Vdc 10W
- Flasher maximum load 24Vdc 20W
- Current available for photocells and accessories 24Vdc 500 mA ±15%
- Battery power supply 24Vdc

**RADIO TECHNICAL SPECIFICATIONS**

- Reception frequency 433,92MHz
- Impedence 52 ohm
- Sensitivity >1 µV
- Feedback control PLL
- Memory storage (codes) 1000

**TROUBLESHOOTING**

After making all the connections, carefully following the diagram and having placed the gate in intermediate position, check the correct lighting of led DL4, DL7, DL8 DL9, DL12, DL13 and DL14.

If one of the led does not turn on, check the following and replace any faulty components if necessary (perform the inspection with the gate always in intermediate position):

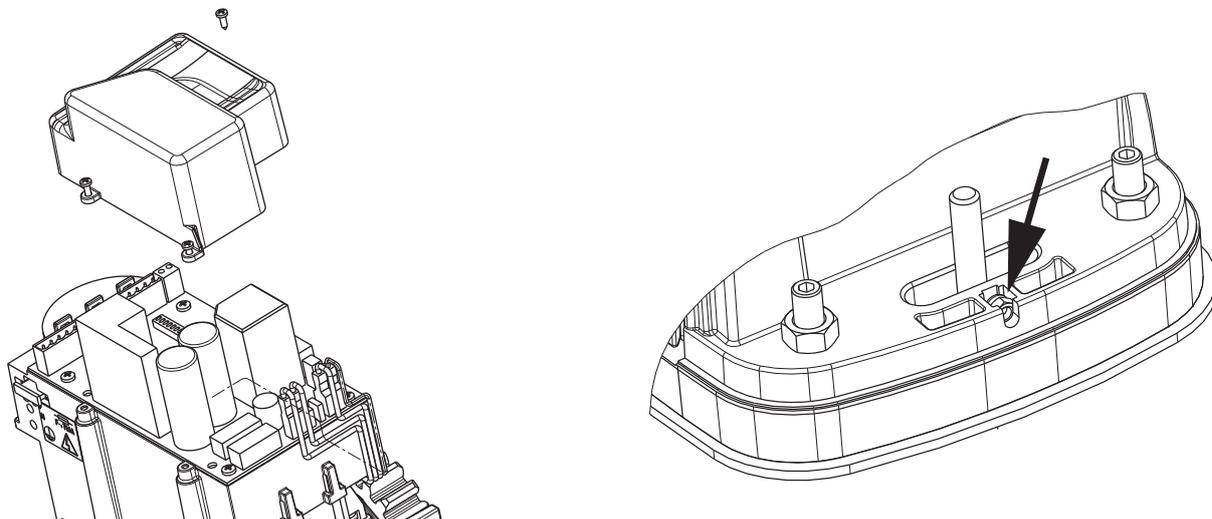
- DL4 red off - manual release open (close it)
- DL7 red off - limit switch that stops gate closure is faulty
- DL8 green off - limit switch that stops gate opening is faulty
- DL9 red off - 3.3V power supply missing (check secondary 10Vac voltage presence from transformer to connector J4).
- DL12 red off - stop button fault (if the STOP is not connected, run the jumper between COM and STOP).
- DL12 red off - photocell fault (if the photocells are not connected, run the jumper between COM and PHOT).
- DL14 red off - safety edge fault (if the edge is not connected, run the jumper between COM and EDGE).

During operation, hold DIP 1 in ON position, make sure that when the gate opens, the green led DL6 turns on and that when the gate closes, red led DL5 turns on.

Otherwise, perform a new full opening programming sequence.

PROBLEM	SOLUTION
After making the various connections and supplying voltage, all leds are off.	Check the integrity of fuses F1 and F2. In case of faulty fuse, replace it only with one of the same value: F1 = T 1,6A F2 = T 300mA
The photocells are not lit and the motor does not rotate	Check the integrity of fuse F3. In case of faulty fuse, replace it only with one of the same value: F3 = T 10A
The gate opens, but does not close after the set time	Check that led DL3 turns on. If it is off, turn the trimmer clockwise. Or, check that the photocells are not engaged. It is also possible that you have pressed the STOP button with the gate open, temporarily blocking the automatic closure.
The gate does not open and does not close when pressing the various K-RADIO OPEN-CLOSE buttons.	Edge contact or photocell fault with DIP 4 OFF. Adjust or replace its contact. Or, check that manual release device is not open.
When the gate is open, pressing the K, RADIO button or the CLOSE button, the gate does not move.	Clock function enabled. Check the status of the B.I.O. input. Or, edge auto-test failed => check the connections between the electronic panel and power unit of the edges. Caution: If you are not using a power unit for the edges, DIP 10 must be set to OFF.
the gate triggers an alarm due to over-current, signalled by 3 buzzer tones.	Check the sliding of the gate, making sure that there is no friction. Only if necessary, set DIP 7 to OFF to exclude the current sensor.
LED DL1 flashes ON-OFF 250ms.	DIP 1 set to ON. Set it to OFF. Or, an edge or photocell is broken. The movement is allowed only if operator-run.
When programming the time, the gate stops and the buzzer emits a tone for 10 s, with pause for 2 s.	Incorrect programming sequence. Set DIP 2 to OFF. Bring the gate at about 20 cm from the end closure and repeat the programming sequence.

