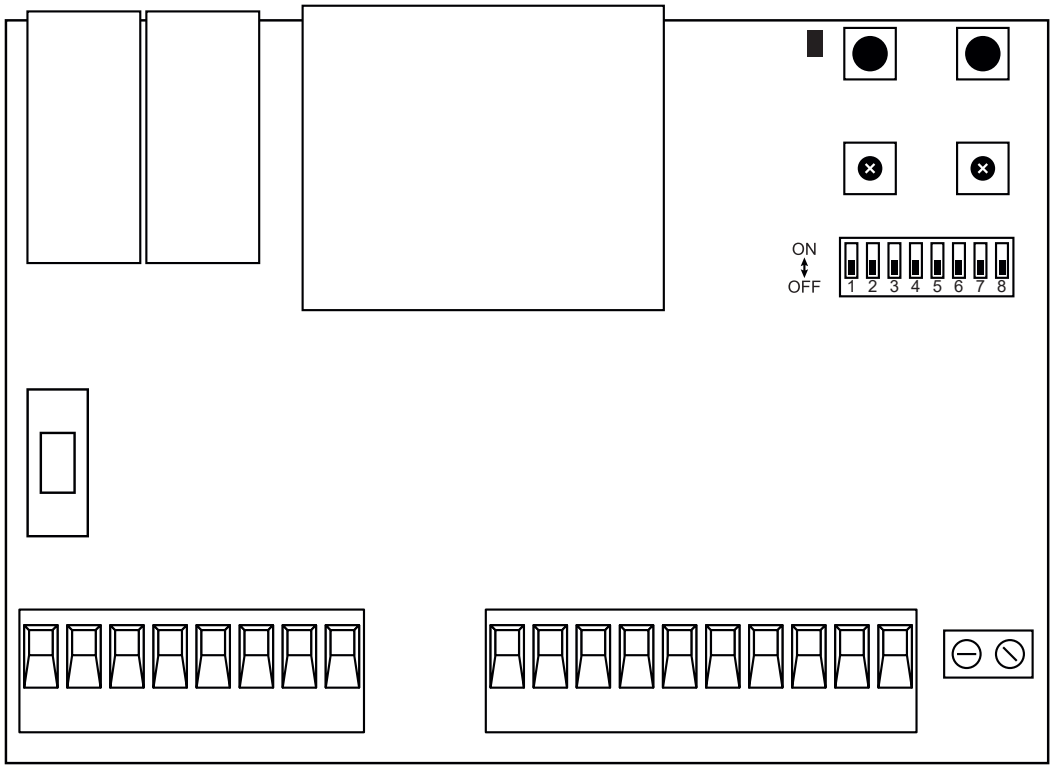
KEY AUTOMATION

Instructions and warnings for installation and use



CT1RS

Control unit for a 230 Vac motor, for a rolling shutter or sliding gate

Management System ISO 9001

www.tuv.com
ID 9105043769

EN

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1 - SAFETY WARNINGS

⚠ ATTENTION !

ORIGINAL INSTRUCTIONS - important safety instructions. Follow the instructions since incorrect installation can lead to severe inquiry! Save these instructions.
Read the instructions carefully before proceeding with installation.

The design and manufacture of the devices making up the product and the information in this manual are compliant with current safety standards. However, incorrect installation or programming may cause serious injury to those working on or using the system. Compliance with the instructions provided here when installing the product is therefore extremely important.

If in any doubt regarding installation, do not proceed and contact the Key Automation Technical Service for clarifications.

Under European legislation, an automatic door or gate system must comply with the standards envisaged in the Directive 2006/42/EC (Machinery Directive) and in particular standards; EN 12453; EN 12635 and EN 13241-1, which enable declaration of presumed conformity of the automation system.

Therefore, final connection of the automation system to the electrical mains, system testing, commissioning and routine maintenance must be performed by skilled, qualified personnel, in observance of the instructions in the “Testing and commissioning the automation system” section.
The aforesaid personnel are also responsible for the tests required to verify the solutions adopted according to the risks present, and for ensuring observance of all legal provisions, standards and regulations, with particular reference to all requirements of the EN 12445 standard which establishes the test methods for testing door and gate automation systems.

⚠ ATTENTION !

Before starting installation, perform the following checks and assessments:
ensure that every device used to set up the automation system is suited to the intended system overall. For this purpose, pay special attention to the data provided in the “Technical specifications” section. Do not proceed with installation if any one of these devices is not suitable for its intended purpose;

check that the devices purchased are sufficient to guarantee system safety and functionality;

perform a risk assessment, including a list of the essential safety requirements as envisaged in Annex I of the Machinery Directive, specifying the solutions adopted. The risk assessment is one of the documents included in the automation system’s technical file. This must be compiled by a professional installer.

