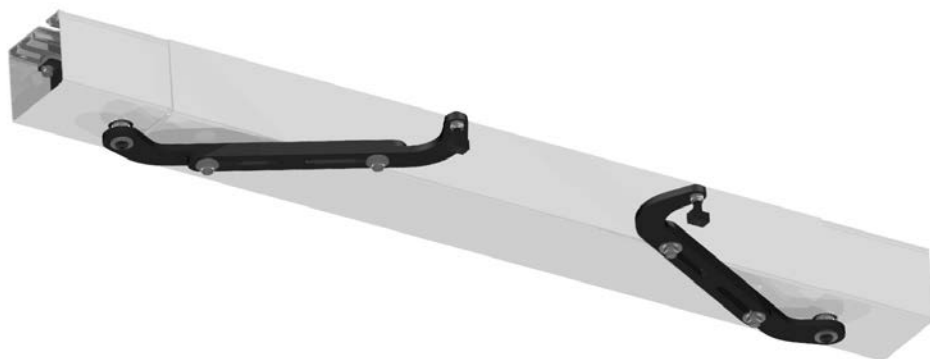


## ACTUATOR FOR CASEMENT BLINDS



### USER AND MAINTENANCE MANUAL

English version

*This user manual is an integral part of the machine and must be kept in a suitable place so that it remains intact and can be consulted throughout the life of the machine.*

*chine.*

The manufacturer is entitled to make changes to the production and the manual, without this implying an obligation to update the previous production and manuals.



### PREFACE

Dear customer, we thank you for your choice of our equipment, which will certainly prove to be important, especially over time. We invite you to carefully follow the instructions given in this manual, which will help you to use your equipment in the best possible way and to maintain its characteristics over time.








CHIAROSCURO SAS di Girelli Marco & C.

## 1. GENERAL INFORMATION

This user manual is an integral part of the equipment and constitutes the indispensable support for its installation and correct use. Read it carefully and completely before installing and using the equipment. The manual must accompany the equipment in the event of resale. Partial or total reproduction of this document is forbidden without the written authorisation of CHIAROSCURO SAS.

### 1.1 DEFINITIONS AND SYMBOLS


The following paragraphs provide a set of definitions, terminologies and symbols used in the drafting of this manual.

SIMBOLO	DESCRIZIONE
	<b>User:</b> (U.) unskilled operator capable of operating the equipment under normal operating conditions and for simple maintenance tasks.
	<b>Electromechanical operator:</b> (O.E.) technician able to install mechanical - hydraulic - pneumatic components and to carry out adjustments, maintenance or repairs and to work in the presence of voltage inside cabinets, junction boxes and electrical installations.
	<b>Manufacturer's technician:</b> (T.C.) qualified technician made available by the manufacturer to carry out operations of a complex nature in particular situations or, in any case, as agreed with the user. The skills are, as appropriate, mechanical and/or electrical and/or electronic and/or software.
	<b>Note:</b> Indicates important indications or information contained in the manual which should be read, with particular attention, for the best use of the equipment.
	<b>Danger:</b> Indicates a situation that could lead to injury, even death, or serious damage to health.
	<b>Attention:</b> Indicates a situation that could cause, even indirectly, damage to persons, property and the environment, including economic consequences.
	<b>Warning:</b> Indicates that particular attention must be paid to the indications. Failure to do so may lead to malfunctions or dangerous conditions or damage.



## 2. IDENTIFICATION OF THE MANUFACTURER

The nameplate attached to the top of the actuator contains all the identification data of the ST50/ST100 actuator.

	Made in Italy <input type="checkbox"/> ST50.2A.80 <input type="checkbox"/> ST50.2A.120
S 33 0464 424715	<input type="checkbox"/> ST50.1A.60
Power Supply	110-230VAC ±10% <sup>+65°C</sup> <sub>-15°C</sub>
Max power absorption	60 W
Max torque	50,0 Nm
Device degree of protection	IP20
Product-Lot-Nr:	2020 <input type="checkbox"/> 2021 <input type="checkbox"/>
www.chiaroscuro.eu	

On the label, applied to all drives, are indications regarding the model of automation used, power supply voltages, absorption, speed of movement, degree of electrical protection, operating temperatures, batch number and year of manufacture of the automation and compatibility

with the European mark. 

*Fig.3.1 Example of a label (the data shown are purely indicative, the actual values are shown on the equipment label on the automation itself).*

### 2.1 INFORMATION ON TECHNICAL SUPPORT AND MAINTENANCE

Please contact the Service Centre to report faults:

## CHIAROSCURO

**CHIAROSCURO SAS di Girelli Marco & C.**

C.so General A. Cantore 23 - 38068 Ala (TN) Italia

Tel : +39 0464 424715 fax : +39 0464 712027

Email : [info@chiaroscuro.eu](mailto:info@chiaroscuro.eu) site: [www.chiaroscuro.eu](http://www.chiaroscuro.eu)

For communications, information requests or any orders for accessories or spare parts, please send your requests to [info@chiaroscuro.eu](mailto:info@chiaroscuro.eu)



*During the period of validity of the Guarantee, the customer must scrupulously follow the instructions given in this manual. Failure to do so will invalidate the warranty and will not result in any problems or malfunctions of the equipment (please read the warranty conditions attached to this manual carefully).*



*The manufacturer, in order to adapt the equipment to technological progress and specific production requirements, may decide, without prior notice, to make changes to the equipment without any obligation to update the previous production and manuals. Furthermore, if the illustrations in this manual differ slightly from the equipment in your possession, the safety and operating instructions of the same are always guaranteed.*



### 3. FEATURES AND TECHNICAL INFORMATION

MODEL	ST50.2A	ST50.1A SX/DX	ST100.2A	ST100.1A SX/DX
Number of doors	2	1 sx / 1 dx	2	1 sx / 1 dx
Min-max wall opening width	80-160 cm - 2 doors	60 - 80 cm - 1 door	160-250 cm - 2 doors	80 - 125 cm - 1 door
Max. surface	3,6 mq - 2 doors	1,8 mq - 1 door	5 mq - 2 doors	2.5 mq - 1 door
Max. door weight	70 kg		140 Kg	
Dimensions LxHxD	77x67x800 / 1600 mm	77x67x600 / 800 mm	77x67x1600 / 2500 mm	77x67x800 / 1250 mm
Power supply voltage	110 ÷ 230 VAC			
Max. current consumption	~ 0,45 A			
Obstacle detection impact force	< 150 N			
Max. torque	50 Nm		100 Nm	
180° manoeuvre time	25 sec. - 2 ante	20 sec. - 1 anta	50 sec. - 2 ante	40 sec. - 1 anta
Working cycle	20 cycles/hour			
Limit switch adjustment	With thrust control			
Degree of protection of electrical devices	IP 32			
Irreversible arm	Standard			
Housing colour	Matt white Ral 9010 / Matt black Ral 9005			
Articulation colour	Matt black Ral 9005 / Matt white Ral 9010			
Housing and articulation colour Ral at choice	No, natural aluminium casing and silver galvanised joint available			
Electric lock	yes on request applicable to window sill/threshold			
Integrated radio receiver	yes on request also available separately			



*The blind develops a maximum torque of 50 Nm. with ST50 and 80 Nm. with ST100. If there are obstacles or wind in the way of the movement of the sash, the automation blocks the motor drive for safety.*



### 3.1 LEGAL REFERENCES

The legislative references applied and the national and harmonised technical standards applied for compliance with the legislative references above are:

Year of construction from **2019**

**Meet the applicable essential requirements of the Machinery Directive 2006/46/EC, Annex I Art. 1.1.2, 1.1.3, 1.1.5, 1.2.1, 1.2.3, 1.2.6; 1.3.2, 1.3.4, 1.3.9 ; 1.5.1, 1.5.7, 1.5.8, 1.5.9, 1.5.10, 1.5.11 ; 1.7.1, 1.7.1.1, 1.7.3, 1.7.4.2, 1.7.4.3**

**The relevant technical documentation shall be compiled according to Annex VII, section B**

The person authorized to constitute the relevant technical documentation is: Girelli Marco  
Upon a suitably substantiated request from the national authorities, the above technical documentation will be made available, via e-mail, within a time compatible with its importance.

