zero
HOME AUTOMATION

COMANDO

CONTROL UNIT
SLIDING GATES
230V

IT | EN | FR

ZCOM230 VER1.0 01052018_REV1

USER MANUAL AND CONFIGURATION

CE
made in italy


zero
HOME AUTOMATION

CONTENTS

1. SAFETY INSTRUCTIONS

STANDARDS TO FOLLOW

ATTENTION:

• To ensure the safety of people, it is important that you read all the following instructions. Incorrect installation or incorrect use of the product can cause physical injury and material damage.
• Keep these instructions in a safe place for future reference.
• This product was designed and produced strictly for the use indicated in this manual. Any other use, not expressly indicated here, could compromise the good condition/operation of the product and/or be a source of danger.
• ZERO SRL is not responsible for the improper use of the product, or other use than that for which it was designed.
• ZERO SRL is not responsible if safety standards were not taken into account when installing the equipment, or for any deformation that may occur to it.
• ZERO SRL is not responsible for the safety and proper operation when using components not sold by them.
• Do not make any modifications to the operator components and / or their accessories.
• Before installation unplug the automatism from the source of power.
• The installer must inform the client how to handle the product in case of emergency and provide this manual to user.
• Keep remote controls away from children, to prevent the automated system from being activated involuntarily.
• The customer shall not, under any circumstances, attempt to repair or tune the automatism. Must call qualified technician only.
• Connect the automatism to a 230V plug with ground wire.
• Control board for indoor use.

2. THE CONTROL BOARD

TECHNICAL SPECIFICATIONS

Power supply:	230V 50/60Hz
Lightbulb's output:	AC230V 40W max
Motor's output:	AC230V 750W max
Aux. accessories output:	AC24V 8W máx
Working temperature:	-20°C a +50°C
Radio Receptor:	Incorporated 433,92 Mhz
OP Transmitters:	12 bits ou Rolling Code
Max. memory capacity:	200 codes max

CONNECTOR'S DESCRIPTION

M2 Connector

01 • Closing limit-switch input signal (NC)
02 • Opening limit-switch input signal (NC)
03 • Open/close transmitter button's input (NA)
04 • Safety device input - complete direction inversion (NC)
05 • Pedestrian transmitter button's input (NC)
06 • Safety device input - 2 seconds inversion (NC)
07 • Safety device input common / STARTs
08 • Power supply output for accessories 0V
09 • Power supply output for accessories 24V AC - 8W máx.

M1 Connector

10 • Light bulb connection's output (230Vac)
11 • Light bulb connection's output - common
12 • Light bulb connection's output or courtesy light
13 • Motor's output - Opening
14 • Motor's output - Common
15 • Motor's output - Closing
16 • 230V line input (neutral)
17 • Not used
18 • 230V line input (phase)

M3 Connector

19 • Antenna
20 • Antenna cable screen

M4 Connector

21 • Place Shunt for motors up to 500kg (included)
22 • Remove Shunt for motors up to 500kg

PROGRAMMING PRE-RECOMENDATIONS

Before proceeding to the control board configuration, note the following points listed in the table below in order to better understand the control board function:

M2 Connector

Limit-switches :

01 and 02 • Make sure that the limit switches connections are synchronized with the L1 and L2 LEDs (see explanation in page 4A at point 3). Test it by moving the automatism limit-switch's spring by hand and see if the it lights up the L1 and L2 LEDs in the correct ways (L1 LED turns off with a closing signal and the L2 LED turns off with the opening signal).

Safety circuits:

04 • This circuit allows the connection of all types of safety devices such as photocells, safety bands, etc. This device operates only in the gate closing and it reverses the automatism's movement, when activated.

06 • This circuit allows the connection of all types of safety devices such as photocells, safety bands, etc. This device acts as both the closing and the opening and it reverses the automatism's movement for 2 seconds, when activated.

M1 Connector

10 • This is an intermittent output and must be used lightbulbs that do not have electrical circuit because the output itself is programmed to create a flashing effect on the bulb (apply only a lightbulb with socket and bulb). It does quick flashes when it is opening, it remains off when paused and it flashes slowly during closure. If you want that, during the pause time, it remains lit continuously, read the last paragraph on chapter 4.

12 • Output for light bulb or courtesy light, according to what is selected in Dipper 3. When used in lightbulb mode, it must be equipped with an electrical circuit that transforms this continuous output in flashing mode. This will only work during the automatism work time.
When used in courtesy light mode, you should be aware of the light maximum consumption capacity because the output only supports 40W. If the consumption is higher, intersperse a power relay.