Considering the risk situations that may arise during installation phases and use of the product, the automation system must be installed in compliance with the following safety precautions:

never make modifications to any part of the automation system other than those specified in this manual. Operations of this type can only lead to malfunctions. The manufacturer declines all liability for damage caused by unauthorised modifications to products;

if the power cable is damaged, it must be replaced by the manufacturer or its after-sales service, or in all cases by a person with similar qualifications, to prevent all risks;

do not allow parts of the automation system to be immersed in water or other liquids. During installation ensure that no liquids are able to enter the various devices; should this occur, disconnect the power supply immediately and contact a Key Automation Service Centre. Use of the automation system in these conditions may cause hazards;

never place automation system components near to sources of heat or expose them to naked lights. This may damage system components and cause malfunctions, fire or hazards;

⚠ ATTENTION !

The drive shall be disconnected from its power source during cleaning, maintenance and when replacing parts. If the disconnect device is not in a visible location, affix a notice stating: “MAINTENANCE IN PROGRESS”:

connect all devices to an electric power line equipped with an earthing system;

the product cannot be considered to provide effective protection against intrusion. If effective protection is required, the automation system must be combined with other devices;

the product may not be used until the automation system “commissioning” procedure has been performed as specified in the “Automation system testing and commissioning” section;
the system power supply line must include a circuit breaker device with a contact gap allowing complete disconnection in the conditions specified by class III overvoltage;

use unions with IP55 or higher protection when connecting hoses, pipes or cable glands;

the electrical system upstream of the automation system must comply with the relevant regulations and be constructed to good workmanship standards;

this appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved;

before starting the automation system, ensure that there is no-one in the immediate vicinity;

before proceeding with any cleaning or maintenance work on the automation system, disconnect it from the electrical mains;

special care must be taken to avoid crushing between the part operated by the automation system and any fixed parts around it;

children must be supervised to ensure that they do not play with the equipment;

drive is not to be used with doors having openings exceeding 50mm in diameter or having edges or protruding parts a person could grip or stand on;

that the drive cannot be used with a driven part incorporating a wicket door unless the drive can only be operated with the wicket door in the safe position;

in the case of detection of an obstacle during its closing travel, the garage door reverses its travel direction, releasing the obstacle until it opens completely;

install the actuating member for the manual release at a height less than 1,8m. If removable, the actuating member should be stored in direct vicinity of the door;

install any fixed control at a height of at least 1,5m and within sight of the door but away from moving parts;

after installation, ensure that the mechanism is properly adjusted and that the drive reverses or the object can be freed when the door contacts a 50mm high object placed on the floor (for drives incorporating an entrapment protection system depending on contact with the bottom edge of the door);

after installation, ensure that parts of the door do not extend over public footpaths or roads;

when the appliance is provided with a separate stop button, that stop button shall be unambiguously identifiable.

⚠ ATTENTION !

Frequently examine the installation for imbalance where applicable and signs of wear or damage to cables, springs and mounting. Do not use if repair or adjustment is necessary.

⚠ ATTENTION !

The automation system component packaging material must be disposed of in full observance of current local waste disposal legislation. Key Automation reserves the right to amend these instructions if necessary; they and/or any more recent versions are available at www.keyautomation.it.