In addition, the above-mentioned product complies with the relevant provisions of the following Directives:

- 1. - 2014/30/EU Electromagnetic Compatibility Directive**
- 2. 2014/35/EU Low Voltage Directive (LVD)**
- 3. - 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive)**
- 4. - 2015/862/EU Delegated Directive amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council with regard to the list of substances with restricted use**
- 5. Translated with [www.DeepL.com/Translator](http://www.DeepL.com/Translator) (free version)**

And of the following harmonized standards and/or technical specifications:

**EN 60335-2-103; EN 61000-6-3:2007 + A1:2011 + AC:2012; EN IEC 61000-6-2:2019  
EN60335-1:2012 + AC:2014 + A11:2014; EN 50581:2012**



*At the customer's request, a version of the ST50/ST100 system is available equipped with a radio receiver module and transmitters operating in the 433MHz band in compliance with the requirements of Directive 1999/95/EC (radio and telecommunications equipment) and subsequent amendments*

### 4. GENERAL DESCRIPTIONS

The ST50/ST100 is an automation for opening/closing hinged shutters (frames). It consists of a high-performance non-reversible automation coupled with highly resistant metal gears. The possibility of

closing or opening with simple manual controls placed in remote positions (remote control) or with automation systems (home automation) allows the user to make the most of the protection offered by the shutters in the various environmental conditions present (e.g. hot, cold, protected from insects, etc.).

## 5. RECEPTION AND STORAGE

### 5.1 CONTROL ON RECEIPT OF EQUIPMENT

On receipt of the equipment, remove the packaging and check the integrity of the contents.

### 5.2 CONTENTS OF THE BOX:



1	Pz.1	Automation with telescopic cover complete with standard slotted arms
2	Pz.1	Technical installation manual
3	Pz.10	Fischer kit, screws for fixing aluminium base (screw + dowel + washer).
4	Pz.6	Countersunk flat head screws with cross, size 3.5x25 for fixing sliding rails
5	Pz.2	Standard slotted joint complete with forearm and end piece (accessory bracket)
6	Pz.2	Sliding rails, length 80 cm. (optional to customer size)
7	Pz.2	Semi-rigid cardboard template for making holes in the upper vault
8	Pz.3	Wedges for carter opening



*If the product, upon receipt, is damaged and/or has missing parts and/or defects/malfunctions are detected, do not attempt to repair the equipment, but contact the service centre, indicating the model, code and serial number of the equipment (see chapter "Manufacturer's identification").*



*It is compulsory to use the screws supplied for fixing the joints and the slider. The package includes the basic supply of screws for fixing to the ceiling and specific screws for fixing the track to wooden sashes: for this type only, the installer may assess the integration and use of complementary screws, provided that these screws respect the dimensional characteristics of those supplied and that they allow the inspection, disassembly and maintenance of the product (the use of turbo screws is not permitted).*



### 5.3 STORAGE



*If the equipment is not used for a long period of time, store it in a dry, clean and dust-free place.*



*In the event of material storage exceeding 24 months from the date of registration, CHIAROSCURO SAS will provide the Warranty provided for in the General Conditions of Sale.*

### 6. MECHANICAL ASSEMBLY INSTRUCTIONS



*Electromechanical operator: (O.E.) a technician able to install mechanical - hydraulic - pneumatic components and to carry out adjustments, maintenance or repairs and to work in the presence of voltage inside cabinets, junction boxes and electrical installations.*



*The automation supplied is a professional product for free installation. Installation must be carried out by a qualified electromechanical operator. CHIAROSCURO SAS is exempt from any liability in the event of incorrect installation and/or installation by unqualified operators.*

#### 6.1 TOOLS REQUIRED FOR ASSEMBLY

The following tools and materials are required for installation:

Drill / Hammer drill	Power and control cable 4x1
Screwdriver	Phillips and slotted screwdriver
Wall drill diam. 8mm.	Screwdriver with Allen insert no. 4
Iron drill diam. 4mm.	Scissors for template cutting



*(DO NOT use drills or impact wrenches to fix the aluminium bases. Use clutched drills/screws only. Do not exceed 150MPa of pressure on the material).*



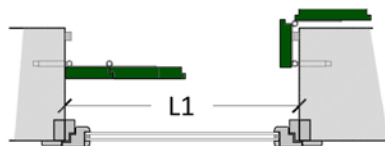
*The list shown is not supplied with the ST40 product, but is necessary for correct installation on the bench. D.P.I. or other is the responsibility of the O.E. depending on the field installation itself.*



## 6.2 IDENTIFYING THE TYPE OF APPLICATION



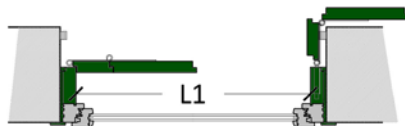
**TIP.1** Bandella dritta  
Cardine a murare



**TIP.4** Bandella snodata alla padovana  
Cardine a murare



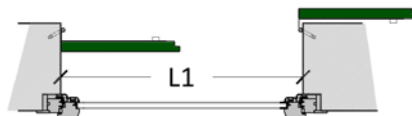
**TIP.2** Bandella dritta  
Cardine su monoblocco



**TIP.5** Bandella snodata alla padovana  
Cardine su monoblocco



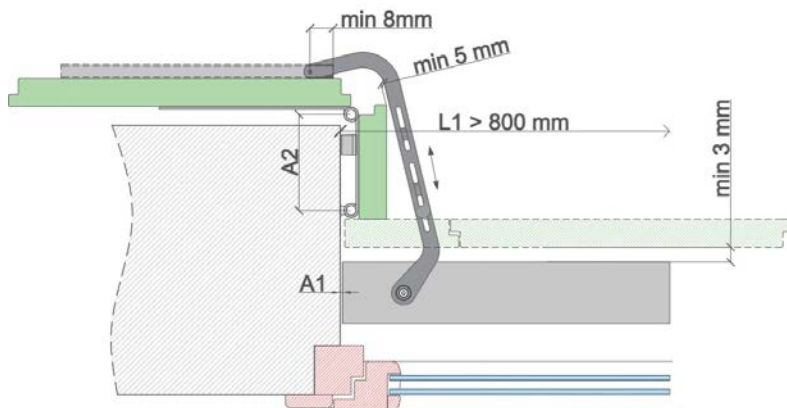
**TIP.3** Cardine superamento spalletta  
su monoblocco



**TIP.6** Bandella zancata  
Cardine a murare

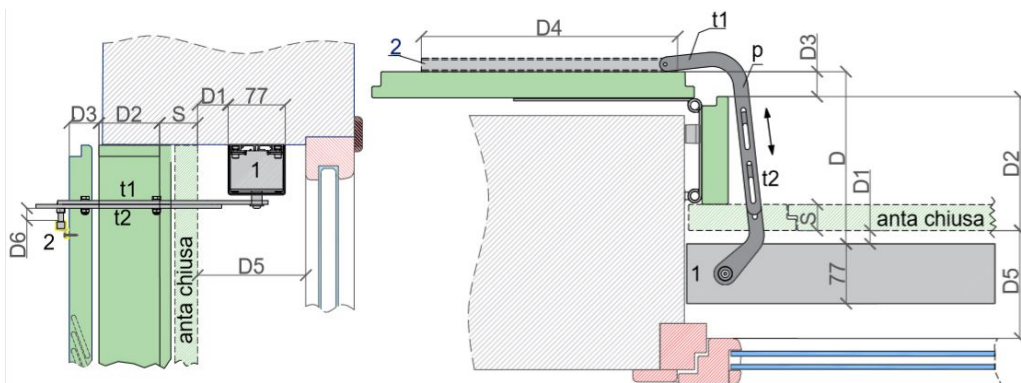
## 6.3 WARNING FOR INSTALLATION TYPES 4,5,6 AND DERIVATIVES

Particular care must be taken when the net passage clearance is between 80 and 90cm and the A2 shoulder dimension is greater than 12cm.



It is advisable to position the slider in the track so that when the sash is open it is at least 8 mm from the end of the track. Make sure that the 90° end does not touch the sash (recommended minimum distance of 5mm).

In order to increase this distance, you can use the adjustment slots on the 90° end and on the forearm. In general, the articulated arm must always have enough space to extend when closing. Installations with L1 (light inside the window) smaller than 80cm/160cm are only possible after checking with the "Chiaroscuro" technical office. If A2 is larger than 12cm, it may be necessary to distance the automation a few centimetres from the window wall abutment (Dimension A1, see previous drawing) to avoid contact between the 90° terminal and the sash.

