RAY RESIDENTIAL GATE OPERATOR & CONTROLLER





USER MANUAL

Gear Motor for Hinged Gates





v.12.5.17

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WHAT'S IN THE BOX

Before proceeding with the installation, check the integrity of the product and that all the components are present in the package.



PRODUCT OVERVIEW

Description of the product

The RAY gear motors are designed to be installed on systems made for the automation of swing gates. The RAY gear motors have been designed and constructed to be installed on swing gates within the weight/length limits indicated in the limit use table (Fig 2.).

The use of gear motors for applications where swing gates differ from the parameters within the limit use table is prohibited.

Model and technical characteristics

RAY4024E: Gear motor for swing gates with a max length of 13 feet @ 500 lbs or 6 1/2 feet @ 1320 lbs. (Refer to chart in Fig 2 for limit use.)

TECHNICAL SPECIFICATIONS

	RAY4024E
Speed (on screw drive)	0.6 inches/second
Thrust force	2000 N
Working cycle	80%
Opening time at 90° (sec)	20-25*
Working stroke	415 mm
Control board	14AB2
Primary Power	110 Vac
Secondary Power	24 Vdc
Absorption	5 A
Engine power	120 W
Integrated lights	yes
Degree of protection	NEMA 3R (IP44)
Dimensions (L - P - H)	33 7/32" x 3 15/16" x 4 3/32"
Weight	18 lbs
Operating temperature	-4°to 133°F
Leaves maximum weight	1320 lbs
* with optimized fix	king dimensions

PRELIMINARY CHECKS

Before installing this product, verify and check the following steps:

- Check that the gate or door are suitable for automation

- The weight and size of the gate or door must be within the maximum permissible operating limitis specified in Fig. 2.

- Check the presence and strength of the security mechanical stops of the gate or door

- Check that the mounting area of the product is not subject to flooding

- Conditions of high acidity or salinity or proximity to heat sources could cause malfunction of the product

- Extreme weather conditions (for example the presence of snow, ice, high temperature range, high temperatures) may increase the friction and therefore the force required for the handling and initial starting point may be higher than under normal conditions.

- Check that the manual operation of gate or door is smooth and friction-free and there is no risk of derailment of the same

- Check that the gate or door are in equilibrium and stationary if left in any position

- Check that the power line to supply the product is equipped with proper grounding safety and protected by a magnetothermal and differential security device

- Provide the power system with a disconnecting device with a gap of contacts enabling full disconnection under the conditions dictated by the overvoltage category III.

- Ensure that all materials used for the installation comply with current regulations



SPACE DIMENSIONS



USE LIMITATIONS



INSTALLATION GUIDELINE

- 1. Measure distance "C" from center of gate hinge to the post edge.
- 2. Use the table to determine the optimum measurement for "B" according to "C" measurement and cut the rear bracket to the size.
- 3. Use the table to determine your "A" dimension according to your "B" dimension and attach rear bracket to post.
- 4. Use the table to determine your "E" dimension according to your "A" dimension and mount the front bracket.



90°-100° OPENING

C (in)	B (in)	A (in)	E (in)
8 1/4"	11"	4"	25 1/2"
8"	10 1/2"	4 1/4"	25 1/4"
7 3/4"	10 1/2"	4 1/2"	25"
7 1/2"	10 1/4"	5"	24 1/2"
7 1/4"	10"	5"	24 1/2"
7"	9 3/4"	5 1/4"	24 1/4"
6 3/4"	9 1/2"	5 3/4"	23 3/4"
6 1/2"	9 1/4"	5 3/4"	23 3/4"
6 1/4"	9"	6"	23 1/2"
6"	8 3/4"	6"	23 1/4"
5 3/4"	8 1/2"	6 1/2"	23"
5 1/2"	8 1/4"	6 1/2"	23"
5 1/4"	8"	7 1/4"	22 1/4"
5"	7 3/4"	7 1/4"	22 1/4"
4 3/4"	7 1/2"	7 1/2"	22"
4 1/2"	7 1/4"	7 1/4"	22 1/4"
4 1/4"	7"	7"	22 1/2"
4"	6 3/4"	6 3/4"	22 3/4"
3 3/4"	6 1/2"	6 1/2"	23"
3 1/2"	6 1/4"	6 1/4"	23 1/4"
3 1/4"	6"	6"	23 1/2"
3"	5 3/4"	5 3/4"	24 1/4"
2 3/4"	5 1/2"	5 1/2"	24"
2 1/2"	5 1/4"	5 1/4"	24 1/4"
2 1/4"	5"	5"	24 1/2"
2"	4 3/4"	4 3/4"	24 3/4"
1 3/4"	4 1/2"	4 1/2"	25"
1 1/2"	4 1/4"	4 1/4"	25 1/4"
1 1/4"	4"	4"	25 1/2"
1"	4"	4"	25 1/2"

100°-110° OPENING				
C (in)	B (in)	A (in)	E (in)	
5"	7 3/4"	6"	23 1/2"	
4 3/4"	7 1/2"	6"	23 1/2"	
4 1/2"	7 1/4"	6"	23 1/2"	
4 1/4"	7"	6"	23 1/2"	
4"	6 3/4"	6 3/4"	25 1/2"	
3 3/4"	6 1/2"	6 1/2"	22 3/4"	
3 1/2"	6 1/4"	6 1/4"	23 1/4"	
3 1/4"	6"	6"	23 1/2"	
3"	5 3/4"	5 3/4"	24 1/4"	
2 3/4"	5 1/2"	5 1/2"	24"	
2 1/2"	5 1/4"	5 1/4"	24 1/4"	
2 1/4"	5"	5"	24 1/2"	
2"	4 3/4"	4 3/4"	24 3/4"	
1 3/4"	4 1/2"	4 3/4"	24 3/4"	
1 1/2"	4 1/4"	4 3/4"	24 3/4"	
1 1/4"	4"	4 3/4"	24 3/4"	
1"	4"	4 3/4"	24 3/4"	

CUTTING & INSTALLING THE REAR BRACKET



Optimal installations occur when the values of "A" and "B" are as near the measurements listed as possible (see Fig. 4.).*

If necessary, cut the rear bracket then weld the bracket to the post as shown in Fig 5.