2 - INTRODUCTION TO THE PRODUCT

2.1 - Product description

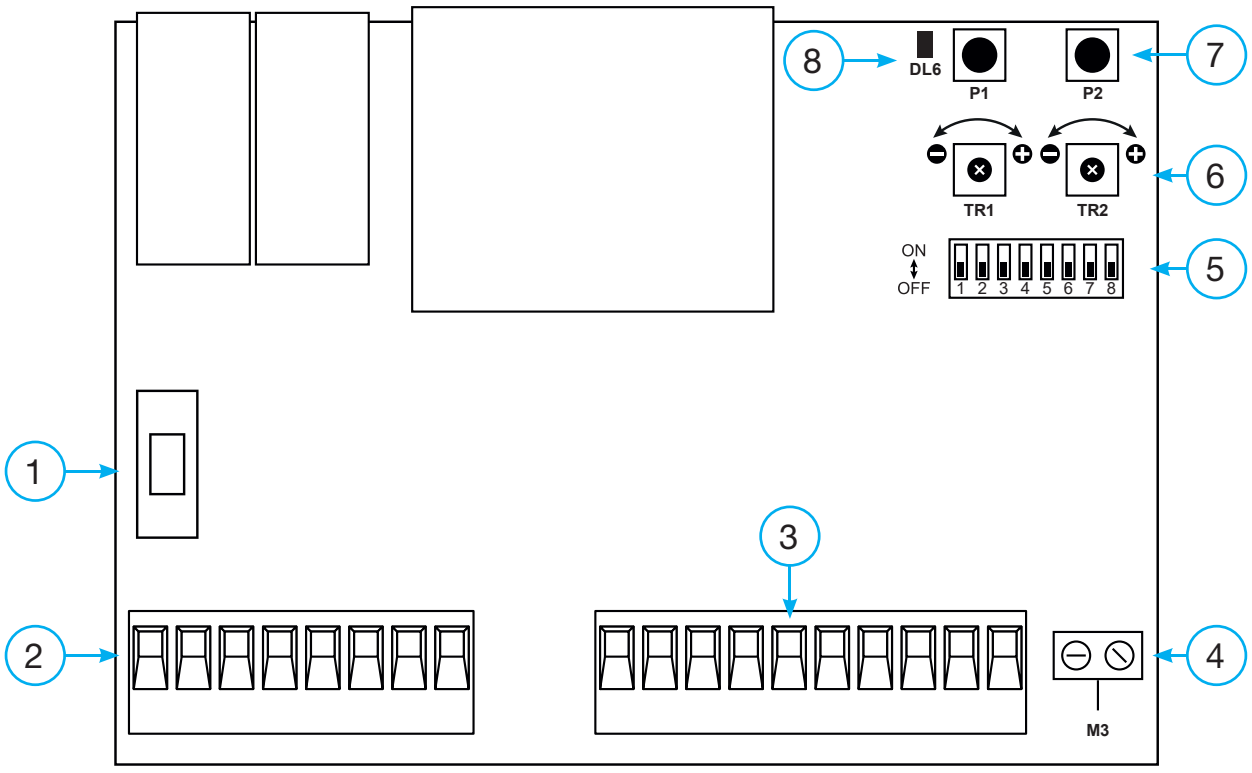
Control unit for an alternating current motor with torque adjustment if sliding gate and courtesy light time if rolling shutter, input for limit switch or selectable Open / Close buttons, inputs for photocells, stop button, step by step, with modular radio. This control unit has been designed for the automation of various types of rolling shutters and sliding gates.

2.2 - Models and technical characteristics

CODE	DESCRIPTION
900CT1RS	230V control unit for a motor for rolling shutter or sliding gate with built-in radio receiver

TECHNICAL DATA	CT1RS
Power supply	230 Vac (±10%) 50-60 Hz
Rated power	700 W
Accessories power outlet	24 Vac 150 mA not stablised
Flashing light output	230 Vac 60 W
Pause time	from 1 to 125 sec.
Operating temperature	-20 + 55 °C
Received frequency	433.92 MHz
Reception code	codice fisso/rolling code
No. max storable transmitters	120 (Using 2 channels for each transmitter)
230Vac outputs protection	Rapid fuse 5A (F1)
Protection rating	IP54
Use in highly acid, saline or explosive atmosphere	No
Dimensions (L-D-H)	200-160-90 mm
Weight	0.95 kg

2.3 - Description of connections



1	⊣□□⊢	Rapid fuse 5A (F1)		STOP	Stop input (N.C.) / edge 8k2
2	⏚	Safety earth		COM	Common for inputs
	L	230Vac power supply phase	**3**	OPEN	Input open (N.O.) / limit switch open (N.C.)
	N	230Vac power supply neutral		CLOSE	input closed (N.O.) / limit switch close (N.C.)
	L1	Motor close terminal		SEQ	SBS button (N.O.)
	L2	Motor open terminal		COM	Common for inputs
	COM	Common of motor	**4**	Shield	Sock
	FLASH	Flashing light / 230Vac courtesy light		FRONT	Antenna
3	+P.OUT	gate open light / photo devices test	**5**	DIP-Switch	DIP-Switch
	+24V	Non-regulated 24Vdc output	**6**	Trimmer	Increase rotating clockwise
	-24V	Non-regulated 24Vdc output	**7**	Buttons	P1 and P2
	PH1	Photocell input (NC)	**8**	LED	Three-colour indicator LED

2.4 - List of necessary cables

In the typical system, the cables necessary for the connections of the various devices are indicated in the cable list table.
The cables used must be suitable for the type of installation; for example, a cable type H03VV-F is recommended for installation indoors or H05RN-F/H07RN-F if laid outdoors.