After verifying the correct functioning of the operator, fix the control panel cover and secure the cover of the operator using the screws and bolts provided. The fixing bolt of the operator's cover must be tighten into the nuts previously inserted in the aluminum base.



# ACCESSORIES

For the connections and the technical data of the optional equipments follow the relevant handbooks.

## NYLON RACK MODULE 4



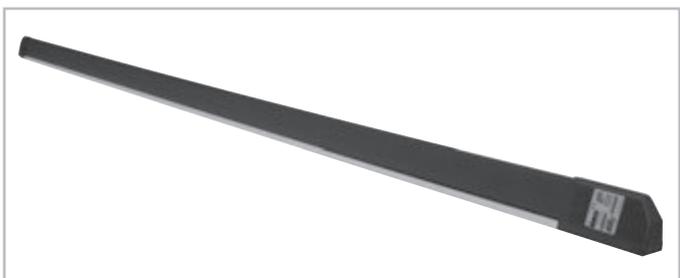
with zinc plated angle Iron, In 1 m bars. Ideal for gates up to 1,000 kg / 2,200 lbs weight.  
 1 m / 3,28" code ACS9000  
 10 m / 32,8" (1 m/3,28" x 10) code ACS9001

## FIT SLIM



**PHOTOCELLS** for the wall-installation code ACG8032  
**PAIR OF COLUMNS FOR FIT SLIM** code ACG8065  
 FIT SLIM photocells have synchronism function in AC current and ranges of 20 m.  
 You can fit many couples close together thanks to the synchronising circuit.  
 Add the **SYNCRO TRANSMITTER TX SLIM SYNCRO** code ACG8029  
 for more than 2 photocells couples (up to 4).

## TOUCH



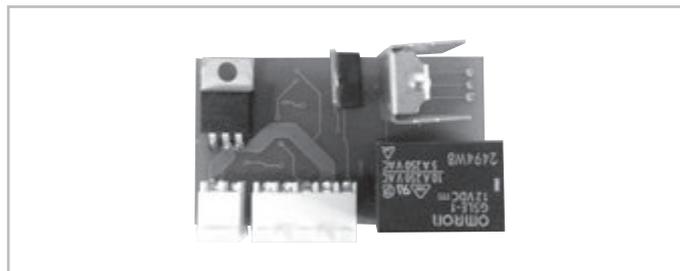
**MECHANICAL STRIP L = 2 m**  
**CERTIFIED EN 13849-2 (2008) CATEGORY 3** code ACG3015

## SPARK



**SPARK BLINKER WITH IN-BUILT INTERMITTENT CARD** code ACG7061  
**LATERAL SUPPORT** code ACG7042  
**SPARK ANTENNA 433** code ACG5452

## BATTERY CHARGER BOARD



code ACG4667

## FIT SYNCRO



**FIT SYNCRO PHOTOCELLS** for the wall-installation code ACG8026  
 The range you can set is 10-20 m, 30÷60 ft.  
 You can fit many couples close together thanks to the synchronising circuit.  
 Add the **SYNCRO TRANSMITTER** code ACG8028  
 for more than 2 photocells couples (up to 4).  
**COUPLE OF BUILT-IN BOXES FOR THE FIT SYNCRO** code ACG8051

## RADIO TRANSMITTER SUN



SUN 2CH	cod. ACG6052	SUN 4CH	cod. ACG6054
SUN CLONE 2CH	cod. ACG6056	SUN CLONE 4CH	cod. ACG6058
SUN-PRO 2CH	cod. ACG6210	SUN-PRO 4CH	cod. ACG6214
SUN-PROX 2CH	cod. ACG6220	SUN-PROX 4CH	cod. ACG6224

## BATTERY



1,2Ah 12V cod. ACG9511  
 In case of power failure, with two 1,2Ah batteries the K400 can run for 25 cycles.