ATTACHING THE FRONT BRACKET



SECURING THE GEAR MOTOR AND REAR BRACKET





Place the gear motor against the bracket and insert the mounting screw as shown in Fig. 7b.

SECURING THE GEAR MOTOR AND REAR BRACKET (continued)



GEARMOTOR RELEASE



SETTING OF THE MECHANICAL LIMIT SWITCH



POWER CONNECTIONS



Fig. 10

 \oslash

≥

MOTOR

ž

REPLACEMENT OF THE LEDS

screws that secure the rear cover.



Turn off the power supply. Use a screwdriver to remove the lower screw as shown in Fig. 11a. Remove the cover and LED strip as shown in Fig. 11a. Disconnect the connector as shown in Fig. 11b. Connect the new LEDs and insert them into the mask. Connect the mask by first inserting the side of the seal and then securing it with the screw.

TESTING AND AUTHORIZING THE AUTOMATION

Testing of the system must be performed by qualified technicians who must perform the tests required by relevant legislation related to risks, ensuring compliance with the provisions of the regulations.

Testing

All system components must be tested following the procedures outlined in the respective instruction manuals.

Check that they meet the guidelines in Safety warnings. Check that the gate or door can move freely once the automation is unlocked, and that they are in equilibrium and stationary if left in any position. Check the correct operation of all connected devices (photocells, sensitive edges, emergency buttons, etc.), testing the opening, closing and stopping of the gate or door via the connected control devices (transmitters, buttons, switches).

Carry out measurements of the impact force, as prescribed by standard EN12445 adjusting the functions of speed, motor force and deceleration of the unit if the measurements do not give the desired results until you find the right setting.

Authorizing

Following the successful testing of all (and not just some) devices in the system you can proceed with the authorizing.

You must prepare, and keep for 20 years, the technical file of the system with the wiring diagram, drawing or photo of the system, risks analysis and solutions adopted, manufacturer declaration of conformity of all devices connected, instruction manual of each device and maintenance schedule of the system.

Fix on the gate or door a plaque indicating the automation data, the name of the person responsible for the authorization, the serial number and year of construction, the CE mark.

Attach a plaque indicating the steps required to manually unlock the system.

Implement and deliver to the end user the declaration of conformity, the instructions and warnings for use for the end user and the maintenance schedule of the system.

Make sure the user understands proper automatic, manual and emergency operation of the automation.

Inform the end user in writing of the dangers and risks still present.

SAFETY PRECAUTIONS

WARNING - for the safety of people, it is important to adhere to these instructions and save them for future use.

Read the instructions carefully before starting installation.

The design and manufacture of the devices making up the product and the information contained in this manual comply with safety regulations. However, wrong installation and programming may cause serious physical injury to those who perform the work and those who will use the device. For this reason, during installation, it is important to carefully follow all instructions in this manual.

Do not proceed with the installation if you have doubts of any kind and contact Key Automation Customer Service for clarifications.

In view of this, the final connections to the power supply of the automation, the system tests, its commissioning and maintenance must be performed by qualified and experienced personnel, according to the instructions in "Testing and commissioning of the automation".

Moreover, the personnel shall also take responsibility to establish the tests related to the risks involved and verify compliance with the provisions of laws, rules and regulations: in particular, compliance with all requirements of standard EN 12445, which establishes methods for the verification of automatic doors and gates.

IMPORTANT - Before starting the installation, perform the following analysis and tests:

- Ensure that the individual automation devices are suitable for the system to be built. In this regard, check with particular attention the data contained in the "Technical data" section. Do not install if even one of the devices is not suitable for use.

- Check whether the devices in the kit are sufficient to maintain safety and functionality.

- Perform risk analysis, which must also include the list of essential safety requirements set out in Annex I of the Machinery Directive, indicating the solutions adopted. Risk analysis is one of the documents comprising the technical file of the automation. This must be completed by a professional installer.

Considering the hazards that may occur during installation and use of the product you need to install the automation observing the following precautions:

- Do not make changes to any part of the automation, other than those specified in this manual. Operations of this type will only lead to malfunction. The manufacturer disclaims any liability for damage arising from products modified arbitrarily;

- Keep the parts of the components from being immersed in water or other liquids. During the installation, ensure that no liquid penetrates into the devices;

- If liquid falls into any part of the automation components, immediately disconnect the power supply and contact the Key Automation Customer Service. The use of the automation under these conditions can be dangerous;

- Do not place the various components near sources of heat and do not expose them to open flame. These actions may damange them and cause malfunctions, fire or danger;

- All operations requiring the opening of the protective shell of vari ous automation components, must be performed with the power unit disconnected from the supply. If the disconnection device is not vis ible, place a "MAINTENANCE IN PROGRESS" sign;

- The Power unit must be connected to a power supply line provided with grounding safety;

- The product cannot be considered an effective system of protection against intrusion. If you want to protect yourself efficiently, you need to integrate the automation with other devices;

- The product can be used only after the "commissioning" of au tomation has been made, as provided in paragraph "Testing and commissioning of the automation";

- Provide the power system with a disconnecting device with a gap of contacts enabling full disconnection under the conditions dictated by the overvoltage category III;

- For the connection of pipes and hoses or guides, use pipefittings with IP55 degree of protection or higher;

- The electric system upstream of the automation shall comply with current regulations and must be made in a workmanlike manner;

- It is recommended to use an emergency button to be installed near the automation (connected to the STOP input of the control card) so that you can immediately stop the gate or door in case of danger;

This device is not intended for use by persons (including children) whose physical, sensory or mental abilities are reduced, or who have lack of experience or knowledge, unless they have been able to benefit, through the intermediary of a person responsible for their safety, from supervision or instruction concerning use of the device.

