It's time to **Automate**

CHIAROSCURO
MECHATRONIC SYSTEMS

Instructions **S.TEL**

Initial warnings

1.0. INDICATIONS FOR SAFETY

The instructions are only for professional technical personnel, responsible for THE INSTALLATION . Unless expressly authorized , no installer can access the internal parts of the device or otherwise, interfere with or modify it, or lose the warranty. This document is related to HS device ; should not be used for other products.

The device described is an electromechanical actuator for the automation of the opening and closing of shutters or windows. Any other use is considered improper and therefore not guaranteed functionality and safety conditions. Anyone running systems without complying with all applicable laws, shall be responsible for any damage that may be caused to and by the system. After installation the system manager must accurately inform the user on how to use the device and the residual hazard and the need for a careful and constant maintenance. The installation must be performed by qualified personnel in accordance with the provisions of the Machinery Directive 89/392 EEC .

The person responsible for the startup operation must prepare the test report, issue the EC declaration of conformity and apply the CE mark accordingly on the entire system (power line, buttons, etc. .) As provided for by Directive 93/68 EEC . (Directive 89/392/EEC , Annex II, Part B)

2.0. DECLARATION OF CONFORMITY

Manufacturer: CHIAROSCURO SAS

Registered Office and Operational headquarters: C.so General Cantore, 23 - 38061 ALA (TN) - ITALY

Declares that the automation:

Is built to be in a machine or to be assembled with other machinery to constitute machinery covered by Directive 89/392/EEC, as amended.

And 'complies with the other conditions of the following EC directives: EMC 89/392/EEC, as amended, Low Voltage Directive 73/23/EEC, as amended, and also declares that is prohibited to put into service the machinery until the machine in which it is incorporated or to which it is a component, has been identified by professionally qualified personnel in accordance with the provisions of Directive 89/392/EEC and has been declared compliance with the conditions of Directive 89/392/EEC and the national law transposing it. ALA, 27/08/2015

3.0. WARRANTY

The warranty for faults or defects in art. 1490 of the Civil Code, covers products and individual parts of these for a period of 24 months from the date of shipment. The guarantee is valid as long as the customer has fulfilled the terms of payment. In case of operation of the guarantee, unquestionable judgment of CHIAROSCURO SAS, the product will be replaced or repaired with mailing costs and freight prepaid by the customer.

The warranty expires in case of improper installation, damage caused by incorrect assembly, or insertion maneuver, excessive stress or improper use by unskilled persons, as well as from tampering.

The warranty is applied to the materials returned to headquarters of the CHIAROSCURO SAS.

The warranty does not include any interventions in the field for which all charges will be exposed.

For the material no longer under warranty, CHIAROSCURO SAS also provides a service for the repair, and charge the resulting costs. If the devices are unrepairable, they shall be replaced with coasts charged to the customer.

3.1. CLAIMS AND REVOCATION OF WARRANTY

Any claims for shortages or damage resulting from external appearance of packages of the goods must be notified immediately after receiving of goods by a statement signed by the purchaser and affixed to the delivery documentation, under penalty of forfeiture.

Claims for other apparent defects of the goods, which are not detectable from external inspection of the packages, must be communicated to CHIAROSCURO SAS in writing form within 8 days from delivery

They are not allowed in any case return goods without prior written agreement of CHIAROSCURO SAS. If the goods are defective, the customer who has reported defects in a timely manner, to the extent and within the warranty period, will be entitled to the elimination of the defect, after return of defective product with the costs of shipment charged to the Customer.

CHIAROSCURO SAS is exonerated from any responsibility dependent on, or related to the products and from any responsibility for property damage or other consequential damages or loss of profit, direct or indirect. No claim may give entitlement to the delay or suspension of payment terms, which must still be made in full as uncontested.