Capacitator:
13 and 15 • You should connect the capacitator between the outputs 13 and 15.

3. DIP SWITCH FUNCTION

DIP 1 - ON

The SOFT STOP function is triggered only after the control board receives the limit switch signal. It continues the movement for another 2 seconds.

DIP 1 - OFF

The SOFT STOP function is triggered 3 seconds before the control board receives the limit-switch signal. When it receives, it immediately stops the automatism.

DIP 2 - ON

Enables the SOFT STOP functions

DIP 2 - OFF

Disables the SOFT STOP functions

DIP 3 - ON

Enables the lightbulb and courtesy light output (M1 - terminal 11 and 12). Only during the motor's work time.

DIP 3 - OFF

Enables courtesy light output (M1 - terminal 11 and 12) during the work time, pause time and an additional 3 minutes after closing.

DIP 4 - ON & DIP 5 - ON

Step-by-step function with self-closing, if the gate is stopped at the limit-switch's end.

• If the gate is stopped by a transmitter signal during the opening and closing course, it will be stopped until new order.

DIP 4 - OFF & DIP 5 - OFF

Step-by-step function with self-closing.

- During the opening accepts transmitter signals.
- When the gate stops, does the timing and automatically closes.
- If it receives a transmitter signal during closing, it reverses.
- In pause time, it anticipates the closing.

DIP 4 - ON & DIP 5 - OFF

Condominium function with automatic locking:Transmitters aren't accepted during opening and during closing it reverses direction and stops only at the gate's end Transmitters are not accepted during the pause time.

DIP 4 - OFF & DIP 5 - ON

Normal Step-by-step function without automatic closure. Gate opens or closes only if it receives transmitter signals.The behavior will be open-stop-close-stop-open.

DIP 6 - ON

Disables the reading of the opening limit-switch.

DIP 6 - OFF

Enables the reading of the opening limit-switch

DIP 7 - ON

Disables the reading of the closing limit-switch.

DIP 7 - OFF

Enables the reading of the closing limit-switch.

NOTE: The DIP SWITCHS 6 and 7 put a link across the safety device and common, instead of using a link wire.

DIP 8 - ON

Disables the safety device reading (such as photocells or safety edges).

DIP 8 - OFF

Enables the safety device's reading (such as photocells or safety edges)

NOTE: The DIP SWITCH 8 puts a link across the safety device and common, instead of using a link wire.

DIP 9 - ON

Programming the work and pause time.

DIP 9 - OFF

Normal functioning.

NOTE: The DIP 9 should only be used to trigger the work and pause time configuration function. When the programming is complete, put it in OFF mode.

DIP 10 - ON

Enables anti-crushing function.

DIP 10 - OFF

Disables anti-crushing function.

4. CONFIGURATION

INSTALATION PROCESS

TOTAL OPENING AND TRANSMITTER PROGRAMMING

STEP1

Place all the dippers in OFF position (down). In case of not using safety device at 4/M2 terminal (ex: photocells), place the DIP 8 in ON to disable it.

STEP 2

Unlock the engine, place the gate in the middle position and re-lock the engine.

STEP 3

Connect the power to the control board check if the limit-switches are activated correctly. When wiring the limit-switches at 01 and 02 terminals, the L1 and L2 LEDs will remain lit. When moving the spring manually towards closing position, the L1 LED must turn off and when moving it towards opening position, the L2 LED must go off too. If the LEDs are turning off switched (L1 for opening and L2 for closing), swap the wires from 01 and 02 terminals.

STEP 4

Make a START with a help of a wire by connecting the 3 and 7 terminals with the wire tips and check if the motor is running in the correct direction. When the gate starts moving to one side, move the limit-switches spring towards the gate's movement direction and it should stop. If it doesn't, pull it the other way and it will stop. Swap the motor wires (13 and 15 terminals from CN1 connector) to put in the right direction.

STEP 5

When the gate is synchronized with the limit-switch correct direction, make a START again between 3 and 7 terminals. The gate will begin to move to one side. Let it reaches the closed position electrically.

STEP 6

When the gate comes to a closed position, press the P1 button located on the control board for 2 seconds until the CODE LED (see connection diagram page) stays lit. Right away, press the transmitter button you want to be the total opening key (choose between 1, 3 and 4 buttons shown in the images at the right).NOTE: When the transmitter button is pressed, the CODE LED must blink, indicating it is receiving the code.