Children should be supervised to make sure they do not play with the device.

WARNING - The packaging material of all components must be disposed of in compliance with local regulations.

WARNING - The data and information provided in this manual are subject to change at any time without notice by Key Automation S.r.I.

INSTRUCTIONS AND PRECAUTIONS FOR THE END USER

Key Automation S.r.I. produces systems for the automation of gates, garage doors, automatic doors, shutters, parking lots and road barriers. However, Key Automation is not the manufacturer of your automation system, which is rather the result of a process of analysis, evaluation, selection of materials, and installation performed by your own installer. Each automated system is unique and only your installer has the experience and professionalism required to create a system to suit your needs, safe and reliable over time, and carried out in a workmanlike manner, i.e. compliant with the current regulations. Even if your automation system meets the security level required by law, this does not exclude the existence of "residual risks", i.e. the possibility that it may cause dangerous situations, usually as a result of improper or irresponsible use; for this reason we would like to give you some suggestions:

• Before using the automation for the first time, ask the installer to explain the origin of residual risks.

 Keep this manual for future use and deliver it to any new owner of the automation.

• Inappropriate or improper use of the automation can make it dangerous: do not command the movement of the automation if people, animals or things are in its range.

• Children: If properly designed, an automation system ensures a high degree of security, preventing movement in the presence of people or things with its detection systems, and ensuring always predictable and safe activation. It is prudent to prevent children from playing near the automation and keep remote controls out of their reach to prevent accidental activation.

• Malfunctions: As soon as you notice any malfunctions, disconnect the system from the power supply and operate the manual release. Do not attempt any repairs by yourself, but require the assistance of your installer: meanwhile, the system can operate like a non-automated opening device after releasing the motor reducer with the release key supplied with the system.

• In case of failures or power failures: While awaiting the arrival of your installer or the restore of the electricity, if the system is not equipped with backup batteries, the automation can be operated as any normal non-automated opening device. To do this, you must run the manual release.

Release and manual movement: before performing this operation pay attention that the device can be released only when the door is stationary. • Maintenance: Like any machine, your automation needs periodic maintenance to ensure its long life and total safety. Agree with your installer on a maintenance plan on a periodic basis; Key Automation recommends a frequency of 6 months for normal domestic use, but this period may vary depending on the intensity of use. All inspection, maintenance or repairs should be performed only by qualified personnel.

• Do not change the system and control or programming parameters of the automation: the responsibility lies with your installer.

• The testing, routine maintenance and any repairs must be documented by the person who performs them, and related documents must kept by the owner.

The only interventions that are possible for the user and should be carried out periodically are the cleaning of the slides and photocells, as well as the removal of any leaves or rocks that could hinder the automation. To prevent anyone from activating the gate or door, before proceeding, remember to release the automation and clean only with a cloth slightly dampened with water.

• Disposal: At the end of the automation useful life, make sure that the dismantling is carried out by qualified personnel and the materials are recycled or disposed of according to local regulations in force.

• Operate the gate or door (with remote control, key switch, etc..); if everything is working properly, the gate or the door will open and close normally, otherwise the flashing light flashes and the maneuver does not start.

With the safeties out of use, the automation must be repaired as soon as possible.

Replacing the remote control battery: if your remote control seems to work worse or not work at all after a while, this may simply depend on the exhaustion of the battery (depending on use, it may take several months to over a year). In that case, you will see that the confirmation of transmission light does not turn on, or comes on only briefly.

The batteries contain polluting substances: do not throw them in the garbage but use the methods prescribed by local regulations.

Thank you for choosing keyautomation; for more information feel free to visit our website <u>www.keyautomation.it</u>.





Installation and Programming

Description of the control unit

Automation motors for the electric opening and closure of swing and sliding gates, barriers and garage doors.

The 14A has a programmer with display (optional) allowing easy

The 14A control unit is a modular system for the control of Key programming and constant monitoring of the control unit's status; the menu structure also allows easy setting of working times and operating modes. The display menu is multilingual. All other, improper, use of the control unit is forbidden.

BATTERIES (ACCESSORY) . 2 4 11 M2 5 S. 6 SBS 10 PH1-PH2-PED-OPEN-- ISOLO SBS DGE ELEC-0 TOP-0 sen-0 com-0 EDGE-0 PH2 -0 Ø 0 00 COM-O 0 0 PH1-0 0 LASH-0 SHELD ANT ġ ġ COM TOP PED -EN LOSE BS NO. 8 7 WARNING: the PO24 power module must always be connected/disconnected with the control unit not powered up!

Description of the connections

- 1- Control unit power supply connection 24 Vac
- 2- M1 power module socket
- 3- M2 power module socket
- 4- Display programmer connector
- 5- Receiver compartment RX4X/RX4U

- 6- Integrated STEP BY STEP control button
- 7- External antenna connections
- 8- Input status indicator LEDs
- 9- Accessory/input connection terminal board
- 10- Protective fuse, 2.5AT
- 11 Battery connection

Models	and	technical	charact	eristics

900MA24Logic module for combination with 1 or 2 PO24 power modules for the control of 1 or 2 24V motors for swing sliding gates, barriers and garage doors					
- Power supply with p	- Power supply with protection against short-circuits inside the - Automatic learning of working times.				
control unit, on motors and on the connected accessories Programmable deceleration during opening and closure.					
- Obstacle detection by means of current sensor.		 Safety input deactivation by means of software. 			