Automation for Hinged Shutters

Technical characteristics

Power supply	230	Vac
Shutter weight	50	Kg
Shutter length	75	cm
Maximum area	1,5	m^2
Absorbed power	60	W
Force	25	N
Duty cycle	10	cycle/hours
Noise level	50	db
Degree of protection		IP 32

Box Contents

Automation

Slide rail   Small Parts   Instructions

Accessories

Snap-in receiver
433 Mhz rolling-code

Mounting bracket 90°

Transmitter with 2 or 4 channels
433 Mhz rolling-code

Strap kit for Padovana

CXE module for
management general
control by wire

Test kits command or power
construction

Preliminary verifications

1.0. LIST OF MATERIALS FOR INSTALLATION:

- Hammer drill
- Screw gun
- Wall bit diam. 6 or diam. 8
- Diamond core bit diam 4 mm
- Wall dowels 6 or 8 mm
- Power supply cable 3x1,5
- Control cable 3x0,75
- Metric hexagonal key n°13
- Crosstip and flathead screwdrivers
- Allen key n°3
- Metric hexagonal key n°8

2.0. IDENTIFY THE TYPE OF APPLICATION

Type 1

In-wall fixed hinge

Type 5

Wall-in coplanarar hinged for padova shutters
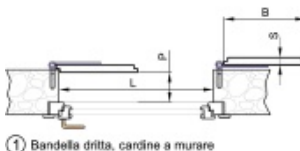
Type 2

Hinge fixed on block

Type 6

On-block coplanar hinged for padova shutters
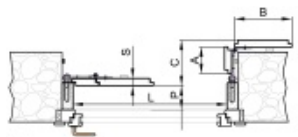
Type 3
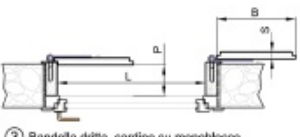
Hinge fixed on block

Type 7
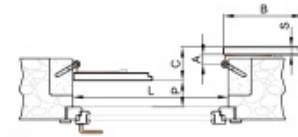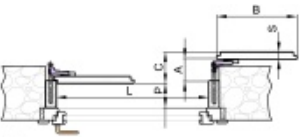
Fixed hinge for recessed shutters

Type 4

On-block fixed hinge for recessed shutters

Type 8

On-block fixed hinge for recessed shutters
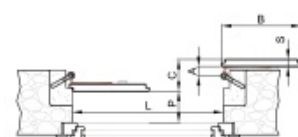
Note for installation type 4,5,6,7,8

For installations of type 4/5/6/7/8 please observe the notes described below. In the drawing below is shown the application of coplanar hinge for Padova shutters, the other 4 types still need to refer to this drawing.
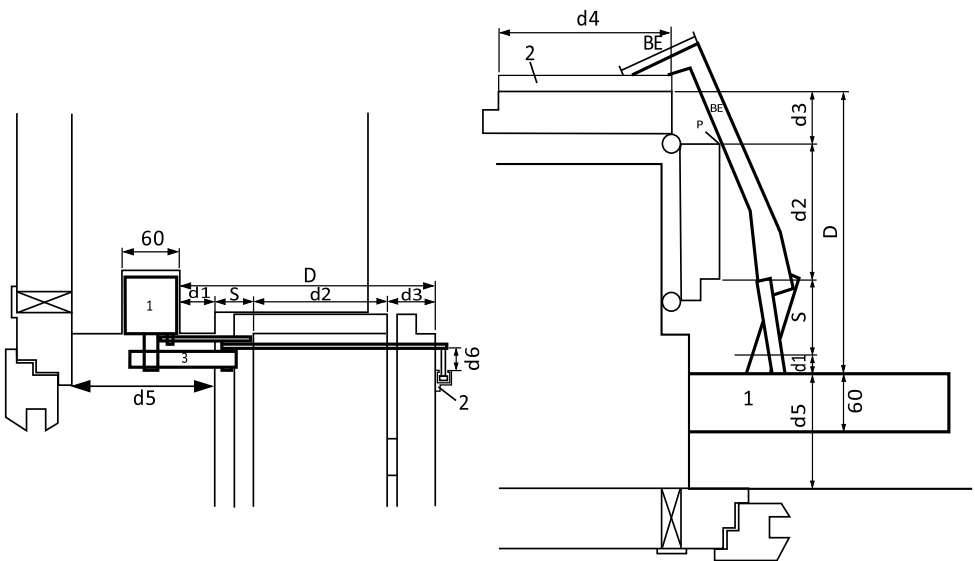
• The Max Distance "D" = d1 + S + d2 + d3" is 200 mm and is only accessible with adjustable arm BR set to the maximum length. It is recommended to keep the distance "d1" to approx. 20 mm and in this case slide rail 2 in closure may be up next to arm 3 and "d6" will be about 5 mm.