TECHNICAL SPECIFICATIONS OF ELECTRIC CABLES		
Connection	**cable**	**maximum limit permitted**
Control unit power supply electrical line	1 x cable 3 x 1.5 mm^2	20 m *
Flashing light	1 x cable 2 x 0.5 mm^2	20 m
Antenna	1 x cable type RG58	20 m (recommended < 5 m)
Transmitter photocells	1 x cable 2 x 0.5 mm^2	20 m
Receiver photocells	1 x cable 4 x 0.5 mm^2	20 m
Sensitive edge	1 x cable 2 x 0.5 mm^2	20 m
Key selector	1 x cable 4 x 0.5 mm^2	20 m

* If the power supply cable exceeds 20 m in length, a cable with a larger section (3x2.5 mm2) must be used and a safety earthing must be installed near the automation

3 - PRELIMINARY CHECKS

Before installing the product, check and verify the following points:

Make sure that the door is suitable for automation;

the weight and size of the door must be within the operating limits specified for the automation system in which the product is installed;

check that the door has firm, effective mechanical safety stops;

make sure that the product fixing zone is not subject to flooding;

high acidity or salinity or nearby heat sources might cause the product to malfunction;

in case of extreme weather conditions (e.g. snow, ice, wide temperature variations or high temperatures), friction may increase, causing a corresponding rise in the force needed to operate the system; the starting torque may therefore exceed that required in normal conditions;
check that when operated by hand the door moves smoothly without any areas of greater friction or derailment risk;

check that the door is well balanced and will therefore remain stationery when released in any position;

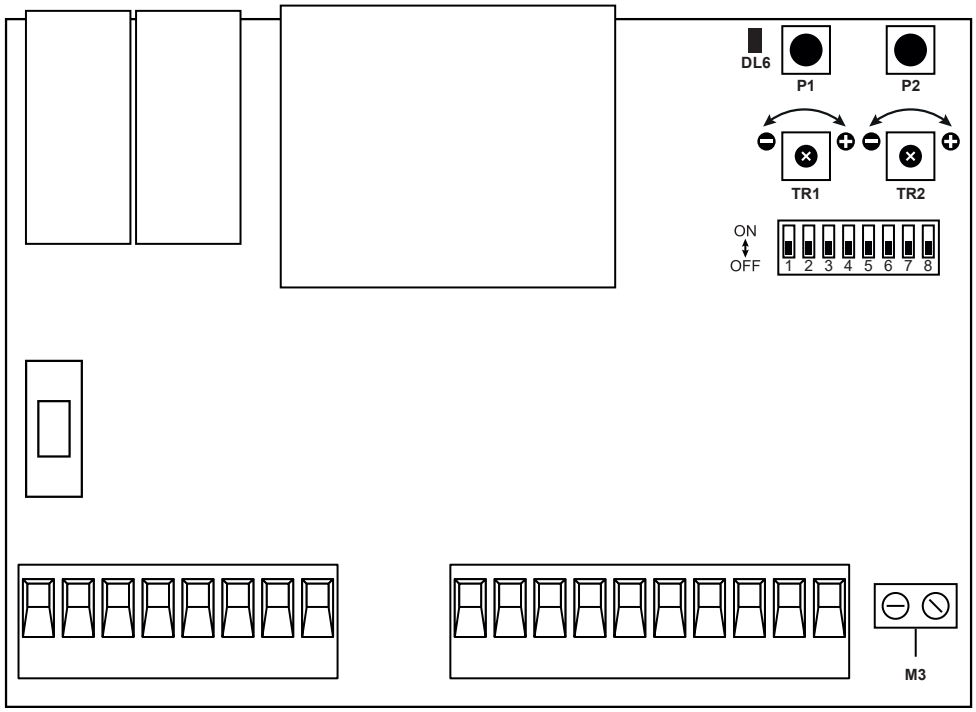
check that the electricity supply line to which the product is to be connected is suitably earthed and protected by an overload and differential safety breaker device;

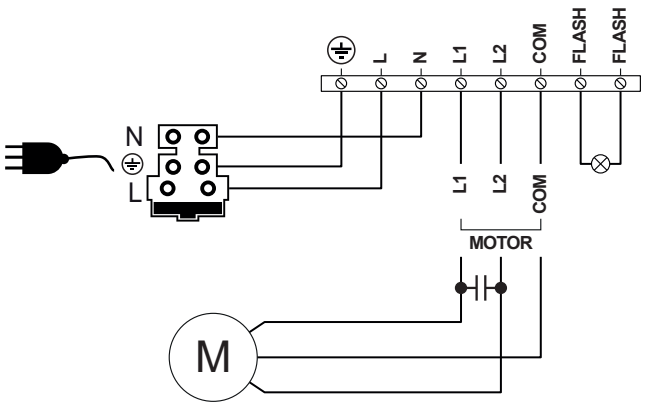
the system power supply line must include a circuit breaker device with a contact gap allowing complete disconnection in the conditions specified by class III overvoltage;