- Anti-crush safety device.

- Control panel with microprocessor logic.

TECHNICAL SPECIFICATIONS		
Power supply (L-N)	110Vac (+10% - 15%) 50/60 Hz	110Vac (+10% - 15%) 50/60 Hz
Rated power	maximum 210W	maximum 300W
Photocell power supply output	24Vdc (without regulation) maximum 250mA	24Vdc (without regulation) maximum 250mA
Flashing light output	24Vdc (without regulation) 25W	24Vdc (without regulation) 25W
Courtesy light output	24Vdc (without regulation) 15W	24Vdc (without regulation) 15W
Electric lock output	12Vac maximum 15VA	12Vac maximum 15VA
Gate open warning light output	24Vdc (without regulation) 5W	24Vdc (without regulation) 5W
Antenna input	50Ω RG58 type cable	50Ω RG58 type cable
Operating temperature	-4°F to 131°F	-4°F to 131°F
Accessory fuses	2.5AT	2.5AT
Power supply line fuses	2AT	2AT
Use in particularly acid, saline or explosive atmospheres	NO	NO
Protection class	IP54 (inside protective casing)	IP54 (inside protective casing)
Control unit dimensions	7.2 x 4 x 2.3 H inches	7.2 x 4 x 2.3 H inches
Weight	9.5 lbs	9.5 lbs
* Compulsory for motors: RAY4024, SN-50-24 and	I INT-24	

List of cables required

The cables required for connection of the various devices in a standard system are listed in the cables list table.

The cables used must be suitable for the type of installation; for example, an H03VV-F type cable is recommended for indoor applications, while H07RN-F is suitable for outdoor applications.

ELECTRIC CABLE TECHNICAL SPECIFICATIONS				
Connection	cable	maximum permitted limit		
Power line (110 Vac)	(1) 3 conductor wire 15 AWG	65 feet *		
Flashing light, Courtesy light, ambient light sensor Antenna	(4) 24 AWG**(1) RG58 type cable	65 feet 65 feet (< 16 ft recommended)		
Electric lock	(1) 2 conductor wire 18 AWG	32 feet		
Transmitter photocells	(1) 2 conductor wire 24 AWG	65 feet		
Receiver photocells	(1) 4 conductor wire 24 AWG	65 feet		
Sensitive edge	(1) 4 conductor wire 24 AWG	65 feet		
Key-operated selector switch	(1) 4 conductor wire 24 AWG**	65 feet		
Motor power supply line	(1) 2 conductor wire 15 AWG	32 feet		

* If the power supply cable is more than 65 feet long, it must be of larger gauge (10 AWG) and a safety grounding system must be installed near the automation unit.

** Two cables of 2 conductor (24 AWG) can be used as an alternative

PRELIMINARY CHECKS

Before installing the product, perform the following checks and inspections:

check that the gate is suitable for automation;

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

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

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

high acidity or salinity or proximity to 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 gate moves smoothly without any areas of greater friction or derailment risk;

check that the gate 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 fitted with magnetothermal and differential protection;

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.

INSTALLING THE PRODUCT

Electrical connections

WARNING - Before making the connections, ensure that the control unit is not powered up



MA24 ELECT	MA24 ELECTRIC CONNECTIONS				
SHIELD	Antenna - shield -				
ANT	Antenna - signal -				
COM	Common for FLASH, LED, SEN inputs / outputs				
FLASH	Flashing light output 24Vdc (without regulation) maximum 25W				
LED	Courtesy light output 24Vdc (without regulation) maximum 15W (radio channel 4 selecting COURTESY LIGHT START = 2, COURTESY LIGHT TIME = 0)				
SEN	Ambient light sensor input				
COM	IND output common				
IND	Gate open warning light output, 24Vdc (without regulation) maximum 4W				
COM	ELEC output common				
ELEC	Electric lock output 12Vac, maximum 15VA				
EDGE/EDGE	Sensitive edge output, NC contact or resistive 8k2				
COM	STOP output common				
STOP	Safety STOP NC contact between STOP and COM. This input is considered as a safety device; the contact may be broken at any time, cutting out the automation at once and disabling all functions, including automatic closure				
NEG	Photocell power supply negative output				
PH-POW	Photocell power supply positive output, 24Vdc (without regulation, maximum 250mA				
PH1	Photocells (closure), NC contact between PH1 and COM. The photocell is tripped at any time during closure of the automation, stopping movement at once and reversing the travel direction				
PH2	Photocells (opening), NC contact between PH2 and COM. The photocell is tripped at any time during opening and closure of the automation, stopping movement at once; the automation will continue opening when the contact is restored if it was opening, or continue closing if it was closing (see parameter "PHOTO 2")				
COM	Common for PED, OPEN, CLOSE and SBS outputs				
PED	PEDESTRIAN opening command, NO contact between PED and COM. Used to open the gate partially, depending on the software setting				
OPEN	OPEN command, NO contact between OPEN and COM. Contact for the opening function				
CLOSE	CLOSE command, NO contact between CLOSE and COM. Contact for the closing function				
SBS	STEPPING command, NO contact between SBS and COM. Open/Stop/Close/Stop command, or as set in the software				