• In general, note that in closure the articulated arm must always have the space needed to distend completely. In particular when due to the width of "L1" you must use the maximum value of D = 200 mm, the sashes must have a useful supporting surface (L1 + L2) of at least 440 mm, also on sashses with a narrow rabbet

• If there is limited space available between closed shutters and closed windows – value "d5"- or if it's necessary to exploit the maximum allowed D = 200 mm, the value "d1" can be reduced up to 2 mm and then guide runner 2 in closure must pass under the arm 3 and the value "d6" will be about 20 mm. In this case, it may be necessary to extend the cursor with a specific accessory on request.

• The length of the arm BE is designed so that in closed position, the articulated arm falls in the space of 60mm, which is the encumbrance of the engine block. In the case of particular forms of the sash may be necessary to increase the length of BE to prevent the arm from touching the sash at point "P"- before it complete the opening maneuver. The elongation of BE can be obtained by requesting the appropriate extended tip which increases encumbrance of the articulated arm in closed position to 100 mm instead of 60 mm, or the installer can achieve the most appropriate measure by applying an extension plate on extremity of the arm BE. Please note that by lengthening BE, in the case where the distance "D" is already at the maximum 200mm, the dimension "L1 + L2" may be greater than 440mm to allow the articulated arm to distend completely in the closed position

• in case of application of the extended tip, witch brings the encumbrance of the arm in closed position from 60 mm to 100 mm, the proper functioning of the articulation itself is not guaranteed, so it's advisable to make a test on a sample.
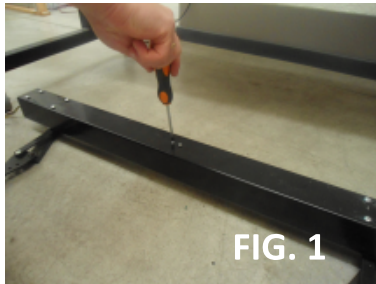
Max breadth between shutters	D max mm
900	200
850	150
800	120

Compared to the values in the table is advisable to keep at least 10-mm margin. In cases where the values are below 10 mm margin is preferable to proceed with on-field test of dimensions , on a sample to establish with certainty whether the available space is sufficient.

Installation

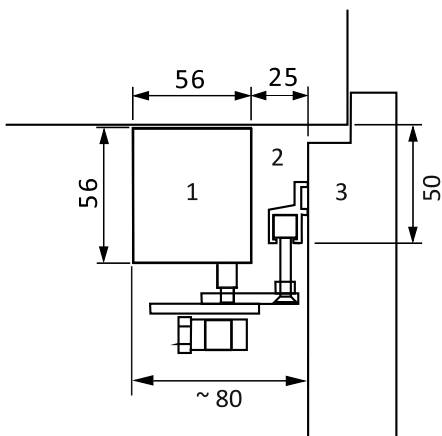## PRELIMINARY ACTIONS

FIG. 1

1.0.
Unscrew the two screws securing the plastic cover, so that the two side tubes can slide.
See fig. 1

Be careful not to slide covers more than 15 cm on each side otherwise the central cover is released. If the cover is opened over the limit, reinsert it, careful not to cause damage
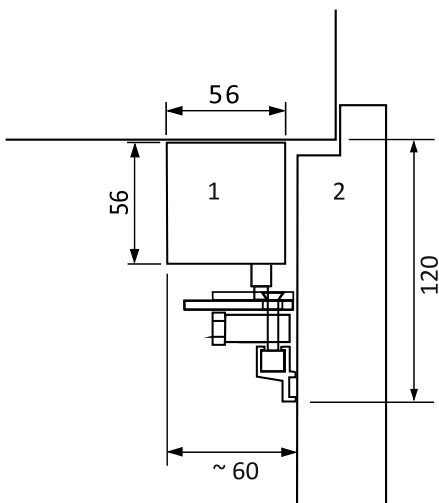
CHOOSING THE TYPE OF APPLICATION