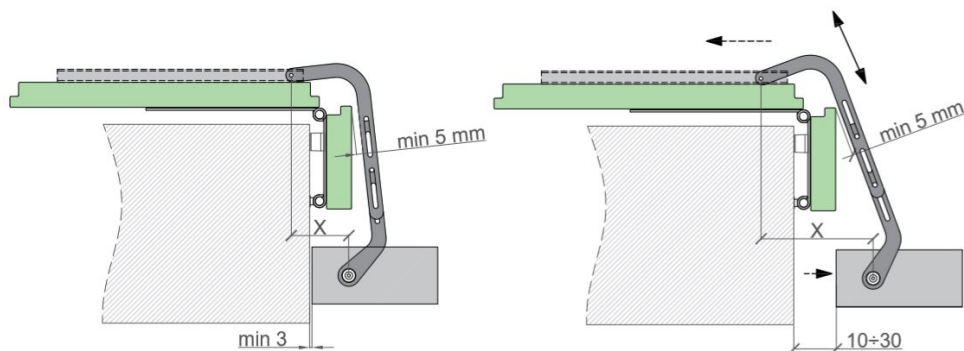


• If there is limited space available between closed shutters and closed glazing - distance "D5" - or if the maximum permitted  $D = 200$  mm is to be used, distance "D1" can be reduced by up to 2 mm so that guide rail 2 in closing will have to pass under the arm and distance "D6" will be approx. 20 mm.

• The length of the 90° terminal "t1", for TIP.1, 2 and 3, is designed so that when the sash is closed the articulated arm fits into the 77 mm space occupied by the motor unit. In the case of particular sash shapes, TIP.4, 5, and 6, it is necessary to use a 90° Padovian terminal, extended to prevent the arm from touching the sash at point "P" - the edge of the hinge - before completing the opening stroke. The 90° Padovian terminal increases the overall dimensions of the closed joint to 120 mm instead of 77 mm. Please note that when using the 90° padovan terminal, if the distance "D" is already max. 200 mm, the dimension "D4+D2" could be greater than 400 mm to allow the articulated arm to extend when closing.

MAXIMUM WIDTH	D MAX MM.
900	200
850	150
800	120

The values in the table are valid for doors with a thickness of 40 mm, type 4,5, 6 and derivatives. A margin of at least 5 mm should always be kept in relation to the values in the table. In cases where the values are below 5 mm, it is preferable to proceed with a dimensional test in the field and/or on a sample to establish with certainty whether the space available is sufficient to move the shutters correctly.

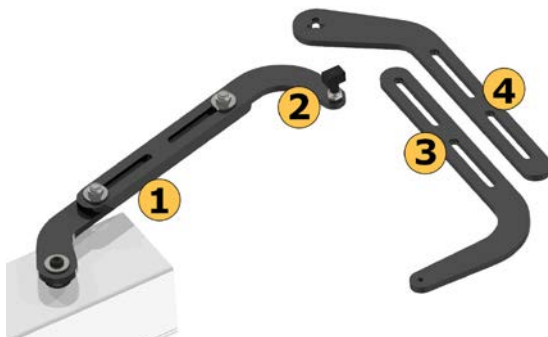


The thrust efficiency of the motorisation improves as the "X" measurement increases, which is the distance measured on the vertical axis between the fulcrum of rotation of the motor arm and the slider located on the track, and the position of the slider with respect to the hinge. Bear in mind that the more the slider is moved towards the centre of the sash, the greater the opening efficiency of the motorisation. Moving the drive towards the centre of the window increases the efficiency of the drive, but at the same time increases the overall length of the joint. During installation, once the position of the motor has been determined from the wall abutment and with respect to the shutter, open the sash and ensure that the end joint is as extended as possible, guaranteeing a minimum distance between the joint and the shutter of at least 5mm at each point of rotation of the sash..



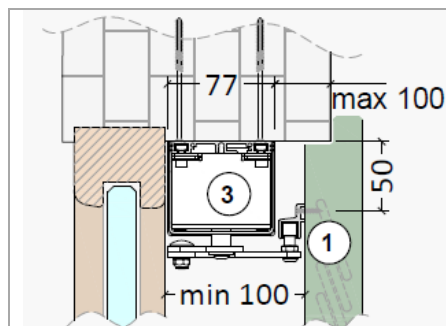
*It should be noted that the ST50/ST100 product is specifically for casement windows and doors. Any other use does not guarantee correct functioning and compatibility with CE marking.*

## 7. ARTICULATION DETAILS



Article 1	Standard slotted forearm
Article 2	Standard slotted terminal
Article 3	Extended slotted terminal (compulsory accessory in the Padua version)
Article 4	Extended slotted arm (compulsory accessory in the Padua version)

## 8. CHOICE OF APPLICATION TYPE

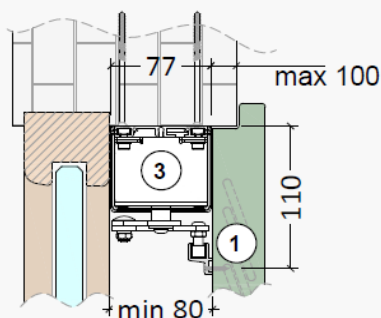


Automazione a vista  
e binario affiancato

### SIDE-BY-SIDE GUIDANCE

Position the drive as shown in the adjacent figure. There must be approximately 20 mm between the automation and the internal edge of the leaf. If, for various installation reasons, this distance is exceeded, you must:

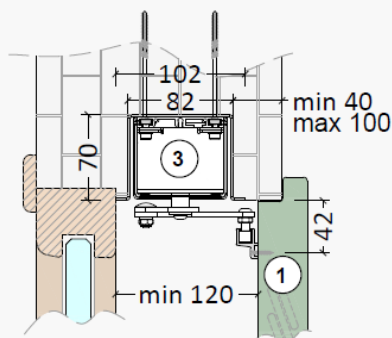
- In any case, make sure that you comply with the specifications given in the drawing in chapter "Installation note".
- Please note that increasing the distance reduces the thrust on the sash.



Automazione a vista  
e binario sottostante

### GUIDE BELOW

Position the motor flush with the leaf as shown. The guide must be positioned under the automation as shown in the figure. Between the leaf and the automation, leave a space that prevents the leaves from coming into contact with the automation when they are fully closed.



Automazione incassata

### RECESSED AUTOMATION

Depending on the type of material your lintel is made of, the distance between the edge of the wall and the drive can vary, but must never be less than 40 mm. If this measurement increases, remember to check that the dimensions given in chapter 7.3 are respected.

#### Mounting accessories:

Sheet metal for flush-mounting omega plate for fastening the automation (only with side-by-side or underneath rail)



## 9. PHYSICAL INSTALLATION OF THE AUTOMATION

### 9.1 CHECKING DOOR MOVEMENT AND FIXING

The automation you are installing incorporates a safety device which, by detecting obstacles, stops the movement of the leaves. For this reason, it is necessary to check it before installing the automation,

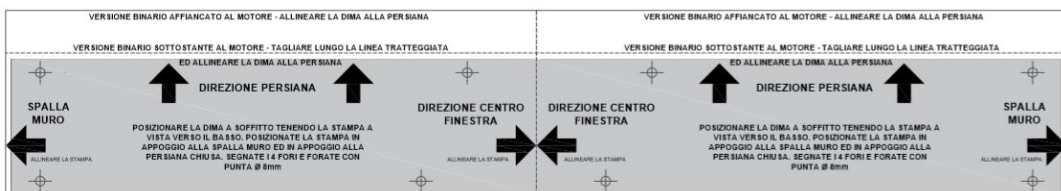
### 9.2 CHECKING DOOR MOVEMENT AND FIXING

The automation you are installing incorporates a safety device that, when it detects obstacles, stops the movement of the leaves. For this reason, even before installing the automation, it is necessary to check that the leaves have compatible characteristics, as indicated in the table in chapter 7 (in particular, the maximum leaf weight of 70 kg/140 kg and the maximum leaf surface area, which must not exceed 1.8 sq.m./2.5 sq.m. for each leaf). These indications are not exhaustive: for further information please refer to chap. 22. It is also necessary to check the rotation of the leaves, which must rotate fluidly, free and unobstructed. We suggest carrying out this check by closing the leaf and pushing it from the closed position. With a normal push, the leaf should open fully until it touches the opposite wall. If the shutter shows some friction in its movement, it is necessary to suspend the assembly phase of the automation and intervene on the hinges and elements of the shutter that compromise the fluidity of movement, making the appropriate changes to the elements that create friction. A problematic shutter will reduce the life of the automation, which will be unnecessarily fatigued throughout its life of use. Furthermore, once connected, it will be more difficult to detect these types of problems, which must therefore be resolved initially.

### 9.3 POSITIONING THE MOTOR

The template provided can be used to determine the position of the drive and the relevant fixing holes. In the case of installation with a guide rail underneath, the template must be cut with scissors at the dotted line.