EVENT	DESCRIPTION	KEY TO MAIN CONTROL FLASHING LIGHT AND LEDS
opening	Gate opening	
closure	Gate closing	
automatic closure	Gate open with timed re-closure active	
stop during closure	Gate stopped during closure	
stop during opening	Gate stopped during opening	
open	Gate completely open without automatic re-closure	
closed	Gate completely closed	
programming	during the programming phase	2 quick flashes + pause + 1 flash
M1 obstacle	Motor 1 obstacle detected	4 quick flashes + pause, 3 times
M2 obstacle	Motor 2 obstacle detected	4 quick flashes + pause, 3 times
photo 1!	Photocell 1 tripped	2 quick flashes + pause, 3 times
photo 2!	Photocell 2 tripped	2 quick flashes + pause, 3 times
sensitive edge!	Sensitive edge tripped	5 quick flashes + pause, 3 times
pedestrian opening	Pedestrian opening in progress	
automatic pedestrian closure	Gate opening to pedestrian position with timed re-closure activated	
realignment	Realignment after a manual release	
FLASH/NLS error	Night Light System line overload	6 quick flashes + pause, 3 times
ELEC/IND error	Electric lock / gate open light line overload	6 quick flashes + pause, 3 times
Phototest error	Phototest error detected	3 quick flashes + pause, 3 times
Limit switches error!	Limit switch/mechanical end stop error detected	8 quick flashes + pause, 3 times

USING THE DISPLAY PROGRAMMER



When you plug in the programmer the first screen you will see displays the 14A controller. You will select the 14A controller in all installation cases with the Key operator kit.





BUTTON DESCRIPTIONS



Press to scroll up when navigating through the programmer.



Press⊽to scroll down when navigating through the programmer.



Press 💥 to cancel a selection and navigate to the previous screen within the programmer.



Press \checkmark to confirm a selection and navigate forward within the programmer.



← Indicates the current selection of the parameter being configured — to make changes to parameter settings press √ to enter and edit the parameter



* Indicates editing of parameter is available – scroll \triangle or \bigtriangledown to edit and then press \checkmark to confirm the selection



DISPLAY SETTINGS

The first time the display programmer is powered on, the user is prompted to select the language. Scroll $\Delta r \bigtriangledown$ to navigate to desired language and press $\sqrt[n]{}$ to confirm. If no language is selected (by pressing \gtrsim), the control unit will use the default language (ENGLISH) until the next time it is powered on.



Auto-learning of the travel stroke

The first time the control unit is powered up, an auto-learning procedure must be carried out to acquire fundamental parameters. This can be performed using the Quick Programming or Full Programming steps.

QUICK PROGRAMMING WITH DISPLAY PROGRAMMER

Note: If this programming mode is used, the slow down length will reset to the default values shown in the "Basic Settings" table parameter 10, with the same percentage during both opening and closing.



STEP 2: Select the type of installation and the type of motor to be installed by taking the following steps:



Press √ to select the 14A Controller



Press \bigtriangledown to scroll to motor type '4024'



Press
√ to select "Quick Programming"



Press √ to select motor type '4024'



Press √ to select "Swing Gate" installation



Press \checkmark to confirm deleting of current data and to program the gate

WARNING: Selecting a motor type different from the one connected may damage the system.

STEP 3: Check the Connection of the Safety Devices (Photo 1 – Photo 2 – Sensitive Edge – Stop Button):

During programming, you will be asked whether there are any safety devices connected to the system. If additional safety devices are connected later, they are simply activated in the relative menu (see advanced settings parameter table).



Press either:

- ightarrow if you DO NOT intend safety devices to be enabled during programming
- \checkmark if you DO intend safety devices to be enabled during programming

STEP 4: Continue through quick auto-learning of gate and slow down lengths (preset values) by taking the following steps:





Unlock motor(s) with Key on Transmitter



Manually position gate(s) in middle of travel stroke path



Lock motor(s) back in place with Key on Transmitter



SINGLE LEAF CONFIGURATION



Closing limit of MOTOR 1 will be automatically learned

Press any button to exit programming mode

DOUBLE LEAF CONFIGURATION



Press \triangle or \bigtriangledown to reverse direction of MOTOR 2 if gate is not traveling in the OPEN direction





Opening limit of MOTOR 2 will be learned automatically



Closing limit of MOTOR 1 will be learned automatically





Closing limit of MOTOR 2 will be learned automatically



Press any button to exit programming mode

RX4X RECEIVER



ADDING A TRANSMITTER USING THE DISPLAY

This procedure allows one or more transmitters to be memorized in the receiver.

WARNING: If there is not already at least one transmitter in the memory, the first transmitter entered will establish the type of code - rolling code or fixed code.



DELETING A TRANSMITTER USING THE DISPLAY

This procedure allows a transmitter to be deleted from the memory of the RX4X receiver using any transmitter button that has been memorized.



Press √ to enter the "RX4X" menu



Press button on the transmitter that has been memorized to erase the transmitter from the receiver's memory.

The \approx button can be pressed at any point to cancel the procedure.



Press ⊽to scroll to "Delete Transmitter"



After pressing the transmitter button the display will confirm the transmitter has been deleted.

The \gtrsim to exit the "Delete Transmitter" function.



Press √ to select "Delete Transmitter"

Additional transmitters can continue to be deleted by going through the same steps above.

NOTE: If no commands are given for 10 seconds the receiver automatically quits "Delete Transmitter" mode.

CLEARING THE MEMORY OF THE RX4X RECEIVER

This procedure is used to delete all transmitters in the receiver's memory.



Press √ to enter the "RX4X" menu



Press √ to confirm a delete of all transmitters in the RX4X memory



Press ⊽to scroll to "Delete All"





Press √ to select "Delete All"

The display will confirm the deletion of all memory in the receiver.

 $\operatorname{Press} \boxtimes$ to exit the "Delete All" function.



MEMORY LOCK/UNLOCK

This procedure is used to lock or unlock the memory of the RX4X receiver.



Press √ to enter the "RX4X" menu





Press √ to enter the "lock/unlock" parameter



* Indicates parameter is editable – scroll \bigtriangledown to desired selection and press \checkmark to confirm.

Press ⋈ to exit the "lock/unlock" parameter

SYSTEM INFORMATION

This procedure is used to check the serial number of the RX4X receiver and the current firmware within the receiver.