Flanked slide rail

Place the motor as shown in figure beside.
The space between engine and the inner edge of the shatter must be about 25mm.
If, for various reasons of installation, this space exceeds must be sure to respect the specifications indicated in the drawing on page 7.
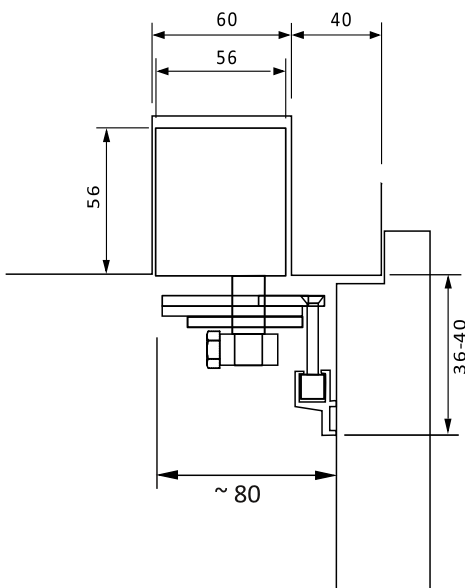
Installation

56

1   2

56

120

~ 60

Underlying slide rail

Place the motor next to the edge of the shatter as shown. The slide rail must be positioned under the engine as indicated in the figure.
Between the shatter and engine keep a space that prevents the shutters, when they are completely closed, to enter in contact

60   40

56

56

36-40

~ 80

Recessed engine

According to the type material by which it is composed your lintel, the distance between the external edge of the wall and the engine may vary, but still in no case should be less than 40 mm.
If this measure should increase, remember to check that the dimensions shown in figure on page 7 are complied.
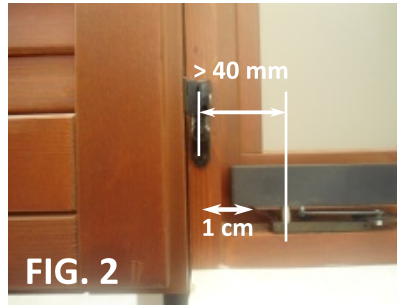
ACCESSORIES FOR MOUNTING

Metal omega profile to install engine to into the lintel

Fixing plate (just in case of flanked or underlying runner)

Installation

Once you have chosen the type of application, verify the feasibility of the movement by the following steps:

FIG. 2

> 40 mm

1 cm

2.0.
Place the engine on extremity of the windowsill, according the measures to the type of installation chosen.

2.1.
Extend the engine cover to the max breadth of the window, leaving 1 cm of space for side (or more if it's necessary) for improve the movement of the arms. See Fig. 2

FIG. 3

3.0.
Bring the shatters and arms of the engine in open position.
Adjust forearms to reach the appropriate length, then fix them with the supplied screws. Fig. 3

3.1 . The arm of the engine, with the door fully open, shall in no case to touch the shutters.

Installation

Once you have verified the proper functioning proceed with the installation
4.0.
Place the motor on the upper transom and position it as described previously in step 2 of the installation, considering the type.
4.1.
Then, while holding engine in place, mark the positions of the holes on the transom
subsequently drill and put the 8 mm fischer type dowels (not supplied). See fig. 4

FIG. 4

FIG. 5

4.2.
Finally proceed with the mounting of the engines by all 8 hardened screws (4 per side) included. An incorrect mounting can seriously affect the functioning of the automation. Fig . 6

FIG. 6

Installation

5.0.

As can be seen from the drawings the position of the slide rail varies, depending on the position in which engine is allocated.

In the case in which the engine turns out to be flanked with the edge of the sash, it is recommended to keep measures reported on fig. 7, to prevent the sash touching the engine, what will not allow a complete closing. In second case the slide rail is positioned between the engine and the sash, so it is advisable to keep the indicated distance (fig. 8) between the edge of sash and the engine, to prevent collisions between these two.