STEP 7

Release the first button and then press the button number 2 to memorize the pedestrian opening button. Release it and wait for the CODE LED turns off. NOTE: If you select a button other than the nº 2 for pedestrian opening, the control board will recognize it as complete opening button, which means it will override the first pressed button. If the pedestrian opening is not wished, do not press the nº2 button and wait for the CODE LED to turn off.

STEP 8

The transmitter is now configured.NOTE: After setting up a transmitter type, the control board will only accept transmitters from the same type, it means, if the first transmitter is Rolling Code, they must all be Rolling Code for the central to accept them. To program other transmitters, repeat the steps from nº06.

ERASE ALL THE TRANSMITTERS FROM THE CONTROL BOARD

With the gate closed, hold the P1 button continuously. The CODE LED lights up and wait for 15 seconds until it turns off. Release the P1 and the LED will flash twice that signals the MEMORY RESET success.

PROGRAMMING THE WORKING TIME AND ENGINE'S PAUSE

STEP 1

With the gate closed, place the DIP 9 to "ON", press transmitter (already programmed) / START and the gate will start to open.

STEP 2

When the gate stops at the open position (opening limit-switch is enabled), wait for the desired pause time (*) and give a new START to close. This waited time represents the time that the engine will PAUSE between the end of the opening maneuver and the automatic closure's start. This automatic closure will only happen if the DIP 4 and 5 are in the selected positions to activate it. If during the working time setting you would like to activate the automatic closing after photocells interruption (3 seconds) just interrupt the photocells signal during pause counting time.

STEP 3

When the gate reaches the closed position, change the DIP 9 to OFF to finish programming and CODE LED will blink and go off. If the DIP SWITCH is leaved ON, the programming won't be finalized.

PROGRAMMING THE PEDESTRIAN WORK TIME

STEP1

With the gate in closed mode put the DIP 9 to ON.

STEP2

Press the button nº2 to start opening the gate. Upon reaching the desired position press again the button to stop the engine. Wait the desired pause time and give a new START to close. This waited time represents the time that the engine will wait between the end of the pedestrian's opening maneuver and the automatic closure's start. Nearing the limit-switch's end, the engine will stop.

STEP 3

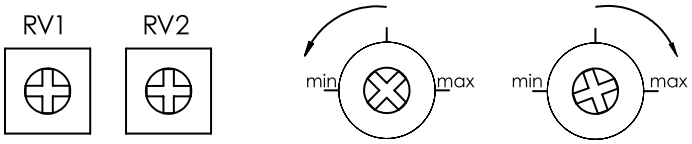
The setting is completed, place the DIP 9 to OFF to finalize and close the pedestrian programming.

FORCE AND SENSITIVITY REGULATION (ANTI-CRUSHING)

The control board has 2 trimmers (rotary knobs):
RV1 - Allows the engine sensitivity regulation (increases sensitivity by rotating it in the clockwise direction);

RV2 - Allows the engine power regulation (increases the force by rotating in the clockwise direction);

ADJUSTMENT



Warning: To use anti-crush function (recommended for small gates), it is necessary to regulate first the engine's power with the trimmer RV2 and right after the sensitivity with trimmer RV1. If you change the engine's power after performing a Working Time and Engine Pause programming , a new one is going to be needed.

ILUMINATED LIGHTBULB IN PAUSE TIME
(10 AND 11 TERMINALS)

01 • If you wish to activate this function, when programming work time and engine's pause at the point 2, do the following operation from (*):

•Press the pedestrian transmitter button while the gate is paused, between the opening and closing.

NOTE: In case of using the 11 and 12 terminals for the lightbulb, the DIP3 must be OFF and the Lightbulb must have a circuit board to make the lamp to blink.

PROGRAMMING SAFETY EDGS FUNCTION (terminal 6)

The control panel could accept wire safety edges and 8.2 Ohm resistive edges.
During programming working time the panel recognize by itself the type of safety edge installed.

Factory set on wire edge, whit shunt placed on terminal 6 and terminal 7.

if you have to change to 8.2 KOhm firstly make the transmitter programming and then remove the shunt and place the edge's connection.