Press √ to enter the "RX4X" menu



The display will show the serial number of the RX4X receiver.

Press \bigtriangledown to scroll to the next option.





The display will show the current firmware loaded into the RX4X receiver.

Press ito exit the "System Info" function.



Press √ to select "System Info"

NIGHT LIGHTS

The Night Light system functions automatically (default setting) with the Eclipse warning light connected appropriately (the Eclipse light contains lighting sensors that automate the lighting system).



	PARAMETERS	DESCRIPTION	DEFAULT	MIN.	MAX.	UNIT
1	AUTOMATIC LIGHT	0 = Night Light System deactivated 1 = Night Light System active (automatically activated during learning of the stroke with the ECLIPSE flashing light connected)	0	0	1	
2	LIGHT INTENSITY	1 to 5 = Brightness at which LEDs switch on during the night	3	1	5	
3	EXTERNAL LIGHT LEVEL	 1 = Light sensor tripped with low outdoor light 2 = Light sensor tripped with medium outdoor light 3 = Light sensor tripped with bright outdoor light 	2	1	3	

The Night Light System switches the lights on or of 15 minutes after the set threshold is exceeded. This delay is to prevent false

switch-on or switch-off due to external light sources such as car headlights.

BASIC SETTINGS

Users may select the Basic Settings which allows modification of the control unit's basic parameters.



	PARAMETERS	DESCRIPTION	DEFAULT	MIN.	MAX.	UNIT
1	AUTOMATIC CLOSING TIME	Automatic re-closure time (0 = off) Seconds of delay before the gate re-closes automatically after opening	0	0	900	S
2	AUTOMATIC CLOSING AFTER TRANSIT	Re-closing time after transit (0 = off) Seconds of delay before the gate re-closes automatically after excitation of photocell 1 during opening or with the gate open.	0	0	30	S
3	SENSITIVITY	Motor sensitivity, sensitivity when detecting an obstacle. 1 = minimum sensitivity, maximum force on obstacle 10 = maximum sensitivity, minimum force on obstacle	3	0	10	

	PARAMETERS	DESCRIPTION	DEFAULT	MIN.	MAX.	UNIT
4	OPENING SPEED	Motor speed during opening 1 = minimum 2 = low 3 = medium 4 = high 5 = maximum	4	1	5	
5	SLOW DOWN OPENING SPEED	Motor speed during opening deceleration phase. 1 = minimum 2 = low 3 = medium 4 = high 5 = maximum	1	1	5	
6	CLOSING SPEED	Motor speed during closing 1 = minimum 2 = low 3 = medium 4 = high 5 = maximum	4	1	5	
7	SLOW DOWN CLOSING SPEED	Motor speed during closing deceleration phase. 1 = minimum 2 = low 3 = medium 4 = high 5 = maximum	1	1	5	
8	STEP BY STEP	SS configuration: 0 = Normal (OP-ST-CL-ST-OP-ST) 1 = Alternate STOP (OP-ST-CL-OP-ST-CL) 2 = Alternate (OP-CL-OP-CL) 3 = Apartment block – timer (always opens) 4 = Apartment block with immediate re-closure (always opens. Closes if gate is open)	0	0	4	
9	MOTOR 2 DELAY	Leaf 2 opening delay with gate closed 0 - 60 sec.	2	0	60	S
10	SLOW DOWN LENGTH	Deceleration distance 0 = Programming decelerations 1 to 100 = Motor deceleration percentage during opening and closure	0	0	100	% (step of 1)
11	ENERGY SAVING	Energy saving: enables photocell switch-off when gate is closed 0= disabled 1= enabled	0	0	1	

OPERATING THE GATE USING THE DISPLAY PROGRAMMER



Press √ to select the 14A controller



Press ∆ to operate the Step-by-step function (step-by-step parameter configured in Basic Settings)





Press \bigtriangledown to turn night lights on and off



Press √ to enter "Manual Controls" menu



Press \checkmark for pedestrian opening/closing to exit the property

DIAGNOSTIC

A number of parameters, including the current absorption or motor speed, can be viewed at any time using this function.

To enter the Diagnostics menu and view parameter numbers please take the following steps:









Press √ to enter the "Diagnostic" menu

56

POSITION ML %

Displays "Position"

value of MOTOR 1

The following diagnostics will be displayed in real time as the gate is opening/closing:

Press \bigtriangledown to scroll through the following diagnostics while the gate is actively moving





Displays "Current" value of MOTOR 1



Displays "Current"

value of MOTOR 2

Displays "Speed" value of MOTOR 1

Displays "Speed" value of MOTOR 2

The following diagnostics can be viewed at any time, whether the gate is moving or stationary:



Displays "Total Cycles" of gate system



Displays number of cycles until maintenance is needed on gate system



Displays Software Version of 14A controller



Displays "Position" value of MOTOR 2

FULL PROGRAMMING WITH THE DISPLAY PROGRAMMER

Note: If this programming mode is used, both the opening and the closing slow down length can be customized. If no customized settings are made during programming, the control unit will set the default values automatically.



motor type different from the one connected may damage the system.



Press √ to confirm deleting of current data and to program gate



Press \bigtriangledown to scroll to motor type '4024'

Press √ to select motor type '4024'

STEP 3: Check the Connection of the Safety Devices (Photo 1 – Photo 2 – Sensitive Edge – Stop Button):

During programming, you will be asked whether there are any safety devices connected to the system. If additional safety devices are connected later, they are simply activated in the relative menu (see advanced settings parameter table).



(STEP 3 continued)



NOTE: If there are safety devices connected, during travel stroke programming, the safety devices can be deactivated to prevent accidental interruption of this operation. At the end of the auto learning procedure, the safety devices selected earlier will be reactivated.