### 9.4 MOTOR MOUNTING TEMPLATE



*The template is designed for a predefined installation of the motors. In some types of use it may be necessary to increase the distance of the motors from the wall abutment, as the thrust efficiency of the joints on the sashes is particularly affected by the position of the motorisation and increases as the motors move closer to the centre of the window.*

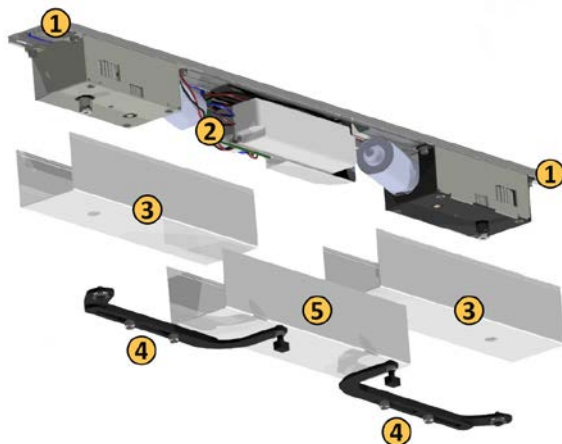
### 9.5 POSITIONING THE TEMPLATE



Draw a line on the upper transom of the window hole for the position of the closed sashes. Align the template with the drawn line, taking care to lay it against the wall abutment at the same time. The text printed on the template must be facing downwards. Mark the position of the holes in the reveal, drill and insert the Fischer plugs supplied.



*Fix the aluminium extrusion carrying the motor and the electronic board to the ceiling using the high-strength screws provided, taking care to use the washer between the screw and the aluminium extrusion.*



#### SUMMARY OF FIXING STEPS

- |   |   |
|---|---|
| 1 | Jig positioning. Holes in masonry.extruded fixing   |
| 2 | Wiring cables   |
| 3 | Interlocking motor casings  |
| 4 | Adjusting the joints, positioning the track on the doors.Fixing joints.                     |
| 5 | Adjustment of power trimmer and door opening delay. Interlocking closure of central casing. |



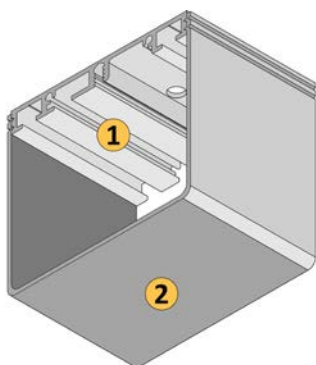
*Unstable fixing of the extruded part to the ceiling will compromise the operation of the automation and reduce its duration over time.The motor cover and the central closing cover have been designed to guarantee an IP21 degree of protection for the automation. Any change made to the cover that reduces the degree of protection will invalidate the guarantee on the entire automation..*

### 10. EXTRUSIONS FOR SECURING THE VAULT AND COVER

#### 10.1 TABELLA RIEPILOGATIVA DEI CARTER DI COPERTURA E DEI CARTER DI SUPPORTO FORNITI A CORREDO

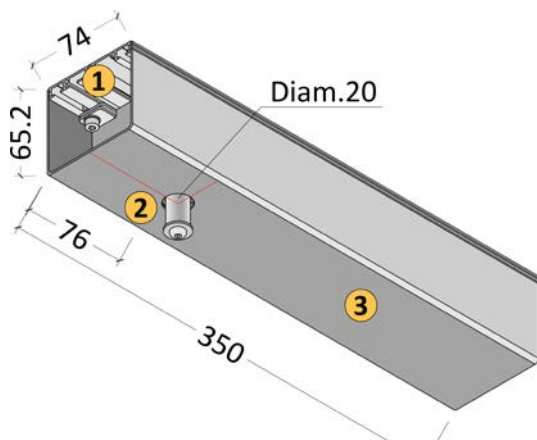
MODEL	WINDOW WIDTH	EXTRUDED MOTOR SIZE	CENTRAL DIMENSION	PRESENCE OF EXTRUDED SUPPORT
ST50 SINGLE SASH	60-80 cm.	1 x 35cm.	60 cm.	<b>YES</b> (5 cm terminal)
ST100 SINGLE DOOR	80-100 cm.	1 x 35cm.	70 cm.	<b>YES</b> (5 cm terminal)
ST50 DOUBLE DOOR	80-120 cm.	2 x 35cm.	60 cm.	<b>NO</b>
ST50 DOUBLE DOOR	120-160 cm.	2 x 35cm.	100 cm.	<b>NO</b>
ST100 DOUBLE DOOR	160-200 cm.	2 x 35cm.	70 cm.	<b>YES</b> (10 cm. centre)

#### 10.2 CHARACTERISTICS AND USE OF THE EXTRUDED SUPPORT AND THE SUPPORT CASING



The support extrudate is supplied in the two lengths of 5 cm and 10 cm only for the types of dimensions listed in the table and consists of an extrudate (item 01) which is fixed to the cowl by means of a single hole and a small support casing (item 02). The support casing acts as anchorage for the central casing, which slides over it. The central casing will overlap the motor casing on one side and the support extrudate on the other, guaranteeing perfect anchorage and stability.

#### 10.3 DIMENSIONAL CHARACTERISTICS OF THE MOTOR COVER



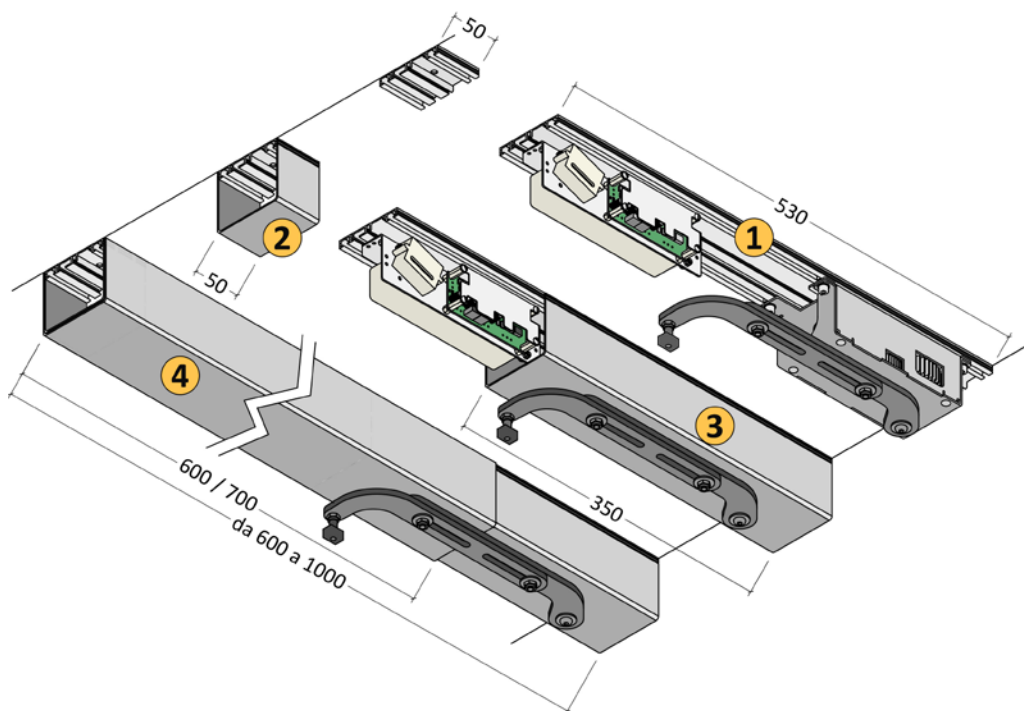
#### LEGEND CRANKCASE / ENGINE EXTRUSION:

1	Extruded aluminium
2	Motor pin outlet (76mm. from centre of hole to extruded edge)
3	Extruded aluminium motor cover. Available in matt white painted finish RAL9010, matt black painted finish RAL9005 or natural aluminium.

The motor cover is 350 mm long and has a standard motor pin exit hole 76 mm from the outer edge. It snaps onto the motor extrusion. It is available in natural aluminium finish, painted matt white RAL 9010 or matt black RAL 9005.