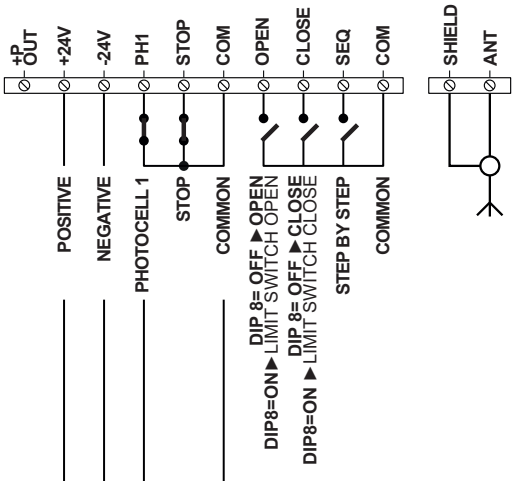
ensure that all the material used for installation complies with the relevant regulatory standards.

4 - PRODUCT INSTALLATION

4.1 - Electrical connections

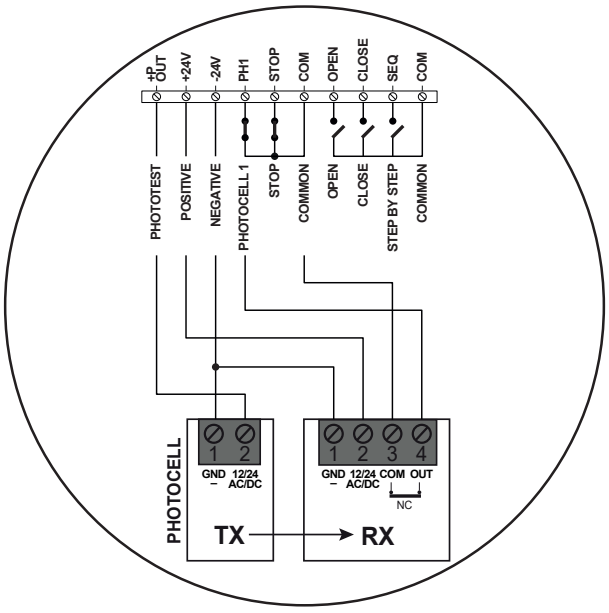


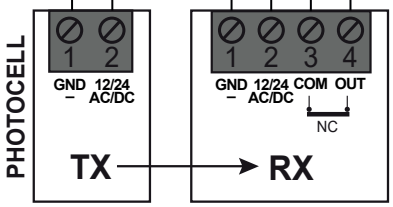




CONNECTION WITH PHOTOCELL TESTING

DIP4 = ON ► PHOTO TEST





4.2 - Table of connections

CONNECTIONS TERMINAL BOARD 1	
⏚	Safety earth
L	Power supply phase 230Vac 50-60 Hz
N	Power supply neutral 230Vac 50-60 Hz
L1	Close motor phase
L2	Open motor phase
COM	Common motor
FLASH	Flashing / 230Vac courtesy light

CONNECTIONS TERMINAL BOARD 2	
+P OUT	Gate open light output or photo devices test output (Set DIP4)
+24 V	Non-regulated 24Vdc output positive
-24 V	Non-regulated 24Vdc output negative
PH1	NC contact (closure) photocells between PH1 and COM. The photocell intervenes at any time during closing of the automation causing immediate stopping of motion, reversing the direction of travel
STOP	If DIP5 = OFF ► Input STOP (NC) If DIP5 = ON ► Input 8K2 Safety edge: 8K2 intervenes during opening and closing with a brief inversion of motion
COM	Common for inputs PH1, STOP, SBS, OPEN, CLOSE (GND)
OPEN	NA contact OPENING command between OPEN and COM MAN PRESENT function contact. The gate OPENS as long as the contact is being pressed With DIP8 = ON ► opening limit switch
CLOSE	NA contact CLOSURE command between CLOSE and COM MAN PRESENT function contact. The gate CLOSES as long as the contact is being pressed With DIP8 = ON ► closure limit switch
SEQ	NA contact STEP-BY-STEP command between SBS and COM Open/Stop/Close/Stop command
COM	Common for inputs PH1, STOP, SBS, OPEN, CLOSE
M3	Terminal for antenna / GND