Press either:

- % if you DO NOT intend safety devices to be enabled during programming
- \checkmark if you DO intend safety devices to be enabled during programming





Press √ to set the MOTOR 1 deceleration point on the closing direction



Closing limit of the MOTOR 1 will be automatically learned





Press √ to set the MOTOR 1 deceleration point on the closing direction



ADVANCED SETTINGS

Users may select the "Advanced Settings" menu which allows modification of the control units advanced parameters.



	PARAMETERS	DESCRIPTION	DEFAULT	MIN.	MAX.	UNIT
1	РНОТО 1	Use of PHOTO1 when starting <u>from closed</u> 0 = PHOTO 1 deactivated 1 = PHOTO1 is checked 2 = the gate starts even with PHOTO1 activated	2	0	2	
2	РНОТО 2	Use of PHOTO2 0 = PHOTO 2 deactivated 1 = enabled during both opening and closing OP/CL 2 =only enabled during opening OP	1	0	2	
3	PHOTOTEST	Photo-device test 0 = off 1 = PHOTO1 on 2 = PHOTO2 on 3 = PHOTO1 and PHOTO2 on	0	0	3	

	PARAMETERS	DESCRIPTION	DEFAULT	MIN.	MAX.	UNIT
4	EDGE TYPE	Sensitive edge type 0 = off 1 = 8k2 sensitive edge 2 = NC contact	2	0	2	
5	SAFETY EDGE	Sensitive edge tripping mode 0= only tripped during closure with direction reversal 1 = stops the automation (during both opening and closure) and retreats from the obstacle (travels short distance in opposite direction)	0	0	1	
6	PEDESTRIAN OPENING LENGTH	Pedestrian opening	50	30	100	% (step of 1)
7	AUTOMATIC CLOSING FROM PEDESTRIAN OPEN	Time for automatic closure from pedestrian opening (0=off) 1 to 900 Seconds of delay before automatic closure from pedestrian opening	0	0	900	S
8	FLASH LIGHT	Flashing light output setup 0 = Fix 1 = Flashing	1	0	1	
9	PRE-FLASHING	Pre-flashing time (0 = off)	0	0	20	S
10	COURTESY LIGHT START	Courtesy light setup 0 = ON at end of operation for courtesy light time 1 = ON if gate not closed + courtesy light duration time at end of operation 2 = ON if courtesy light timer has not gone out since start of operation	0	0	2	
11	COURTESY LIGHT TIME	Courtesy light duration time (0 = off)	30	0	900	S
12	LIGHT INTENSITY AT END OF MOVEMENT	0 = light off after operation 5 = maximum brightness with motor stopped	2	0	5	
13	STOP BUTTON	0 = NC stop button not connected 1 = NC stop button connected	1	0	1	
14	DEAD MAN	0 = off 1 = on (safety devices disabled)	0	0	1	
15	GATE OPEN INDICATOR	0 = deactivated 1 = gate open light ON/OFF 2 = gate open light proportional	0	0	2	
16	MAINTENANCE	Service interval cycle threshold	10	1	200	x 1000 cycles
17	MAINTENANCE FLASH	Enabling of continuous flashing when service is required (only active with gate closed). 0 = off 1 = on	0	0	1	
18	ELECTROLOCK ACTIVATION	0 = off Activated for from 1 to 20 seconds when the motors start to open the gate	2	0	20	S

	PARAMETERS	DESCRIPTION	DEFAULT	MIN.	MAX.	UNIT
19	WATER HAMMERING IN OPENING	From motor M1 closed 0 = off Motor M1 activated for from 1 to 30 seconds in the closing direction to ensure that the electric lock releases	0	0	30	S
20	WATER HAMMERING IN CLOSING	From motor M1 closed 0 = off Motor M1 activated for from 1 to 30 seconds in the closing direction to ensure that the electric lock engages	0	0	30	S
21	MOTOR RELEASE AT STOP	Motor release from limit switch. Useful for lightweight gates 0 = off 1 to 10 release levels (1 = minimum release, 10 = maximum release)	0	0	10	
22	START UP BOOST	High-speed motor start-up. Useful for heavy gates in winter 0 = off 1 = on	0	0	1	
23	CLOSING DELAY M 1	Leaf 1 closing delay with gate open 0 = Off 1 = 1 to 180 Seconds On	1	0	180	S
24	ENCODER	1 = Off (use of virtual encoder) 2 = On (use of motor's physical encoder)	1	1	2	
25	ENCODER PULSES	1 to 10 pulses per revolution of the physical encoder (only with 24 set as "2")	1	1	10	
26	DEFAULT	Restoring the default values	0	0	1	



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, to check that the installation complies with the relevant regulatory requirements, especially the EN12445 standard which specifies the test methods for gate and door automation systems.

Testing

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

ensure that the recommendations in - Safety Warnings - have been complied with

check that the gate or door is able to move freely once the automation system has been released and is well balanced, meaning that it will remain stationary when released in any position; check that all connected devices (photocells, sensitive edges, emergency buttons, etc.) are operating correctly by performing gate or 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.

Authorizing

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

The system's technical file 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 plaque with the details of the automation, the name of the person who authorized it, the serial number and year of construction and the CE marking on the gate or door:

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;

WARNING - after detecting an obstacle, the gate or door stops during its opening travel and automatic closure is disabled; to restart operation, the user must press the control button or use the transmitter.

CONTROLLER SAFETY PRECAUTIONS

CAUTION – ORIGINAL INSTRUCTIONS - important safety instructions. Compliance with the safety instructions below is important for personal safety. 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.

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.