Drill and fix the slide rails with supplied screws. In case of aluminium, PVC or steel shutters is recommendable to use ∅ 4 rivets (not supplied)

5.2.

Check stability of the fixed rail, if necessary, add more screws or use screws of greater thickness.

5.3.

It is also recommended to perform a check in various stages of opening / closing of the sash, so be sure that the cursor never leave the slide rail.

5.4.

The slide rail must be free during the whole phase of the movement. Therefore, the fixing of it must be done after the verification of the correct movement.
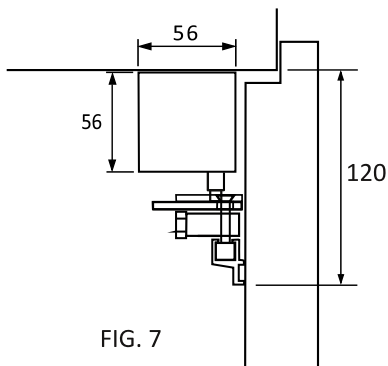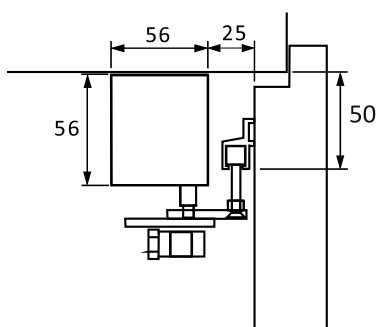

FIG. 7

FIG. 8

Preparation of electrical system

SCHEMATIC LAYOUT FOR ELECTRICAL SYSTEM WITH RADIO CONTROL

Default wire output is on the right (from internal view)

Preparation of electrical system

SCHEMATIC LAYOUT FOR ELECTRICAL SYSTEM WITH UNIT CONTROL

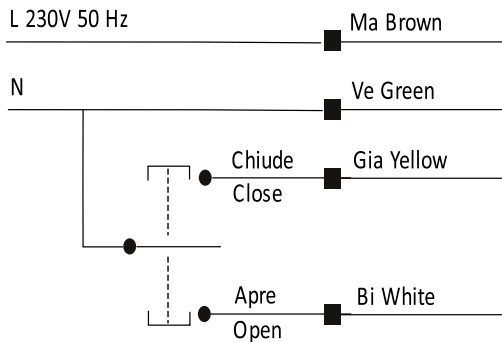**Default wire output is on the right (from internal view)**

On request, the wire output can be changed to the upper left side (from internal view)

Wiring

ENGINE CONNECTIONS

According to the customer's request for the wire output, you will find a box, containing wires, on the desired side (default is on the right, from internal view). to accede to the wires, unscrew the box's cover, than proceed with following scheme:

AUTOMATIC CONTROL UNIT CONNECTIONS

L 230V 50 Hz — Ma Brown

N — Ve Green

Chiude Close — Gia Yellow

Apre Open — Bi White

CENTRALIZED COMMAND WITH CXE UNIT

Cetralized Command

Local Command — C Open / Close — O

CXE   NP   PN 1

230V 50HZ   L   Grd

Green Brown Yellow White

Grd L C O
Chiaroscuro n°1
Csac

Grd L C O
Chiaroscuro n°2
Csac

Grd L C O
Chiaroscuro n°N
Csac
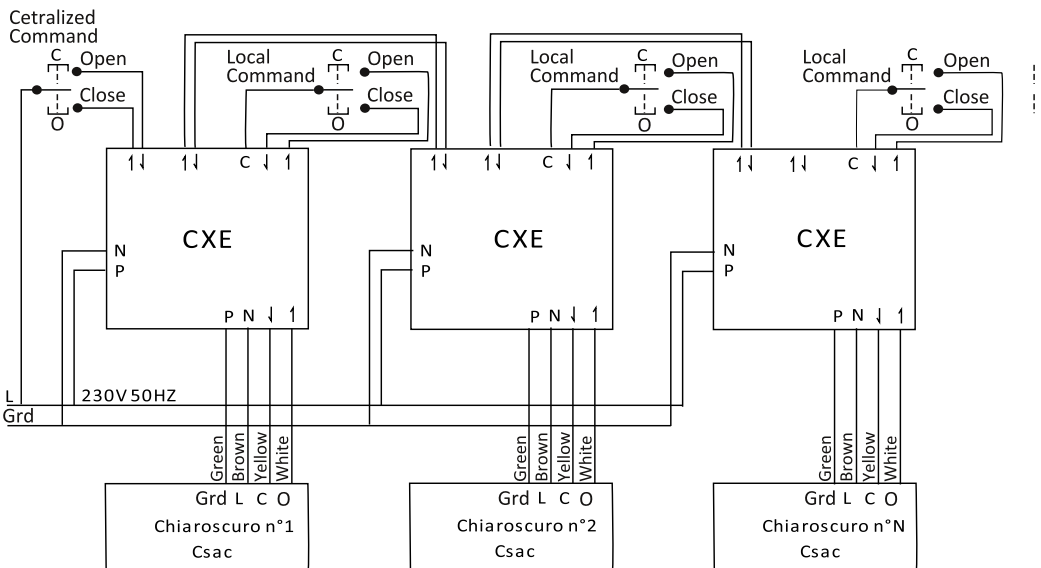
Inversion of the first opening shatter

Normally, the first opening shatter is the right one. In case of necessity to invert the opening sequence, follow the below described process:

1.0.   Cut off the power supply of the device for 30 sec

FOLLOWING PROCEDURE IS ALLOWED ONLY IN THE FIRST MINUTE AFTER POWER ON, AND MUST BE PERFORMED WITH TOTALY ARRESTED SHATTER

2.0.   Power on again and press the 'open' for a time interval of 8-10 sec.

TERMINATED ALL PHASES ABOVE, THE OPENING SEQUENCE WILL BE REVERSED

TO BRING THE AUTOMATION IN TO ORIGINAL CONFIGURATION OF OPENING SEQUENCE, IS SUFFICIENT TO REPEAT THE ABOVE DESCRIBED PROCEDURE

Startup

Here is explained the procedure for startup of the automation

FIG. 8

FIG. 9

FIG. 10

FIG. 11

1.0.
Release the clutch of the engine with a wrench key n°13 if previously blocked, to make the Shatters manually maneuverable. See Figure 9

2.0.
Cut off the power supply of the device for 30 sec, wait 30 sec then power on it again

2.1.
Press the 'open' button for approximately
0 - 3 sec. See Fig.9
Both the motors will move
Is possible that the shatters will not move
because the clutch are unblocked

3.0.
Let the engine complete the maneuver with released clutch then open the shatters manually until the maximum opening and block the clutch n°13
Fig. 10 and Fig. 11

3.1
Wait until the shatter will close automatically to complete the startup maneuver

If the engine, in the phase of movement, continues to slip means that the clutch is not properly fixed so better tighten the ø13 clutch

Special programming functions

PROGRAM SETTINGS OF THE AUTOMATIC CONTROL UNIT

1.0.   Cut off the power supply of the device for approximately 30 sec,
         then power on it again

FOLLOWING PROCEDURE IS ALLOWED ONLY IN THE FIRST MINUTE AFTER POWER ON, AND
MUST BE PERFORMED WITH TOTALY ARRESTED SASHES

2.0.   The programs are chosen according to the amount of time you press the
         button open / close:

                 8 - 10 sec.   : inversion of the first opening sash
                 10 + sec.   : Increase the delay time between two sashes

Automation functions

BELOW DESCRIBES THE STANDARD FUNCTIONS OF AUTOMATION,
ONCE THE START-UP OPERATION IS COMPLETE.

The command is a pulse type.

With a pressure of duration within 5 sec, the automation proceeds to the execution of the maneuver of opening / closing.

NB: As long as the button open / close is held down, engine will not make any movement.

The STOP command is executed by pressing the of open / close button, during the movement of sashes.