4.3 - DIP-Switch Table

DIP	Function	OFF	ON
1	Automatic reclosure	Not Enabled	Enabled
2	SEQ Operation (SBS)	Step by Step	Open - Close
3	Condominium	Not Enabled	Enabled
4	Output P.OUT	Light	Safety devices testing
5	Input STOP	STOP (N.C.)	Safety (8k2)
6	Output FLASH	Flashing light	Courtesy light
7	Man present (if ROLLING SHUTTER)	Not Enabled	Enabled
7	Slowing speed (if SLIDING GATE)	Low	High
8	Mode	ROLLING SHUTTER	SLIDING GATE

4.4 - TRIMMER table

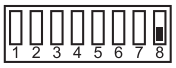
BUTTON	Function
TR1	Pause Time 1 - 125 Sec.
TR2	Motor force (if SLIDING GATE) Courtesy light time 10 - 300 Sec. (if ROLLING SHUTTER)

4.5 - Legend control unit operation

LED STATUS	CONTROL UNIT KEYS	TRANSMITTER
2 s FLASHING SLOW 1 s FLASHING FAST 0.5 s FLASHING VERY FAST	PRESS P1 P2 HOLD PRESSED 3s P1 3s P2	

N.B: It is not possible to access the configuration menu with the automation in motion.
T HE AUTOMATION MUST BE CLOSED!

4.6 - Selection of operating mode - DIP8



OPERATING MODE	OFF	ON
Set to ON for operation on SLIDING GATE motor or set to OFF for operation on ROLLING SHUTTER	ROLLING SHUTTER	SLIDING GATE

5 - ROLLING SHUTTER FUNCTIONS

5.1 - Learning of transmitters

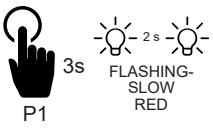
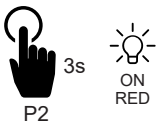
After a total cancellation of the transmitters, the first taught transmitter sets the Rolling Code or Fixed Code mode for all the other transmitters.

STEP-BY-STEP FUNCTION LEARNING: Press and hold P2 until the DL6 LED slowly flashes orange, release. Activate the transmitter to undergo learning until the DL6 LED turns green. (LED DL6 orange reception error, LED DL6 red memory full - 250 buttons). The SBS function does not work if DIP8=OFF and DIP7=ON.	3s P2 — 2 s FLASHING-SLOW ORANGE	3s — ON GREEN
SINGLE BUTTON CANCELLATION: Press and hold P2 until the DL6 LED slowly flashes orange, do not release, wait for rapid flashing, do not release, wait for very rapid flashing. Activate the button to be deleted until the DL6 LED turns green (if the reception error is orange)	3s P2 — 2 s FLASHING-SLOW ORANGE — 1 s FLASHING-FAST ORANGE — 0.5 s FLASHINGVERY FAST ORANGE	3s — ON GREEN
TRANSMITTER TOTAL CANCELLATION: Turn on the appliance by holding down P2 until the DL6 LED quickly flashes orange, do not release, wait for green flashing. All transmitters cancelled.	3s P2 — 2 s FLASHING-SLOW ORANGE — 1 s FLASHING-FAST ORANGE	2 s FLASHING-SLOW GREEN

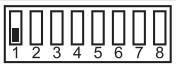
5.2 - Man present function

Press P1 and P2 simultaneously until the DL6 LED turns red. P1 opens man present, P2 closes man present. Press P1 and P2 simultaneously to exit the mode.	3s P1 + P2 — ON RED	3s P1	3s P2	3s P1 + P2

5.3 - Learning of stroke

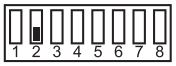
The operation must be performed with the rolling shutter **CLOSED**. Keep P1 pressed until the DL6 LED flashes red. Release P1. With the rolling shutter CLOSED, hold down the P2 button to make the motor move in opening. Release P2 in the open position. Wait for DL6 to turn green. Press and hold the P2 button to make the motor move in closing. Release P2 in the closed position.			

5.4 - DIP1 function



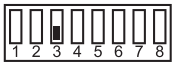
AUTOMATIC CLOSURE	OFF	ON
If enabled after complete opening, it remains open for a time set with TR1 from 1 Sec to 120 Sec.	NOT ENABLED	ENABLED

5.5 - DIP2 function



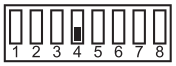
STEP-BY-STEP	OFF	ON
With rolling shutter set to OFF	STEP-BY-STEP	OPEN-CLOSE

5.6 - DIP3 function



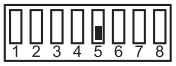
CONDOMINIUM FUNCTION	OFF	ON
If set to ON the SBS command only OPENS.	NOT ENABLED	ENABLED

