

p Instructions and warnings for installation and use





Gear motor for hinged gates

CE



Management System ISO 9001:2015

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EN

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 12445; 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.

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;

▲ 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 <u>www.keyautomation.it</u>

2.1 - Description of the product

RAY gear motors are destined to be installed in systems for the automation of gates with hinged doors.

RAY gear motors have been designed and constructed to be fitted onto hinged doors within the weight limits indicated in the technical specifications table. The use of gear motors for applications which differ from those indicated above is prohibited.

2.2 - Model and technical characteristics

Code	Description
RAY2524	Gear motor for hinged doors with max length 3 m or max weight 500 Kg, 24 Vdc
RAY4024E	Gear motor for hinged doors with max length 4 m or max weight 600 Kg with encoder, 24 Vdc
RAY40	Gear motor for hinged doors with max length 4 m or max weight 600 Kg, 230 Vac
RAY40110	Gear motor for hinged doors with max length 4 m or max weight 600 Kg, 110 Vac
RAY2224	Gear motor for hinged doors with max length 3 m or max weight 300 Kg, 24 Vdc
RAY4024R	Gear motor for hinged doors with max length 4 m or max weight 500 Kg, 24 Vdc, reversible
RAY3024F	Gear motor for hinged doors with max length 3 m or max weight 300 kg, 24 Vdc with encoder

TECHNICAL DATA		MODELS						
		RAY2524	RAY4024 RAY4024E	RAY40	RAY40110	RAY2224	RAY4024R	RAY3024F
TECHNICAL SPECIFICATIONS	Speed	2,6 cm/s	1,5 cm/s	1,6 cm/s	1,6 cm/s	2,6 cm/s	3 cm/s	3,8 cm/s
	Thrust force	1500 N	2000 N	2000 N	2000 N	1500 N	1000 N	1000 N
	Working cycle	80%	80%	40%	40%	80%	80%	50%
	Opening time at 90°	18-25*	20-25*	20-25*	25 sec	18-25*	15-20*	10-15*
	Working stroke	415 mm	415 mm	415 mm	415 mm	415 mm	415 mm	415 mm
	Control board	14AB	14AB2	CT202	CT202V120	CT202 24	14AB2	14AB2F
	Power supply	24 Vdc	24 Vdc	230 Vac	110 Vac	24 Vdc	24 Vdc	24 Vdc
	Absorption	3,5 A	5 A	1,2 A	2,2 A	3,5 A	5 A	5 A
	Engine power	85 W	120 W	280 W	280 W	85 W	120 W	120 W
	Capacitor	-	-	8 µF	20 µF	-	-	-
	Thermoprotection	-	-	150 °C	150 °C	-	-	-
	Integrated lights	si	si	-	-	-	si	si
	Degree of protection	IP44	IP44	IP44	IP44	IP44	IP44	IP44
	Dimensions (L - P - H)	844-100-104	844-100-104	844-100-104	844-100-104	844-100-104	844-100-104	844-100-104
		mm	mm	mm	mm	mm	mm	mm
	Weight	6 Kg	8 Kg	8 Kg	8 Kg	6 Kg	8 Kg	8 Kg
	Operating temperature	-20°+55°C	-20°+55°C	-20°+55°C	-20°+55°C	-20°+55°C	-20°+55°C	-20°+55°C
	Noise emission level	≤ 70dB(A)	≤ 70dB(A)	≤ 70dB(A)	≤ 70dB(A)	≤ 70dB(A)	≤ 70dB(A)	≤ 70dB(A)

* with optimized fixing dimensions

3 - 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 limits 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

4.1 - Installation

ATTENTION !

The installer must verify that the working temperature range stated on the automation device is suitable for the location where it is installed.

ATTENTION !

The automation system must be equipped with a pressure-sensitive edge protecting all possible crushing points (hands, feet, etc.) in accordance with the requirements of the EN 13241-1 standard.

ATTENTION !

The gate must have limit stops in the open and closed positions which prevent it from travelling over the permitted limits. Before proceeding with the installation, check the integrity of the product and that all components are present in the package (Fig. 3). Also make sure that the mounting area of the gear motor is Also check that the gearmotor's installation zone is compatible with its overall dimensions (Fig.1).

Check the opening angle permitted by the bracket fixing points using the graph in Fig.4 for inward opening. For outward opening, refer to the graph in Fig.4.1.

Fig.6 shows a typical installation:

Gear motors (1) Photocells (2) Columns for photocells (3) Flashing light with antenna (4) Key switch or digital keypad (5) Control unit (6) Pressure-sensitive edge (7)

4.2 - Installing the rear fixing bracket with inward opening

The fixing position of the rear bracket is determined according to the graph (Fig. 4).

Important: installations where the values of "A" and "B" (Fig. 4) are as similar to each other as possible are preferred (I.o.= optimal line). Identify dimension C found and trace a horizontal line that

determines the value of dimension B (*) as shown in the example of fig. 4b; the meeting point with line "I.o." (optimal line) determines the value of the angle of maximum opening; from this point, trace a vertical line as shown in the example of fig. 4b to determine the value of dimension A.

If the angle found does not correspond to the requirements, adapt dimension A and if necessary dimension B, so they are similar. (*) Do not use values of dimension B below the line "I.s." If necessary, cut the rear bracket (Fig. 7) to obtain the value "B", then weld the fixing bracket to the wall.

Secure the bracket to the wall using welding, screws or bolts (not included).

4.3 - Installing the front fixing bracket with inward opening

The front bracket must be fixed to the door according to dimension "E" of Table 1 (Fig.5).