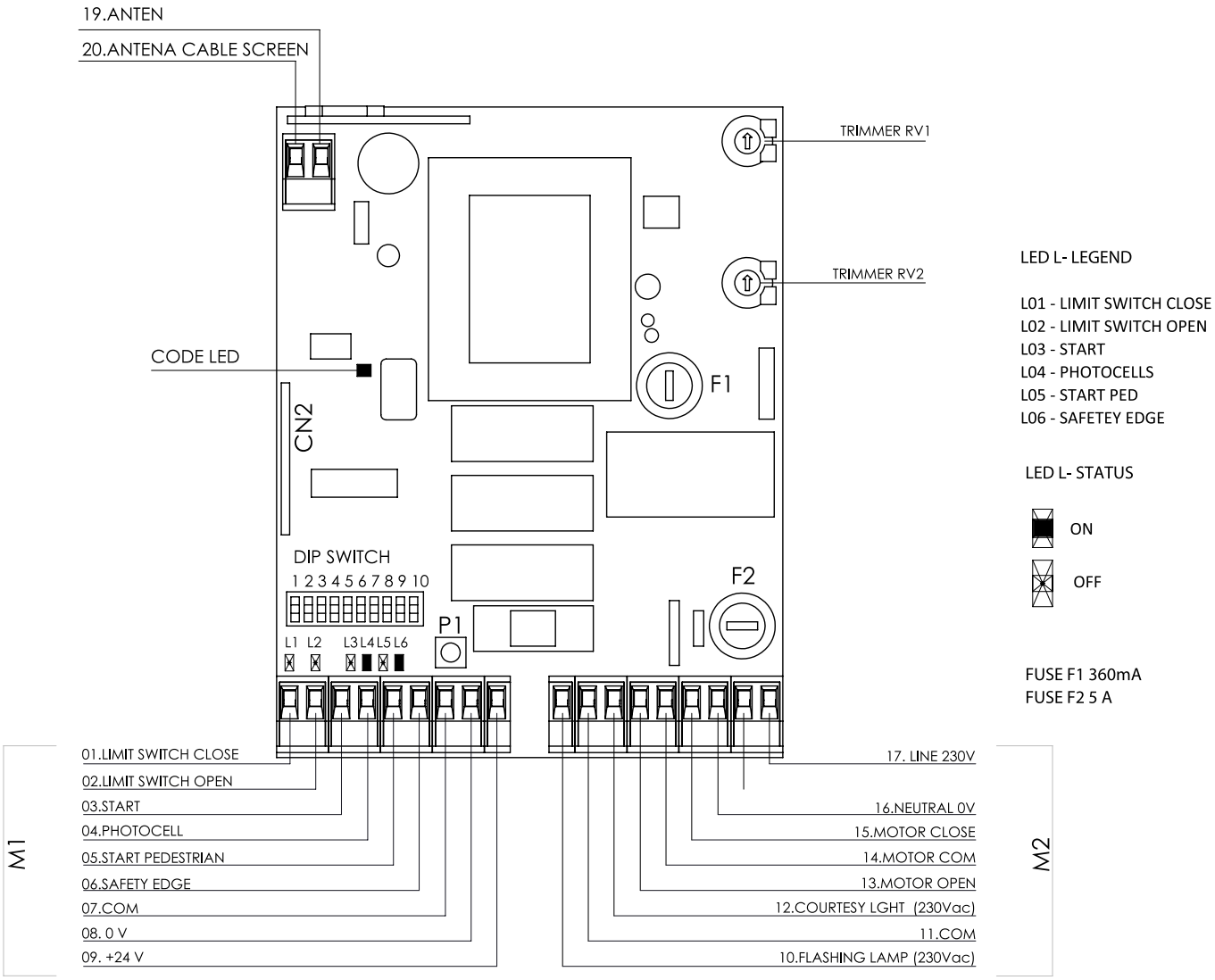
NOTE: if LED CODE signal flashing once you powered the control panel it means that the safety edge is wrongly configured.

RESET TO FACTORY DEFAULTS

If the control board blocks and a RESET is needed, follow these steps:

- Put DIP 9 to ON position
- Power off the control unit by removing the M1 connectors plug, affter few secons power on.
- Put DIP 9 to OFF position.