5.7 - DIP4 function



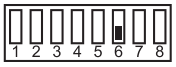
OUTPUT P.OUT 24Vdc	OFF	ON
IF SET TO OFF, A 24V LIGHT IS CONNECTED: - It flashes slowly if the motor is in the opening movement. - It flashes quickly if the motor is in the closing movement. - Steady light on if the motor is stopped and not in closing. **IF SET ON ON:** Perform the photocell test	GATE OPEN LIGHT	PHOTO TEST

5.8 - DIP5 function



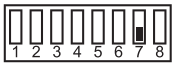
INPUT STOP	OFF	ON
If set on OFF ► STOP input (NC) IF set on ON ► 8K2 edge safety input	STOP (NC)	SAFETY (8K2)

5.9 - DIP6 function



OUTPUT FLASH	OFF	ON
If set to OFF then the output flashes during motor motion, it switches off approximately 5 sec after the motor is turned off. If set to ON, the output is activated with the motor and remains active for a time set by TR2.	FLASHING LIGHT	COURTESY LIGHT

5.10 - DIP7 Function



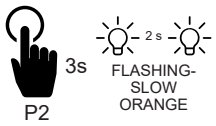
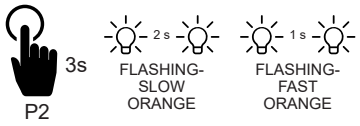
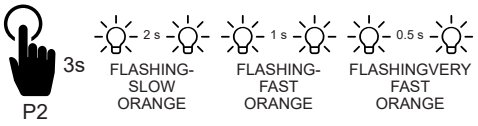
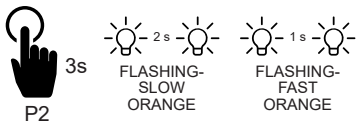
PERSON PRESENT	OFF	ON
The OPEN command and the CLOSE command open as long as they are held down. The SBS command is ignored, even by the transmitter.	NOT ENABLED	ENABLED

6 - FUNCTIONS FOR ROLLING SHUTTERS

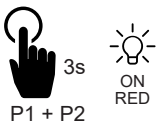
6.1 - Learning of transmitters

After a total cancellation of the transmitters, the first taught transmitter sets the Rolling Code or Fixed Code mode for all the other transmitters.

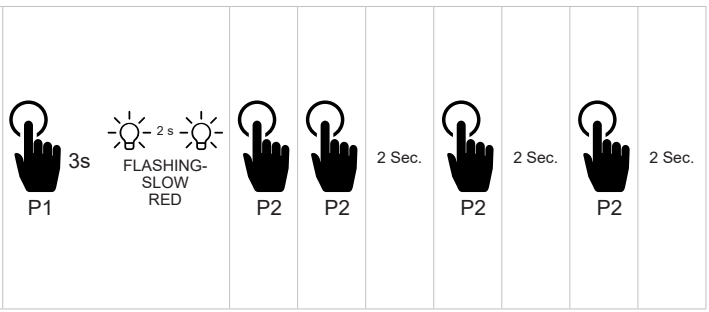
The SBS function will behave according to the settings of DIP2 and DIP3. The PARTIAL function is only available with the transmitter.

STEP-BY-STEP FUNCTION LEARNING: Press and hold P2 until the DL6 LED slowly flashes orange, release. Activate the transmitter to undergo learning until the DL6 LED turns green. (Led DL6 orange reception error, Led DL6 red memory full - 250 buttons). The SBS function does not work if DIP8=OFF and DIP7=ON.		
PARTIAL FUNCTION LEARNING: Press and hold P2 until LED DL6 slowly flashes orange, do not release, wait for rapid flashing. Activate the transmitter to undergo learning until the DL6 LED turns green. (LED DL6 orange reception error, LED DL6 red memory full)		
SINGLE BUTTON CANCELLATION: Press and hold P2 until the DL6 LED slowly flashes orange, do not release, wait for rapid flashing, do not release, wait for very rapid flashing. Activate the button to be deleted until the DL6 LED turns green (if the reception error is orange)		
TRANSMITTER TOTAL CANCELLATION: Turn on the appliance by holding down P2 until the DL6 LED quickly flashes orange, do not release, wait for green flashing. All transmitters canceled.		

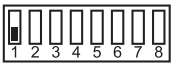
6.2 - Man present function

Press P1 and P2 simultaneously until the DL6 LED turns red. P1 opens man present, P2 closes man present. Press P1 and P2 simultaneously to exit the mode.				