Note: If you mount the closing limit switch, reduce the value "E" of

40 mm.

The front bracket must be fixed as the same height as the rear bracket (Fig.8).

4.4 - Installing the rear fixing bracket with outward opening

The EXRB accessory is required for outward opening. Measure distance "C1". If distance "C1" is 130 mm or less, refer to Fig. 5.1A; if it is more than 130 mm, refer to Fig 5.1B.

To establish distance "B1" draw a horizontal line from the value of distance "C1" (Fig.4.1); the point where the areas of the graph meet

provides the possible values of point "A1". After fastening the rear fixing bracket to the wall, screw on the optional brackets EXRB as shown in Fig. 5.1A or Fig. 5.1B.

4.5 - Installing the front fixing bracket with outward opening

The front bracket must be fixed to the leaf in accordance with distances "E1" (Tab.2, Fig.5.1) and must be fixed at the same height as

the rear bracket (Fig.8).

4.6 - Installing the gear motor

Open the release door and remove the 2 screws that secure the rear cover (Fig. 9A).

Remove the top cover first sliding it slightly backward (Fig. 9A) Place the gear motor against the rear bracket and insert the fixing screw (Fig.9B).

4.7 - Electrical connections

Loosen the cable gland and insert the power cord (Fig.13). connect the wires of the power cable to the terminal block according to the wiring diagram (Fig.14). Screw the cable gland.

Replace the top cover, first sliding it slightly forward. Open the door and tighten the 2 screws that secure the rear cover.

Insert the pin of the sliding bracket into the bush of the front bracket and secure it with the screw and washer provided (Fig.9C).

Tighten without applying too much force, using the nut and washer

of the screw of the rear bracket fitted earlier (Fig.9D).

4.8 - Setting of the mechanical limit switch while opening

Release the gear motor (Fig.11).

Loosen the screw on the mechanical limit switch until it is able to slide.

Open the door manually to the point of desired opening. Bring the mechanical limit switch up to pin of the slide bracket and secure it with the screw (Fig.12).

4.9 - Replacement of the leds - 24 Vdc

Turn off the power supply. With the help of a screwdriver remove the lower screw (Fig.15a). Remove the cover and the LED strip (Fig.15a). Disconnect the connector (Fig.15b). Connect the new LEDs and insert them into the mask. Insert the mask first inserting the side of the seal and then securing it with the screw.

If you need to also adjust the mechanical limit switch in closing

bringing the door to the point of closure you want.

switch installed.

(optional FCRAY), repeat the same procedure, this time manually

N.B. The working travel stroke is reduced by 40 mm for every limit

5- TESTING AND COMMISSIONING THE AUTOMATION

The 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, in particular the EN12445 standard, which specifies the testing methods for the automation of doors and gates.

5.1 Testing

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

Check that they meet the guidelines in Chapter 1 - 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.

5.2 Commissioning

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

You must prepare, and keep for 10 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 commissioning, 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.

6 - IMAGES

Fig. 1 EN - Space dimensions





Fig. 4.

EN - Inward opening angle graph



Fig. 5 IT

EN - "A" and "B" quotes representation

EN A= distance between the hinge axis and the axis of the hole for the rear mounting.

E= distance between the hinge axis and the axis of the hole for the front mounting.





Fig. 5.1

EN - "A" and "B" quotes representation



Fig. 6





Fig. 7 EN - Cutting the rear bracket



Fig. 9

EN - Securing the gear motor and rear bracket



Fig. 11







Fig. 13-14

EN - Power connections





EN - Replacement of the leds



DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

The undersigned Nicola Michelin, General Manager of the company

Key Automation S.r.l., Via Meucci, 23 - 30027 San Donà di Piave (VE) - ITALIA

declares that the product type:

RAY

Electromechanical piston for swing gates

Models:

RAY2524, RAY2224, RAY4024E, RAY3024F, RAY4024ER RAY40, RAY40110

Is in conformity with the following community (EC) regulations:

Direttiva macchine / *Machinery Directive* 2006/42/EC Direttiva compatibilità elettromagnetica / *EMC Directive* 2014/30/EU Direttiva bassa tensione / *Low voltage Directive* 2014/35/EU Direttiva radiofrequenza / *RED Directive* 2014/53/EU Direttiva RoHS / *RoHS Directive* 2011/65/UE

In accordance with the following harmonized standards regulations:

ETSI EN 301489-3:2013, ETSI EN 301489-1:2011 EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN 61000-3-2:2014, EN 61000-3-3:2013 EN 61000-6-2:2005, EN 61000-6-3:2007 EN 60335-1:2012 + A1 + A11; EN 60335-2-103:2015 EN 55014-1:2006 + A1 + A2; EN 55014-2:2015 EN 62233:2008

Declares that the technical documentation is compiled in accordance with the directive 2006/42/EC Annex VII part B and will be transmitted in response to a reasoned request by the national authorities.

He also declares that is not allowed to use the above mentioned product until the machine, in which this product is incorporated, has been identified and declared in conformity with the regulation 2006/42/EC.

San Donà di Piave (VE), 21/02/17

Amministratore Delegato General Manager Nicola Michelin

1,06 40.

Key Automation S.r.I. Via Meucci, 23 30027 San Donà di Piave (VE) P.IVA 03627650264 C.F. 03627650264 info@keyautomation.it

Capitale sociale 154.000,00 i.v. Reg. Imprese di Venezia 03627650264 REA VE 326953 www.keyautomation.it



Key Automation S.r.I. Via Meucci 23 - 30027 San Donà di Piave (VE) T. +39 0421 307456 - info@keyautomation.it www.keyautomation.com