CONNECTIONS



LED DESCRIPTIONS

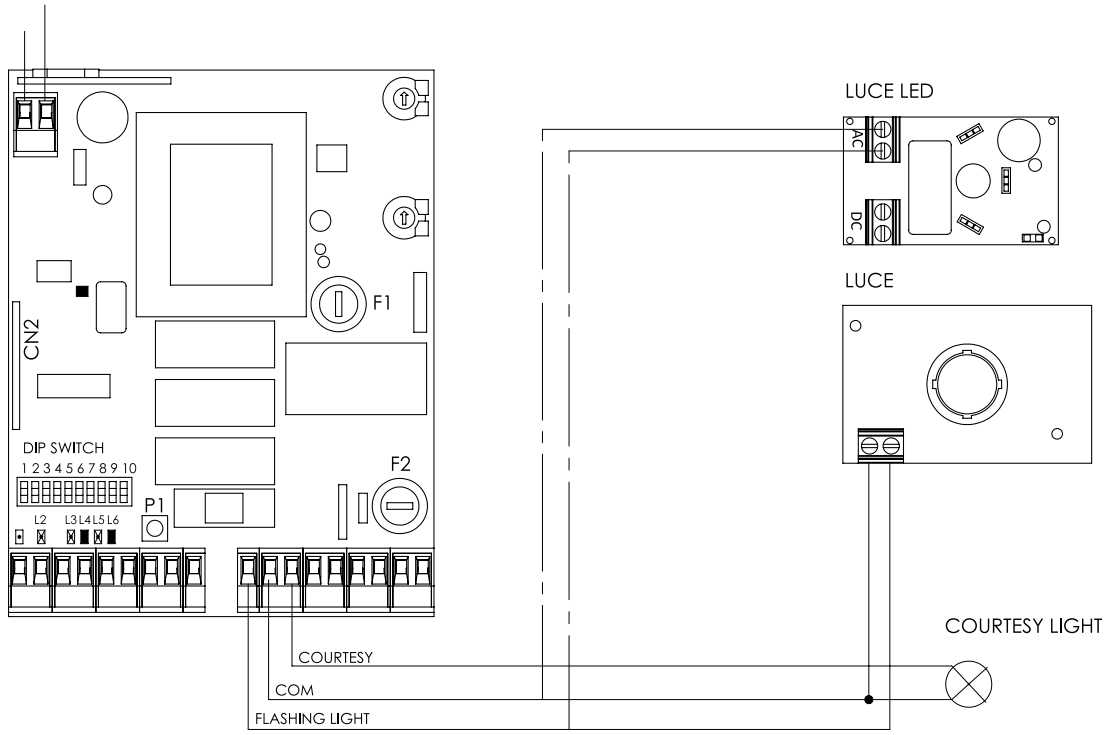
LED	COLOR	FUNCTION DESCRIPTION
L01	RED	Always on. Goes off when the CLOSING LIMIT SWITCH of motor is reached.
L02	RED	Always on. Goes off when the OPENING LIMIT SWITCH of motor is reached
L03	RED	Comes on when the START command is activated and goes off when released.
L04	RED	Always on. Goes off when the photocell is intercepted interrupting the PHOTO beam.
L05	RED	Comes on when the PEDESTRIAN start command is activated and goes off when released.
L06	RED	Comes on when SAFETY EDGE is activated and while programming.
CODE	RED	Blinking when wrongly configured.