### 10.4 TYPE OF CRANKCASE AND EXTRUSIONS SINGLE LEAF VERSION

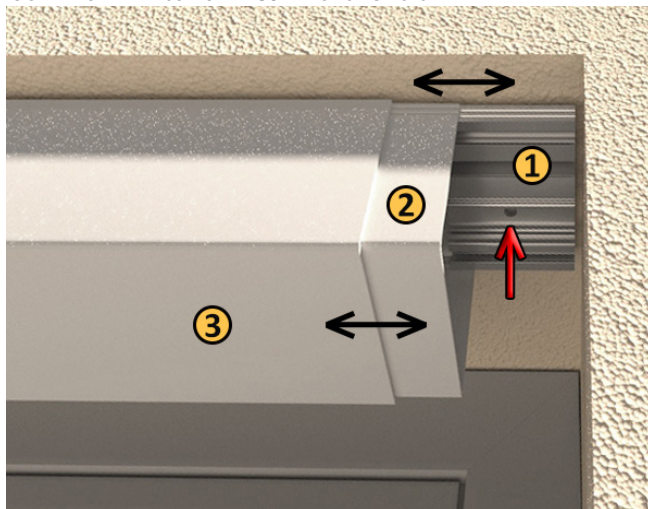


#### THE SINGLE-SIDED VERSION CONSISTS OF THE FOLLOWING EXTRUSIONS AND HOUSINGS:

1	N°1 530 mm aluminium extrusion on which a motor and all electronic control components (ES1 board and power supply) are fixed.
2	N°1 support extrusion and support casing L=50mm. The support casing is supplied in natural aluminium finish.
3	N°1 motor cover L=350mm. Available in matt white RAL9010, matt black RAL9005 or natural aluminium finishes.
4	N°1 central casing available in lengths of 600 or 700mm. depending on the architectural width of the window (see summary table at the beginning of this chapter). Available in matt white RAL9010, matt black RAL9005 or natural aluminium painted finishes.



### 10.5 POSITIONING OF EXTRUDED END SUPPORT L=50MM. ON SINGLE SASH



#### LEGEND:

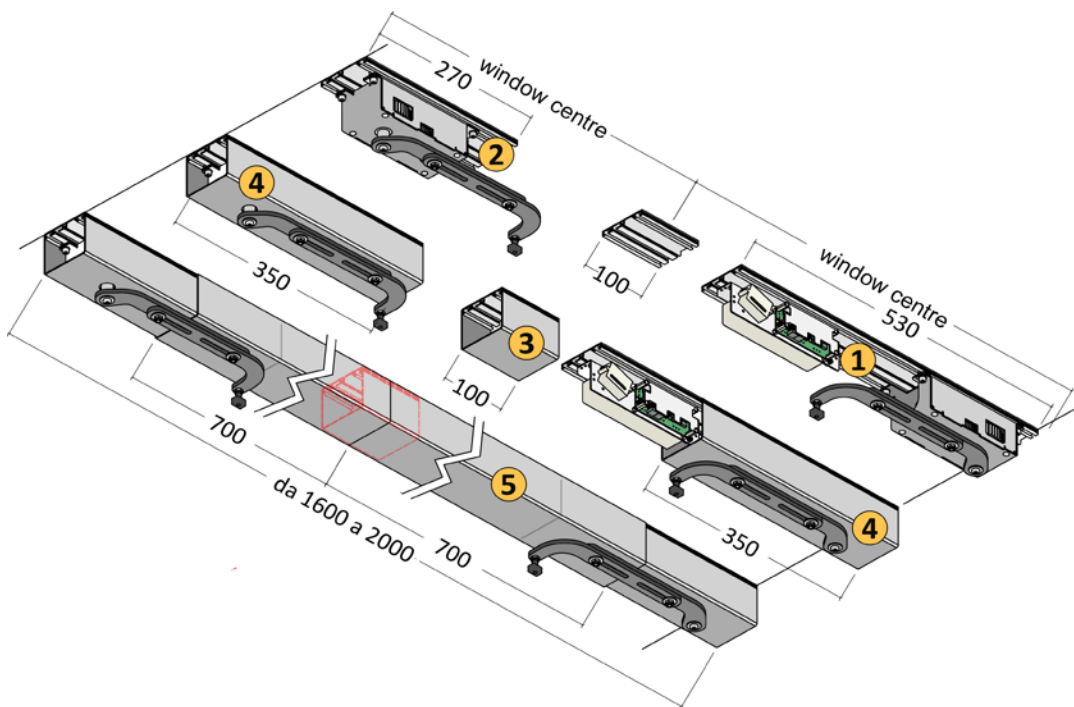
1	Support carter for single sash L=50mm. in natural aluminium finish
2	Support carter for single door L=50mm. in natural aluminium finish
3	Central carter Available in matt white RAL9010, matt black RAL9005 or natural aluminium finishes

The support extruded part (pos.01), must be fixed to the crankcase by means of a single fixing point. In order to precisely mark the position of this hole, we suggest fixing the motor extruded part, positioning the motor casing and the central casing. Position the support casing (pos.02) at the end of the central casing (pos.03) and push the support extruder (pos.01) out a few centimetres, as in the photo, taking care that the central casing is well aligned, parallel to the shutter and wall edge. Slide both the central casing (03) and the support casing (02) so as to bring the support extrudate (01) closer to the wall shoulder and mark the position of the hole (N.B: it is not necessary for the support extrudate to be positioned in adherence to the wall shoulder). Mark the position of the hole and fix the support extrudate.



Once the support extrusion is fixed to the vault, position the support casing and extend the central casing until it is flush with the wall shoulder.

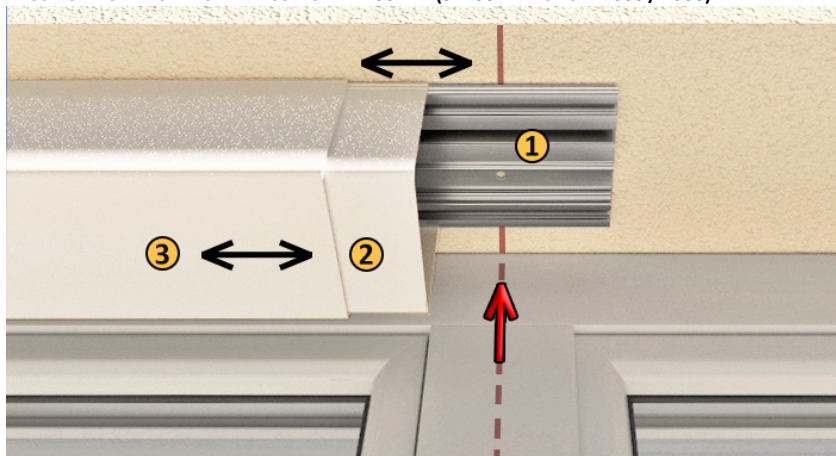
### 10.6 TYPE OF CASING AND EXTRUSIONS DOUBLE LEAF VERSION



#### THE DOUBLE DOOR VERSION FROM cm.160 to cm.200 IS COMPOSED OF THE FOLLOWING EXTRAS AND CARTERS:

1	N°1 530 mm aluminium extrusion onto which a motor and all the electronic control components (E51 board and power supply) are fixed.
2	N°1 aluminium extrusion of 270 mm to which a motor is fixed.
3	N°1 support extrusion and support casing L=100mm. The support casing is supplied in natural aluminium finish.
4	N°2 motor cover L=350mm. Available in matt white RAL9010, matt black RAL9005 or natural aluminium finish.
5	N°2 central casings length 700mm. (see summary table at the beginning of this chapter). Available in painted finishes: matt white RAL9010, matt black RAL9005 or natural aluminium.

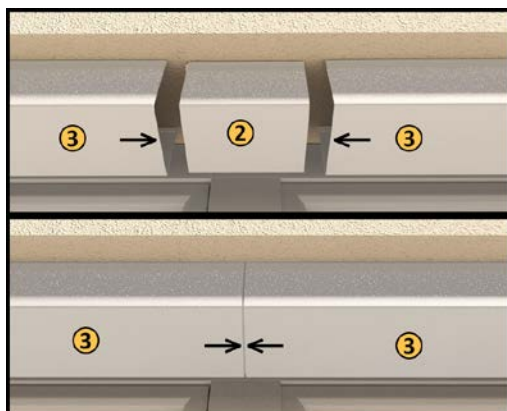
### 10.7 POSITIONING EXTRUDED CENTRAL SUPPORT L=100MM. (ST100 WINDOWS L=1600 / 2000)



#### LEGEND:

1	Extruded support carter L=100mm. in natural aluminium
2	Support carter L=100mm. in natural aluminium finish
3	Central casing Available in matt white RAL9010, matt black RAL9005 or natural aluminium finishes

The supporting extrudate (pos.01), is to be fixed to the vault by means of a single fixing point. In order to mark the position of this hole precisely, we recommend fixing at least one motor extrudate, positioning the motor casing and the centre casing. Mark the position of the window centre. Position the support casing (pos.02) at the end of the central casing (pos.03) and protrude the support extrusion (pos.01) a few centimetres, as in the photo, taking care that the central casing is positioned parallel to the shutter and the wall edge. Slide both the central casing (03) and the support casing (02) so as to position the support extrusion (01) in the centre of the window. It is important that the casings are well aligned with each other to form a compact, linear element. Mark the position of the hole and fix the central support extrusion.