6.3 - Learning of the STROKE and of the PARTIAL OPENING function

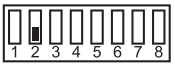
The operation must be performed with the gate **CLOSED**. Keep P1 pressed until the DL6 LED flashes red. Release P1. Pressing and releasing P2 starts fast opening, pressing and releasing P2 starts slowing down, the motor stops on the limit switch during opening. After 2 sec it starts fast closing, pressing and releasing P2 starts slowing down, the motor stops on the closing limit switch. After 2 sec it starts PARTIAL OPENING, pressing and releasing P2 stops partial opening. After 2 sec it starts closing up to the closing limit switch. The motor speed is determined by Trimmer 2, also in learning, so first set TR2 and then perform the learning.	

6.4 - DIP1 function



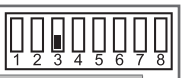
AUTOMATIC CLOSURE	OFF	ON
If enabled after complete opening, it remains open for a time set with TR1 from 1 Sec to 120 Sec.	NOT ENABLED	ENABLED

6.5 - DIP2 function



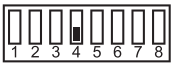
STEP-BY-STEP The SBS function is subordinate to the setting of the **DIP3.**	OFF	ON
The SEQ function is the equivalent of the SBS function. If DIP 2=OFF then the SBS command executes: open-stop-close-stop-open. If DIP2=ON then the PP command executes: open-close-open.	STEP-BY-STEP	OPEN-CLOSE

6.6 - DIP3 function



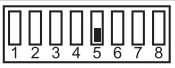
CONDOMINIUM FUNCTION	OFF	ON
An SBS opening command brings the gate to full opening, no other command is considered (except for the STOP command that blocks the automation). A closing SBS command behaves normally: if DIP2 is set to OFF it executes the STOP - OPEN ALL command, if DIP2 is set to ON it executes the OPEN ALL command.	DO NOT ENABLED	ENABLED

6.7 - DIP4 function



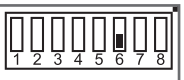
OUTPUT P.OUT 24Vdc	OFF	ON
IF SET TO OFF, A 24V LIGHT IS CONNECTED: - It flashes slowly if the motor is in the opening movement. - It flashes quickly if the motor is in the closing movement. - Steady light on if the motor is stopped and not in closing. **IF SET ON ON:** Perform the photocell test	GATE OPEN LIGHT	PHOTO TEST

6.8 - DIP5 function



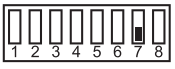
INPUT STOP	OFF	ON
If set on OFF ► STOP input (NC) IF set on ON ► 8K2 edge safety input	STOP (NC)	SAFETY (8K2)

6.9 - DIP6 function



OUTPUT FLASH	OFF	ON
If set to OFF it flashes during movement. If set to ON, it remains on during movement and for the next 10s.	FLASHING LIGHT	COURTESY LIGHT

6.10 - DIP7 function



SLOWING SPEED	OFF	ON
Determines the slowing speed.	LOW	HIGH

7 - TESTING AND COMMISSION THE AUTOMATION

The system must be tested by a qualified technician, who must perform the tests required by the relevant standards in relation to the risks present and must check that the installation complies with the relevant regulatory requirements, especially with the EN12445 standard which specifies the test methods for gate and door automation systems.

7.1 - Testing

All the system components must be tested following the procedures described in their respective operator manuals;

ensure that the recommendations in Chapter 1 – Safety Warnings - have been complied with;

check that the door can move freely once the automation is released and that it is in balance and therefore remains stationary if left in any position;

check that all the connected devices (photocells, sensitive edges, emergency buttons, etc.) are operating correctly by performing door opening, closing and stop tests using the connected control devices (transmitters, buttons or switches);

perform the impact measurements as required by the EN12445 standard, adjusting the control unit's speed, motor force and deceleration functions if the measurements do not give the required results, until the correct setting is obtained.

7.2 - Commissioning

Once all (and not just some) of the system devices have passed the testing procedure, the system can be commissioned;

the system's technical dossier must be produced and kept for 10 years.It must contain the electrical wiring diagram, a drawing or photograph of the system, the analysis of the risks and the solutions adopted to deal with them, the manufacturer's declaration of conformity for all connected devices, the operator's manual for every device and the system maintenance plan;

fix a plate on the door indicating the automation data, the name of the person responsible for commissioning, the serial number, the year of construction and the CE mark;

also fit a plate specifying the procedure for releasing the system by hand;

draw up the declaration of conformity, the instructions and precautions for use for the end user and the system maintenance plan and consign them to the end user;

ensure that the user has fully understood how to operate the system in automatic, manual and emergency modes;

the end user must also be informed in writing about any risks and hazards still present;

⚠ ATTENTION !

After detection of an obstacle, the door stops on opening and automatic closing is excluded; to resume movement, press the control button or use the transmitter.

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Instruction version
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