DIP SWITCH DEFAULT (FACTORY) SETTINGS

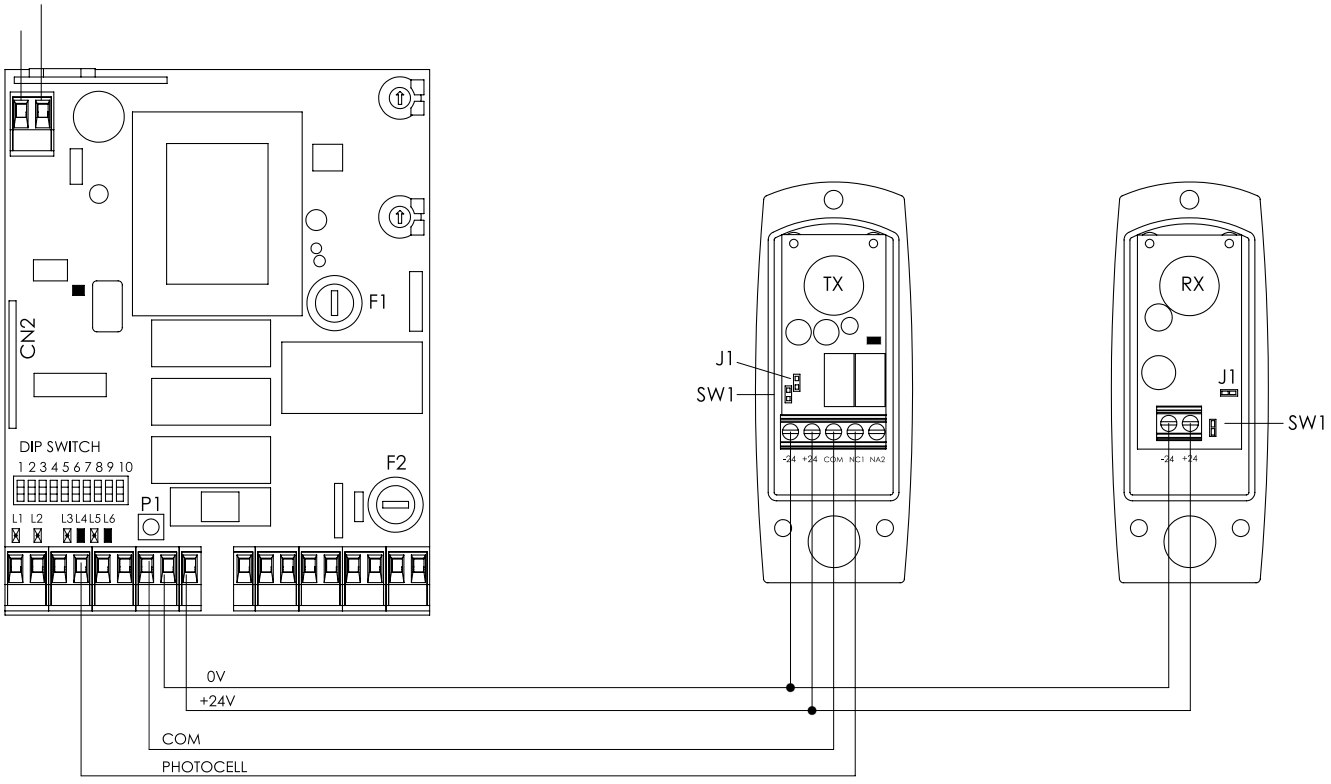
The default settings are highlighted in the boxes with grey background.

DIP 1	ON	SOFT STOP AFTER LIMIT SWITCH SIGNAL
	OFF	SOFT STOP BEFORE LIMIT SWITCH SIGNAL
DIP 2	ON	SOFT STOP FUNCTION ENABLED
	OFF	SOFT STOP FUNCTION DISABLED
DIP 3	ON	FLASHING LIGHT BLINKING ONLY WHILE MOTOR OPERATES (SLIDING GATES)
	OFF	**COURTESY LIGHT FUNCTION (FOR GARAGE DOORS)**
DIP 4	ON	STEP BY STEP LOGIC WITH SELF CLOSING (for other configuration see the DIP SWICH paragraph)
	OFF	
DIP 5	ON	
	OFF	
DIP 6	ON	OPENING LIMIT SWITCH READING DISABLED
	OFF	**OPENING LIMIT SWITCH READING ENABLED**
DIP 7	ON	CLOSING LIMIT SWITCH READING DISABLED
	OFF	**CLOSING LIMIT SWITCH READING ENABLED**
DIP 8	**ON**	**SAFETY DEVICES READING DISABLED**
	OFF	SAFETY DEVICES READING ENABLED
DIP 9	ON	PROGGRAMING AND LEARNIG FUNCTIONS
	OFF	**NORMAL OPERATION : READY TO START**
DIP 10	ON	ANTI - CRUSHING FUNCTION ENABLED
	OFF	**ANTI - CRUSHING FUNCTION DISABLED**