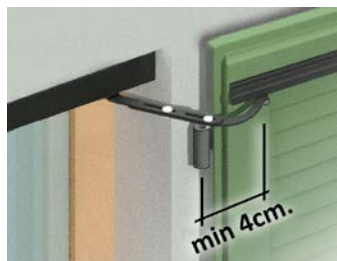
Once the support extrusion is vaulted, position the support casing (2) and extend both central casings from the right-hand and left-hand motors, (03) aligning them with the centre of the window, effectively making the central support "disappear".

### 10.8 ADJUSTING THE ARTICULATION, POSITIONING AND FIXING OF THE SLIDING RAILS

After fixing the extruder, connect motor 2, if present, and the power supply to the circuit board. Place the cover on the motors and then position the forearms.



The bolts must be positioned in the lower part of the joints and the pan head screws must be positioned in the upper part, to prevent the bolts from touching the motor casing when the arms are closed, damaging it and preventing the doors from closing properly.



Slide the ends of the joints along the slots until they reach the maximum possible extension, making sure that the forearm is not in contact with the shutter or the wall for any reason (minimum safety distance 5mm). When the shutter is open, the slider should be positioned as far as possible from the hinge, towards the centre of the shutter (minimum distance 4cm., see picture): this optimises the thrust efficiency of the joint.

Open the doors and align the rail with the slider and mark a first rail position on the door. Check that the slider runs across the whole surface of the rail without pushing or pulling the joint and forcing it to swing up or down. The joints must maintain the same natural tension in each position of the slider in the rail, otherwise friction will fatigue or in the worst case interrupt the movement of the automation and over time deteriorate it. It is also advisable to carry out a check during the opening/closing phases of the leaf to make sure that the slider on the leaf never leaves the guide. After carrying out the checks, tighten the forearms firmly to the motor and the terminals to the forearms.

### 11. AUTOMATION OPERATION

The drive operates the leaves when the button is pressed and continues to move them as long as the button is pressed. The drive switches off automatically when the force is detected, when the door is fully opened or fully closed. The closing/opening force must be set appropriately via trimmers (see chapter "Setting trimmers"). To stop the leaves at an intermediate point during movement, it is sufficient to stop pressing the button.



*Ensure that there is a soft buffer in the upper corner of the sash or a blind stop without automatic triggering, so that the sash always remains free and can be supported without scoring. These elements are generally the responsibility of the shutter supplier, but can be supplied as accessories on request.*

### 12. ADJUSTMENT TRIMMER



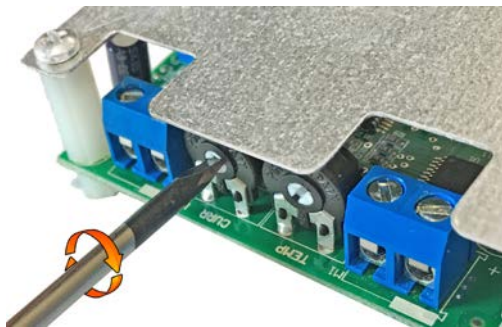
*The board, as standard, is pre-wired and configured with pre-optimised "default" parameters that are valid for most users and types of common use. Changing the default parameters of the electronic board is not recommended and should only be done when essential. Modification of the configuration parameters should only be carried out by knowledgeable and qualified operators.*

#### 12.1 TRIMMER TEMP: INCREASING THE OPENING DELAY OF THE DOORS:



Adjustment of the TEMP trimmer allows the opening delay between leaves to be set. Clockwise rotation decreases the opening delay time between leaves, while anticlockwise rotation increases it. Carry out a few opening and closing tests to check that the leaves are not overlapping or jamming when moving.

#### 12.2 CURR TRIMMER: INCREASING MOTOR POWER:



Setting the CURR trimmer allows the thrust torque to be set. Setting the thrust level too low will cause the leaves to lock abnormally, while too much power will cause the motors to strain unequally when the stroke is completed. We suggest finding the minimum operating point and from that position, increase the power by ¼ turn.

## 13. ELECTRICAL INSTALLATION

### WARNING !

The electrical installation must be carried out in accordance with the national standards in force. The electrical connections must be carried out without voltage, do not supply power to the work area until all assembly operations have been completed. Radio specifications Frequency : 433.92 Mhz Transmitter range : approx : 70m free field The good propagation of radio waves depends on the nature of the environments to be crossed. The range of the radio waves is influenced by the type of construction

BASIC CIRCUIT DIAGRAM WITH RADIO CONTROL



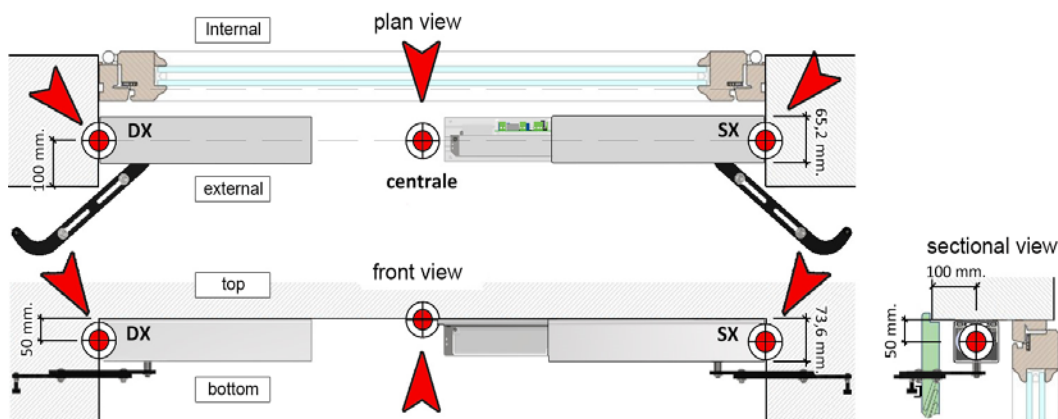
CIRCUIT DIAGRAM OF AUTOMATIC CONTROL UNIT ELECTRICAL SYSTEM



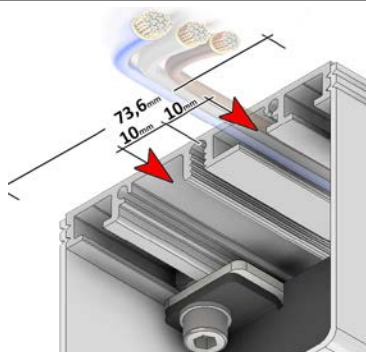
## 14. ELECTRICAL CONNECTIONS

### 14.1 CABLE ACCESS TO MOTORS

#### cable exit position







It is possible to provide for the wiring of the motors by accessing the cables in the centre of the window, in a central position with respect to the position of the extruded aluminium motor, to the left or right of the motors themselves. In the case of recessed omega, provide for the cable outlet in the centre or at the sides of the omega itself. These channels are positioned 1 cm apart from the centre of the extruded element.

### 14.2 TYPE OF CONTROL BUTTON AND CONNECTION TO THE INTEGRATED CONTROL UNIT

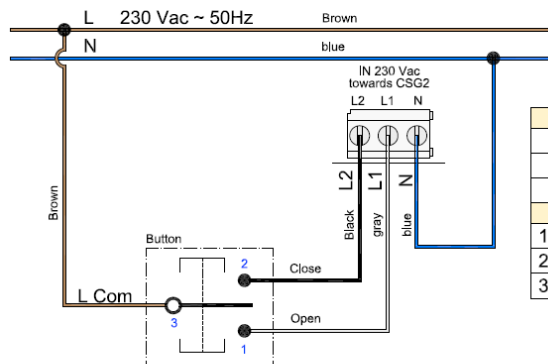
#### CONTROL BUTTON TYPE



The switch must necessarily be of the type:  
up/down switch interlocked without detent.