HALF CLOSED POSITION:
Press button open / close for more than 5 sec, regardless of the position of sashes.
Thereafter, the sashes will close completely and reopen in a half closed position.

Electro lock mounting

N.B. our system is able to handle Electro locks powered at 24V which do not exceed a current consumption of 600mA

The Electro lock is an *optional* accessory and is mounted on the inside of the main leaf, the power cables must be placed under the same wing and connected to the actuator.
To avoid damage to the cables in the operations of opening and closing , the cables should be inserted in the flexible cable guide which will then be fixed to the leaf and frame.

For more information refer to the installation instructions included in the package of Electro lock
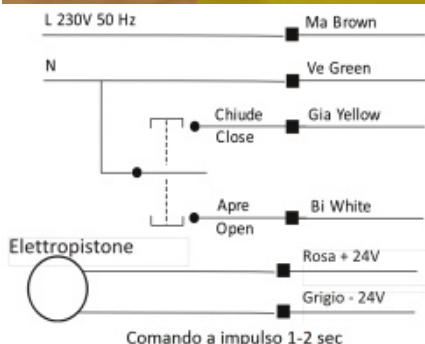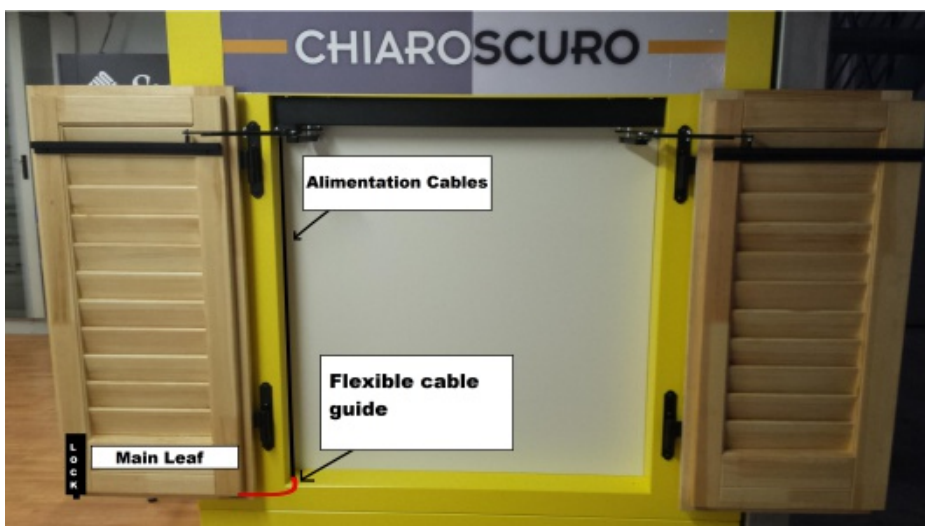
Note

Declaration of Conformity

CHIAROSCURO SAS di Girelli Marco & C

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

The undersigned, representative of the following manufacturer, declares that electrical product :

Model:	**Designation:**
STEL	Automation System for Swing Shutters

Is in accordance with the following Directives:

-2004/108 EC Directive (EMC Directive) and subsequent amendments

-2006/95/EC EC Directive (Low Voltage Directive) and subsequent amendments

-1999/5/EC Radio and Telecommunications Terminal Equipment

-2002/95/EC Restriction of use of certain Hazardous Substances

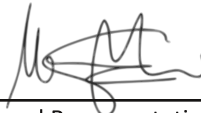**The Product is suitable to be installed into a machinery, made by installer, compatible:**

Certification CE, EN 13659, EN 60335-1, EN 60335-2-97, EN 61000-6-1 to 6-4

A condition it is used in manner for with it is intended and in accordance with the specifications and instructions to the assembler, it is also required to conform to existing standards

Place: ALA (TN) Italy

Date: 27/08/2015

Marco Girelli

Legal Rapresentative

mecha**tronic**

100% *italy*

secure *life*

CHIAROSCURO SAS di Girelli Marco & C.

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chiaroscuro
MECHATRONIC SYSTEMS