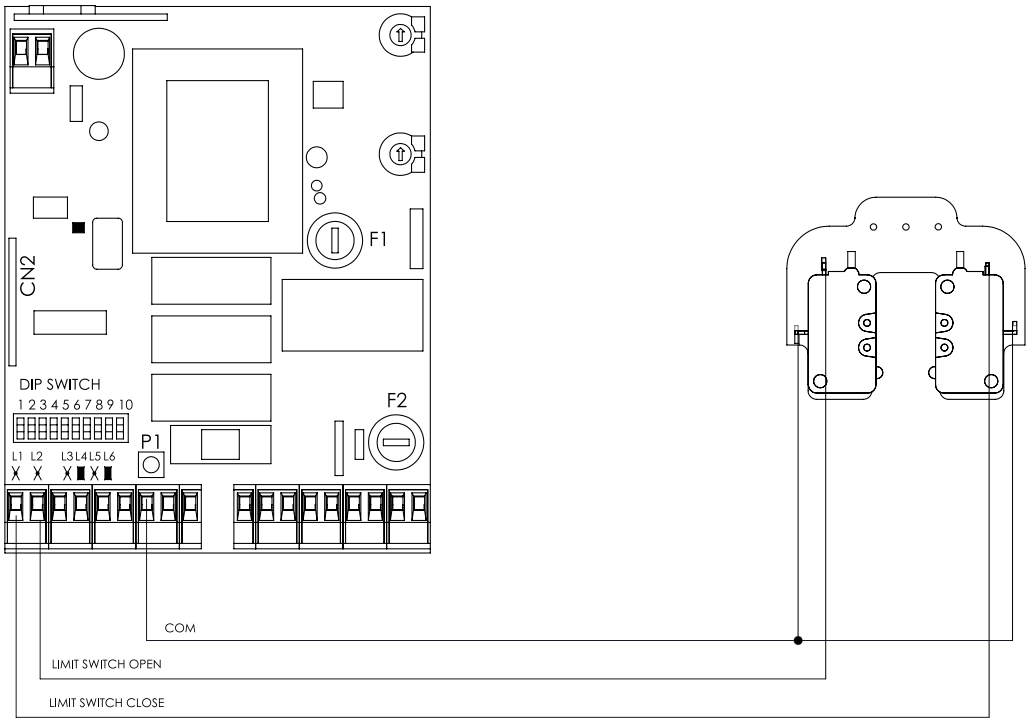
FLASHING LIGHT & COURTESY LIGHT CONNECTIONS



PHOTOCELLS CONNECTION

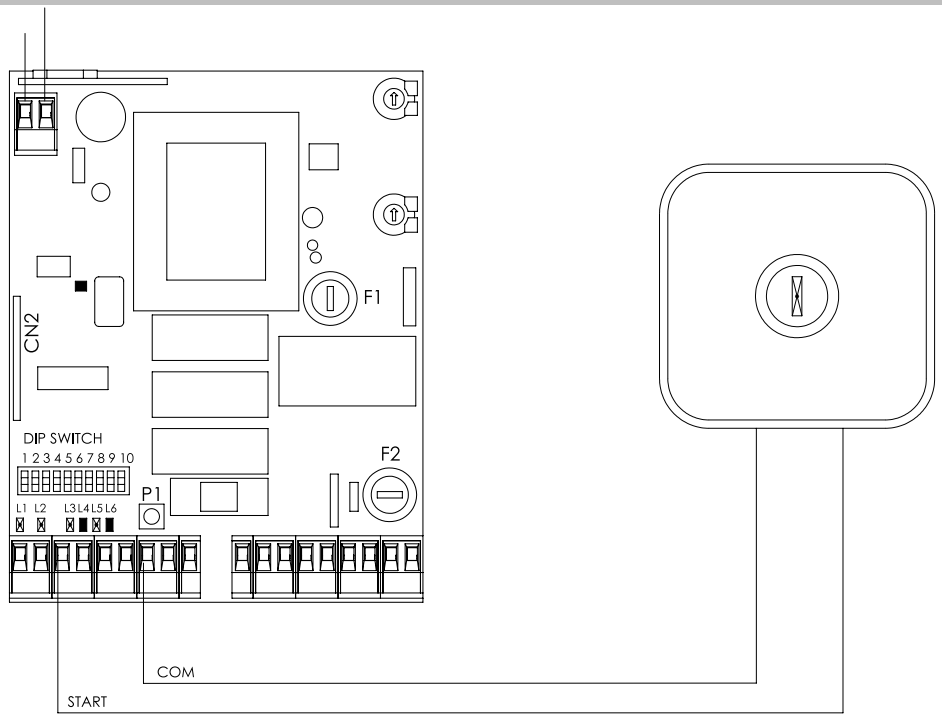


LIMIT SWITCH (GATE OPEN/CLOSE POSITION) CONNECTION



NOTE:
ON-BOARD MAGNETIC LIMIT SWITCH FUNCTION the control unit is equipped with a CN2 connector to accommodate a magnetic limit switch module directly welded on control panel (**on demand and just for Z01 model, will be also provided two magnetic stoppers for end limit switch positions**).