### COMMAND CONNECTION:

### COMMAND CONNECTION FUNCTIONAL DIAGRAM



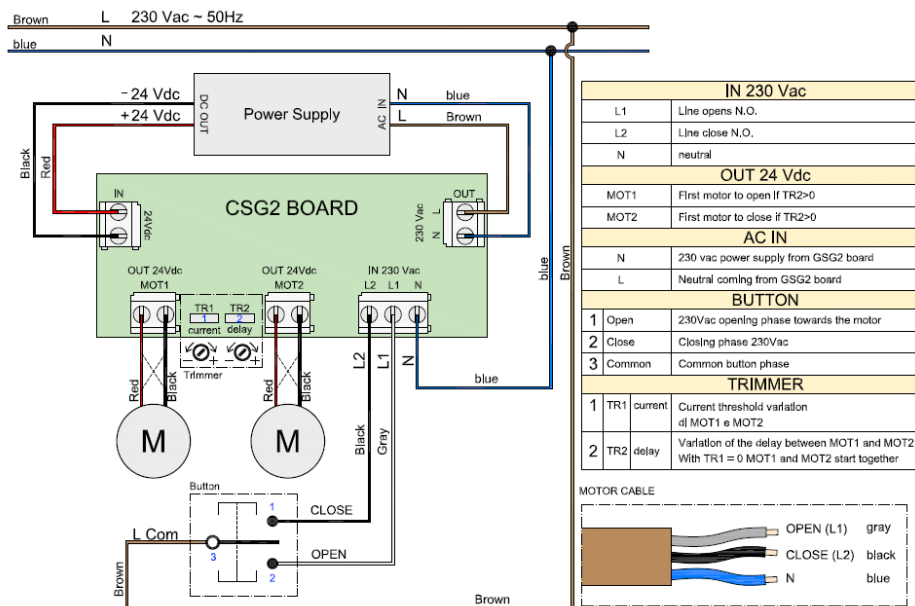
IN 230 Vac su GSG2	
L1	Line opens N.O.
L2	Line close N.O.
N	neutral
BUTTON	
1 Apre	Opening phase towards 230Vac motor
2 Chiude	Close phase 230Vac
3 Comune	Common button phase



## 14.3 CONNECTIONS TO THE BOARD

### Connections to the board - "dead-man" command

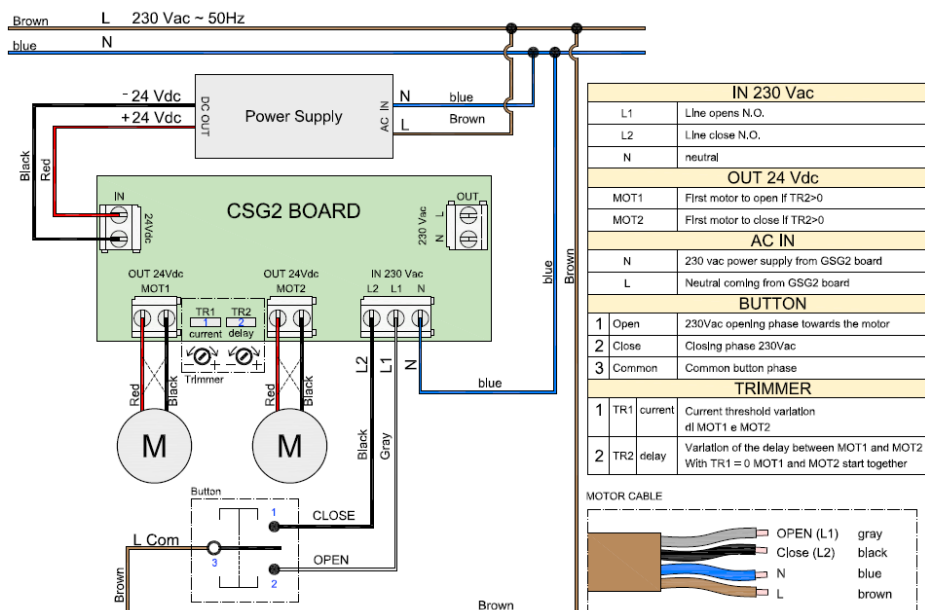
#### WIRING DIAGRAM CSG2 - dead man



*L'automazione è stata concepita, sviluppata, testata e certificata per un utilizzo esclusivo a comando uomo presente e l'utilizzatore deve essere vigile e presente durante le fasi di movimentazione delle ante e di azionamento dell'automazione.*

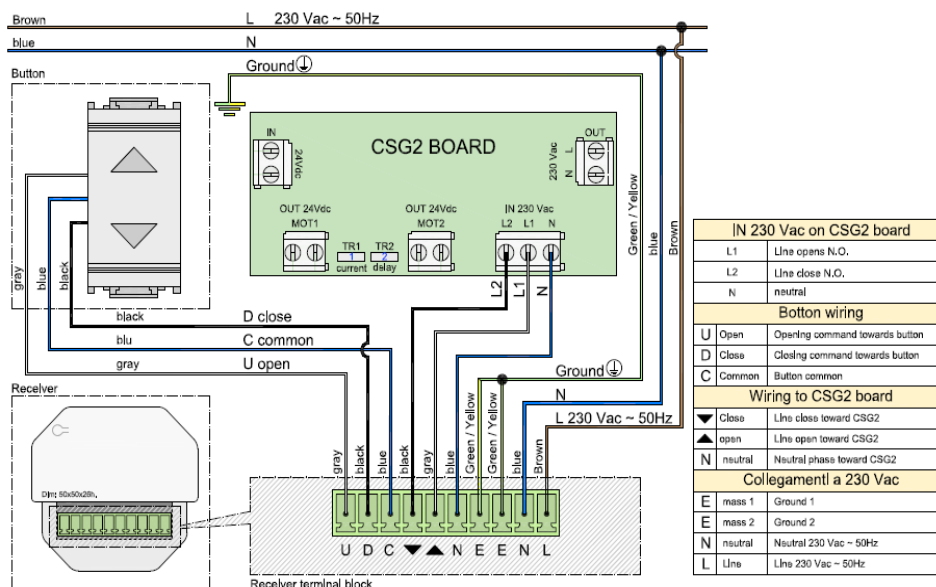
### Connections to the board - "impulse" command

#### WIRING DIAGRAM CSG2 - IMPULSIVE COMMAND



## 14.4 WIRING DIAGRAM FOR RADIO RECEIVER MODEL EWSCE230

### WIRING DIAGRAM FOR CONNECTION TO EWSCE230 RECEIVER ON CSG2 BOARD



## 15. COMPATIBILITY WITH HOME AUTOMATION SYSTEMS



The automation is compatible with almost all home automation systems and existing home automation management modules that manage the opening and closing of shutters (modules available from specialist retailers). As for the control of rolling shutters, it is sufficient to set a hold time of more than 60 seconds using your favourite application: the automation will perform the movement and automatically stop when the shutters have been opened/closed. The integrated card is able to stop the motors when the movement is complete, detect any obstacles or presence during operation, to ensure maximum safety during operation and protect the motors from strain. This simplified operation makes the automation extremely easy to manage and configure! We suggest that you check the compatibility of your home automation module by consulting your trusted retailer and showing him this simplified use and these wiring diagrams. You can also contact our technicians who will be happy to provide you with further technical and functional details.



### 16. AUTOMATION OPERATION

The drive operates the leaves when the button is pressed and continues to move them as long as the button is pressed. The drive switches off automatically when the force is detected, when the door is fully opened or fully closed. The closing/opening force must be set appropriately via trimmers (see chapter "Setting trimmers"). To stop the leaves at an intermediate point during movement, it is sufficient to stop pressing the button.



*Ensure that there is a soft buffer in the upper corner of the sash or a dark stop without automatic triggering, so that the sash always remains free and can rest on the sash without scoring. These are generally the responsibility of the shutter supplier, but can be supplied as accessories on request.*

## 17. SPECIAL PROGRAMMING FUNCTIONS

### 17.1 REVERSING THE FIRST DOOR

As a standard, the first door to open is the right-hand door. To reverse the first door to open, the cover must be opened and the cable connections to the electronic board reversed.