WARNING - 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;

All operations requiring opening of the protective housings of various automation system components must be performed with the control unit disconnected from the power supply. If the disconnect device is not in a visible location, affix a notice stating: "MAINTE-NANCE 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 "commis sioning" 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 com ply with the relevant regulations and be constructed to good workmanship standards;

Users are advised to install an emergency stop button close to the automation system (connected to the control PCB STOP input) to allow the door to be stopped immediately in case of danger;

This device is not intended for use by persons (including children) with impaired physical, sensory or mental capacities, or with lack of experience or skill, unless a person responsible for their safety provides surveillance or instruction in use of the device;

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.

WARNING - The automation system component packaging material must be disposed of in full observance of current local waste disposal legislation.

WARNING - The data and information in this manual are subject to modification at any time, with no obligation on the part of Key Automation S.r.I. to provide notice.

INSTRUCTIONS AND PRECAUTIONS FOR THE END USER

Key Automation S.r.I. produces systems for the automation of gates, garage doors, automatic doors, roller blinds and car-park and road barriers. However, Key Automation is not the manufacturer of your complete automation system, which is the outcome of the analysis, assessment, choice of materials and installation work of your chosen installer. Every automation system is unique, and only your installer has the experience and skill required to produce a safe, reliable, durable system tailored to your needs, and above all that complies with the relevant regulatory standards. Although your automation system complies with the regulation safety level, this does not rule out the presence of "residual risk", meaning the possibility that hazards may occur, usually due to reckless or even incorrect use. We would therefore like to give you some advice for the correct use of the system:

• before using the automation system for the first time, have the installer explain the potential causes of residual risks to you.

 keep the manual for future reference, and pass it on to any new owner of the automation system;

 reckless use and misuse of the automation system may make it dangerous: do not operate the automation system with people, animal or objects within its range of action;

• a properly designed automation system has a high level of safety, since its sensor systems prevent it from moving with people or obstacles present so that its operation is always predictable and safe. However, as a precaution children should not be allowed to play close to the automation system, and to prevent involuntary activation, remote controls must not be left within their reach.

 as soon as any system malfunction is noticed, disconnect the electricity supply and perform the manual release procedure. Never attempt repairs on your own; call in your installation engineer. In the meantime the door or gate can be operated without automation once the geared motor has been released using the release key supplied with the system. In the event of safety devices out of service arrange for repairs to the automation immediately;

• in the event of a breakdown or power supply failure: while waiting for the engineer to come (or for the power to be restored if your system is not equipped with buffer batteries), the automated system can be used just like any non-automated installation. To do this, the manual release procedure must be carried out; manual release and operation: first bear in mind that the release procedure can only be carried out with the door or gate stationary.

• Maintenance: Like any machine, your automation system needs regular periodic maintenance to ensure its long life and total safety. Arrange a periodic maintenance schedule with your installation engineer. Key Automation recommends that maintenance checks should be carried out every six months for normal domestic use, but this interval may vary depending on the level of use. Any inspection, maintenance or repair work must only be carried out by qualified staff.

• Never modify the automation system or its programming and setup parameters: this is the responsibility of your installation engineer.

• Testing, routine maintenance and any repairs must be recorded by the person who performs them and the documents must be conserved by the system's owner.

The only procedures you are capable of, and which you are recommended to perform, are cleaning of the photocell glass and removal of any leaves or stones that may obstruct the automation system. To prevent anyone from activating the gate or door, release the automation system before starting. Clean only with a cloth dipped in a little water.

• At the end of its useful life, the automation system must be disposed of by qualified personnel, and the materials must be recycled or disposed of in compliance with the legislation locally in force.

If after some time your transmitter seems to have become less effective, or stops operating completely, the battery may be flat (depending on the level of use, this may take from several months up to more than a year). You will realize this because the transmission confirmation light does not come on, or only lights up for a very short time.

Batteries contain pollutants: do not dispose of them with normal waste but follow the methods specified by the local regulations.

Thank you for choosing Key Automation S.r.I.; please visit our Internet site <u>www.keyautomation.it</u> for further information.

INSTALLING THE BACKUP BATTERY











CT202 24





WARRANTY INFORMATION

The warranty period of this product is 24 months, beginning from the manufacturing date. During this period, if the product does not operate correctly, due to a defective component, the product will be repaired or replaced at the sole discretion of Transmitter Solutions. This warranty does not extend to the product casing which can be damaged by conditions outside of the control of Transmitter Solutions. This warranty is further limited by the following disclaimer of warranty and liability:

EXCEPT AS SET FORTH ABOVE, TRANSMITTER SOLUTIONS MAKES NO WARRANTIES REGARDING THE GOODS, EXPRESS OR IMPLIED, INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. BUYER MAKES NO RELIANCE ON ANY REPRESENTATION OF TRANSMITTER SOLUTIONS, EXPRESS OR IMPLIED, WITH REGARD TO THE GOODS AND ACCEPTS THEM "AS-IS/WHERE-IS". TRANSMITTER SOLUTIONS SELLS THE GOODS TO BUYER ON CONDITION THAT TRANSMITTER SOLUTIONS WILL HAVE NO LIABILITY OF ANY KIND AS A RESULT OF THE SALE. BUYER AGREES THAT TRANSMITTER SOLUTIONS SHALL HAVE NO LIABILITY FOR DAMAGES OF ANY KIND, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING INJURIES TO PERSONS OR PROPERTY, TO BUYER, ITS EMPLOYEES OR AGENTS, AS A RESULT OF THE SALE. BUYER ALSO AGREES TO HOLD TRANSMITTER SOLUTIONS HARMLESS FROM ANY CLAIMS BUYER, OR ANY THIRD PARTY, MAY HAVE AS A RESULT OF BUYER'S USE OR DISPOSAL OF THE GOODS. BUYER HAS READ THIS DISCLAIMER AND AGREES WITH ITS TERMS IN CONSIDERATION OF RECEIVING THE GOODS.



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