START BUTTON | KEY SELECTOR CONNECTION



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TROUBLESHOOTING

Problem	Procedure	Behavior	Procedure II
Door doesn't work	Make sure you have 230V power supply connected to control board and if it is working properly.	Still not working.	Consult a qualified ZERO technician.
Motor doesn't move but makes noise	Unlock motor and move the gate by hand to check for mechani cal problems on the movement	Encountered problems?	Consult an experienced gate expert.
		The gate moves easily?	Consult a qualified ZERO technician.
Motor opens but doesn't close	Unlock motor and move the gate by hand to closed position. Lock motor again and turn off power supply for 5 seconds. Reconnect it and send start signal using transmitter.	Gate opened but didn't close again.	Check if there is any obstacle in front of the photocells;
			Check if any of the control-devices (key selector, push button, video intercom, etc.) of the gate are jammed and sending permanent signal to control unit;
			Consult a qualified ZERO technician.
Gate doesn't make complete route	Unlock motor and move ate by hand to check for mechanical problems on the gate	Encountered problems?	Consult an experienced gate expert.
		The gate moves easily?	Consult a qualified ZERO technician.
LED CODE Blinking	Check the safety devices connections and DIP 8 position.		

Discovering the origin of the problem			
1. Open control board and check if it has 230V power supply 2. Check input fuses	3. Disconnect the motor from control board and test them by connecting directly to power supply in order to find out if they have problems.	4. If the motor works, the problem is on the control board. Pull it out and send it to our ZERO technical services for diagnosis.	5. If the motor doesn't work, remove them from installation site and send to our ZERO technical services for diagnosis.
Check all motion axis and associated motion systems related with the motor and the gate to find out what is the problem.			
1. Check capacitors, testing operator with new capacitors;	2. If capacitors are not the problem, disconnect motors from control board and test them by connecting directly to power supply in order to find out if they have problems.	3. If the motors work, the problem is from control board. Pull it out and send it to our ZERO technical services for diagnosis;	4. If the motors doesn't work, remove them from installation site and send to our ZERO technical services for diagnosis
All ZERO control boards have LEDs that easily allow to conclude which devices are with anomalies. All safety devices LEDs (DS) in normal situations remain On. All "START" circuits LEDs in normal situations remain Off. If LEDs devices are not all On, there is some security systems malfunction (photocells, safety edges), etc. 1 • Close with a shunt all safety systems on the control board (check manual of the control board in question). If the automated system starts working normally check for the problematic device. 2 • Remove one shunt at a time until you find the malfunction device . 3 • Replace it for a functional device and check if the motor works correctly with all the other devices. If you find another one defective, follow the same steps until you find all the problems.			
If "START" circuits LEDs are turn On, there is a control device sending permanent signal. 1 • Disconnect all wires from START terminal input (terminal 3). 2 • If the LED turned Off, try reconnecting one device at a time until you find the defective device.			
In case described procedures fell, remove control board and sendto our technical services for diagnosis.			
Check all motion axis and associated motion systems related with the motor and the gate to find out what is the problem.			
1. Check capacitors, testing with new capacitors; 2. If capacitors are not the problem, disconnect motor from control board and test it by connecting directly to power supply in order to find out if it is broken;	3. If the motor doesn't work, remove it from installation site and send to our ZERO technical services for diagnosis.	4. If motor work well and move gate at full force during the entire course, the problem is from controller. Set force using trimmer on the board. Make a new working time programming, giving suffient time for opening and closing with appropriate force.	5. If this doesn't work, remove control unit and send it to ZERO technical services services.
NOTE: Setting force of the controller should be sufficient to make the gate open and close without stopping, but should stop and invert with a little effort from a person. In case of safety systems failure, the gate shall never cause physical damaged to obstacles (vehicles, people, etc.).			

EC DECLARATION OF COMFORMITY:

The undersigned Mr. ANDREA MARAN , representing the following manufacturer,

ZERO SRL Via Roma 25/A 36077 ALTAVILLA VICENTINA (ITALIA)

Declares that the equipment described below:

Description: Electronic control unit
Model: ZCOM230

Is in compliance with the provisions set down in the following directives:

2014/35/UE , 2014/30/UE,R&TTE

and that all the rules and/or technical specifications shown below have been applied:

2014/35/UE -Low voltage Directive

2014/30/UE- Electromagnetic compatibility Directive

2014/53/EU RED/radio equipment directive EN 301 489-3:V2.1.1 EN 300 220-2:V3.1.1

according to the following harmonized standards: -EN60335-1; EN61000-6-2 and EN61000-6-3

ALTAVILLA VICENTINA (VI) – Italia
01-07-2016

and he also declares that it is not allowed to commission the device until the machinery where it will be incorporated or whose it will become a component will have been identified and will have been declared in compliance with the conditions of the 2006/42 EC Directive and with the national legislation that transpose it.

ANDREA MARAN
ZERO SRLS Representative


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ZERO SRLS
Via Olona 110, Gallarate (VA) ITALIA

info@miozero.it - www.miozero.it