*WARNING: To reverse the opening direction of the leaves, in addition to swapping the motor cables on terminal boards M1 and M2, it is also necessary to reverse the polarity by connecting the RED cable in place of the BLACK cable for each motor.*

## 18. SOLENOID BOLT ASSEMBLY

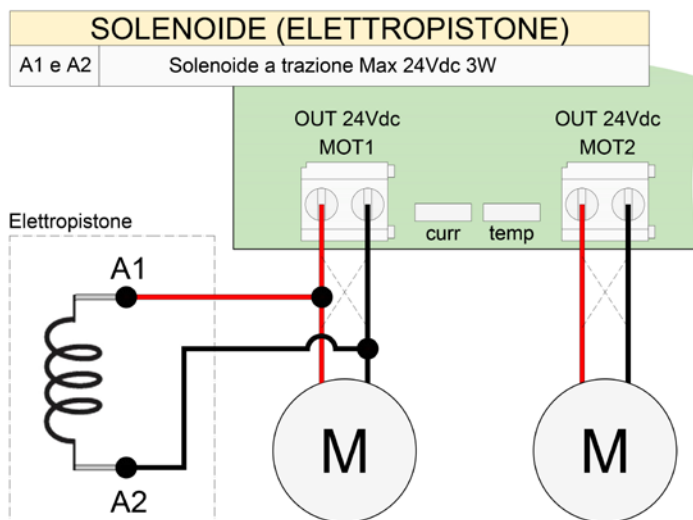


The solenoid bolt is an optional accessory and must be mounted close to the stop of the main sash in the closing position. A small perforated flange must be mounted on the sash, and when it is in the closed position, this hole must coincide with the solenoid bolt. The solenoid bolt cables must be routed to the right, usually, or left, providing a conduit for their protection, until they reach the electronic board.



*N.B. Our system is able to manage 24V powered electropistons that do not exceed a current consumption of 600mA.*

### SOLENOID BOLT CONNECTION WIRING DIAGRAM



The solenoid bolt must be connected by bridging the motor cables corresponding to the first leaf to be opened. For further information, refer to the instructions in the solenoid bolt package.



*Check that the electrical set-up and all parameters are respected as indicated in the previous sheets.*



*If defects/malfunctions are found, do not attempt to repair the equipment, but contact the service centre, indicating the model, code and serial number, which can be found on the label attached to the motor.*

## 19. MAINTENANCE



*The operations described in the following paragraphs must always be carried out with the equipment switched off (equipment switch in OFF position).*

### 19.1 PERIODIC MAINTENANCE



**User:** Periodically clean the equipment casing using a soft cloth dampened with neutral, non-aggressive detergent and wipe dry. Keep the movement area of the casing clean and well maintained.



**Electromechanical operator:** Check the correct tightening of the runner block shank, the play of the runner block in the guide, the wear of the bushes in the joint.

### 19.2 EXTRAORDINARY MAINTENANCE



**User:** Contact the Electromechanical Operator in the event of a breakage or malfunction.



**Electromechanical operator:** Identify malfunctions and, if necessary, contact the service centre, indicating the model, code and serial number of the equipment. Use the service request form - 'spare parts'.

## 20. MALFUNCTIONS AND DEFECTS



*If the proposed intervention has not resolved the anomaly detected, stop operations and request assistance from the Service Centre..*



*Never open the casing of the equipment unless expressly authorised to do so in writing by Chiaroscuro. Failure to comply with this rule will immediately void the supplier's warranty and consequent responsibilities for safety and operation.*

## 21. DISPOSAL

### INFORMATION TO USERS



Pursuant to Article 13 of Legislative Decree No. 151 of 25 July 2005 "Implementation of Directives 2002/95/EC, 2002/96/EC and 2003/108/EC on the reduction of the use of hazardous substances in electrical and electronic equipment and the disposal of waste" *"The crossed-out wheeled bin symbol on the equipment indicates that the product, at the end of its useful life, must be collected separately from other waste. The user must therefore deliver the equipment intact with its essential components at the end of its useful life to the appropriate separate collection centres for electronic and electrotechnical waste, or return it to the retailer when purchasing new equipment of an equivalent type, on a one-to-one basis. Appropriate separate collection for the subsequent sending of the discharged equipment for recycling, treatment and environmentally compatible disposal helps to avoid possible negative effects on the environment and health and favours the recycling of the materials of which the equipment is composed. Illegal disposal of the product by the user entails the application of the administrative sanctions provided for by the regulations in force."*

## 22. LIMITATION OF LIABILITY

ST50 offers a torque of 40 Nm, ST100 offers a torque of 80 Nm: these are the maximum drive torques available on the transmission pin which, through the arm and track, impart movement to the sash or maintain its position. It is the responsibility of the purchaser / installer to establish whether this torque is adequate for the needs of the required application; the needs depend on various factors, mainly: weight and dimensions of the sash (the indications given in chapter 11.2 are purely indicative and not binding), friction of the hinges and correct verticality of the axis of rotation of the same, and above all, the amount of antagonistic force generated by the wind. The requirements depend on various factors, mainly: weight and size of the sash (the indications given in section 11.2 are purely indicative and not binding), friction of the hinges and correct verticality of the axis of rotation of the hinges, and above all the entity of the antagonistic force generated by the wind. The intensity and duration of wind loads are highly variable and in the absence of complex and expensive measuring and recording procedures can only be estimated subjectively and approximately. In the offer, the supplier expresses an evaluation of these factors based first of all on the data and information made available by the customer and, if necessary, revealed by the on-site inspection, but these evaluations cannot be considered contractually binding and binding for the purposes of attributing responsibility to the supplier for the choice and suitability of the supply to the specific case, since the real requirements/problems of the application can only emerge with a pilot installation carried out in the case considered most significant by the customer. The various mechanical elements are designed to cope with the stresses and normal wear caused by the driving torque generated by the device for a number of 20,000 operating cycles. There are, however, stresses and consequent wear that do not depend on the driving torque but on poor installation and above all on stresses caused by the wind when the intensity or frequency of gusts/ gusts are significant or linked to significant atmospheric phenomena. Precisely because of the unknown entity and type of said stresses, the resistance of the equipment for this purpose cannot be guaranteed.



### 23. CERTIFICATE OF COMPATIBILITY WITH MARKING

**CHIAROSCURO SAS di Girelli Marco & C.**

C.so General A.Cantore 23 - 38061 Ala (TN) Italy.

Tel: +39 0464 424715 fax: +39 0464 712027

email: [info@chiaroscuro.eu](mailto:info@chiaroscuro.eu) sito: [www.chiaroscuro.eu](http://www.chiaroscuro.eu)

Declares that the electrical product

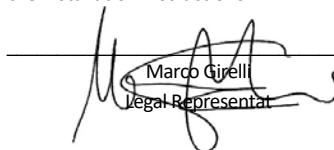
Model ST50/ST100

Description Actuator for swing door movement

È conforme alle disposizioni legislative che traspongono le seguenti direttive e successivi emendamenti: 2004/108 EC Directive (EMC Directive) e successivi emendamenti 2006/95/EC EC Directive (Low Voltage Directive) e successivi emendamenti 1999/5/EC RoHS2 Radio and Telecommunications Terminal Equipment 2002/95/EC Restriction of use of certain Hazardous Substances

CE marking compatibility is valid provided that the ST50/ST100 actuator is only used for the intended applications and the installation is carried out in accordance with the installation instructions..

ALA, 20/01/2020

  
Marco Girelli  
Legal Representative

### 24. WARRANTY

#### CONDITIONS AND LIMITATIONS:

CHIAROSCURO SAS guarantees the equipment for a period of 12 months, starting from the purchase date indicated on the fiscal document when the equipment is delivered. The company undertakes to repair or replace free of charge those parts that present manufacturing defects within the warranty period. The warranty does not include any form of compensation arising from direct or indirect damage to persons or property. During the warranty period, if the Customer wishes the repair to be carried out by CHIAROSCURO SAS technicians, it is necessary to send a written request to CHIAROSCURO SAS. In this case the customer will have to bear all the costs related to travel, board and lodging. For interventions caused by defects or failures not clearly attributable to the material or manufacture, all travel, repair and/or replacement costs of all parts shall be charged to the customer. An extension of the warranty following repair work on the equipment is excluded. In case of return of parts of the equipment, the Customer can ship them only after receiving a written authorization by CHIAROSCURO SAS. Packaging and shipping costs are charged to the customer (unless otherwise agreed between the parties). However, the warranty does not cover accidental damage due to transport, carelessness, inadequate treatment, use not in accordance with the instructions given in this manual or all those phenomena not depending on normal operation or use of the equipment. The warranty is void if the equipment is repaired by unauthorized third parties or if equipment or accessories not supplied, recommended or approved by CHIAROSCURO SAS are used or if the serial number is removed or altered during the warranty period. The warranty ceases immediately its effects in case the Customer is late or fails to pay, even partially. CHIAROSCURO SAS declines any responsibility for any damage to persons or things, caused by improper use or misuse of the equipment. For any possible controversy the competent court is the Court of Rovereto (ITALY).