

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.

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



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PREFACE

Dear customer, we would like to 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 it in the best possible way and to maintain the characteristics of your equipment over time.








CHIAROSCURO SAS by 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 TERMS AND SYMBOLS

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

SIMBOLO	DESCRIZIONE
	User: (U.) An unskilled operator capable of operating the equipment under normal operating conditions and for simple maintenance work.
	Electromechanical operator: (E.O.) 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.
	Manufacturer's technician: (M.T.) 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.
	Note: It lists important indications or information contained in the manual which should be read, with particular attention, for the best use of the equipment.
	Danger: Indicates a situation that could lead to injury, even death, or serious damage to health.
	Attention: Indicates a situation that could cause, even indirectly, damage to persons, property and the environment, including economic consequences.
	Warning: 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, which is attached to the top of the actuator, contains all the identification data of the ST40 actuator.



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 **CE**.

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

2.1 2.1 INFORMATION ON TECHNICAL SUPPORT AND MAINTENANCE

Please contact the Service Centre to report faults:



For communications, information requests or any orders for accessories or spare parts, please send your requests to 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	ST40.2A	ST40.1A.L/R
NUMBER OF DOORS	2	1 sx / 1 dx
MIN-MAX WALL COMPARTMENT WIDTH	80-100cm./100-120cm./120-140	50 - 70 cm. - 1 door
MAX. SURFACE	3,0 mq - 2 doors	1,5 mq - 1 door
MAX. SASH WEIGHT	50kg.	
DIMENSIONS LxHxD	56x56x800 / 1150 mm.	56x56x600 mm.
SUPPLY VOLTAGE	110 ÷ 230 Vac	
MAXIMUM CURRENT CONSUMPTION	~ 0,3 A	
OBSTACLE DETECTION IMPACT FORCE	< 150 N	
MAX. TORQUE	40 Nm	
180° MANOEUVRING TIME	45 sec. - 2 ante	30 sec. - 1 anta
WORK CYCLE	20 cycles/hour	
ADJUSTING THE END STOPS	Self-determination of position	
DEGREE OF PROTECTION OF ELECTRICAL	IP 32	
IRREVERSIBLE CLUTCHED ARM	Standard	
CRANKCASE COLOUR	White Ral 9016 / Black Ral 9011	
ARTICULATION COLOUR	Black Ral 9005 - White Ral 9010	
CABLE LENGTH	~ 2 metres	
ELECTRO-LOCKING	Yes on request	
INTEGRATED RADIO RECEIVER	No external	



ATTENZIONE

If there are obstacles or wind blocking the movement of the leaf, 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:

The legislative references are:	The international technical standards are:
2004/108/CE EMC Directive 2006/95/CE LVD Directive 2006/42/CE machinery directive 2011/65/CE directive RoHS2EN 55014-2 (1998_10)/A1 (2002_09)/A2 (2009_09)	EN 60335-1 (2008_07) EN 60335-2-103 (2003_08)/A11(2009_07). EN 55014-1 (2008_01)/A1 (2010_10)/A2 (2012_02) EN 55014-2 (1998_10)/A1 (2002_09)/A2 (2009_09)



At the customer's request, a version of the ST40 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

5. The ST40 is an automation for the opening/closing of casement 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.).

6. RECEPTION AND STORAGE

6.1 CHECK ON RECEIPT OF EQUIPMENT

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

6.2 CONTENTS OF THE BOX:



Pz.1	Automation with telescopic cover (unscrew the top screws to allow adjustment)
Pz.1	Technical installation manual
Pz.8	Countersunk flat head screws with cross, 4.8x120/60mm screws for fixing the automation.
Pz.1	Cylinder head screws with cross, 3.5x25 screws for fastening tracks
Pz.1	90° end caps (optional extended for Padovano) complete with sliders
Pz.1	Sliding rails, length 40 cm. (optional to customer size)
Pz.1	Semi-rigid cardboard template for drilling holes in upper vaulting

6.3 CHECKS BEFORE INSTALLATION:



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).

6.4 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 registration, CHIAROSCURO SAS will provide the warranty provided for in the General Conditions of Sale.

7. 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.

TOOLS REQUIRED FOR ASSEMBLY

The following tools and materials are required for installation:-

Drill / Hammer drill	8 mm wall plugs.
Screwdriver	Power and control cable 4x1
Wall drill diam. 8mm.	Phillips and slotted screwdriver
Iron drill diam. 4mm.	Long spanner for No. 13 hexagonal screw (leverage is required for tightening)
Hexagonal screw key n°8	Scissors for cutting template



(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).

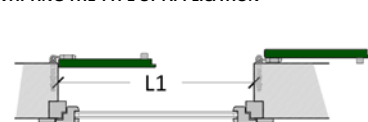


The list shown is not supplied with the ST40 product, but is necessary for correct installation on the bench. D.P.I. or others are the responsibility of the O.E. depending on the field installation itself.

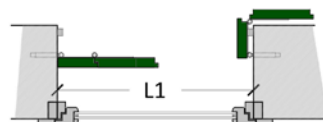
7.1 WARNING FOR INSTALLATION TYPES 4, 5, 6 AND DERIVATIVES

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

7.2 IDENTIFYING THE TYPE OF APPLICATION



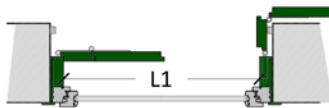
TIP.1 Bandella dritta
Cardine a murare



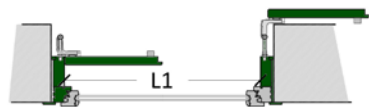
TIP.4 Bandella snodata alla padovana
Cardine a murare



TIP.2 Bandella dritta
Cardine su monoblocco



TIP.5 Bandella snodata alla padovana
Cardine su monoblocco

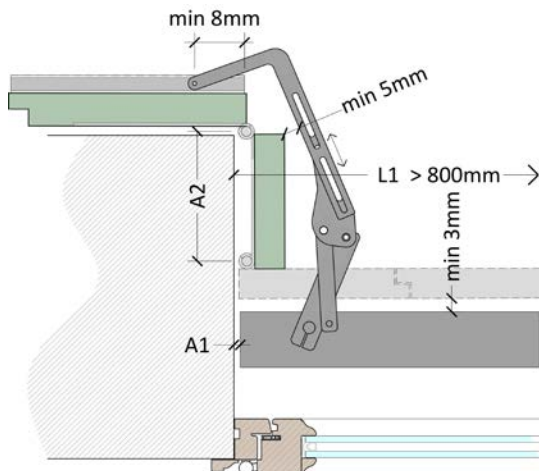


TIP.3 Cardine superamento spalletta
su monoblocco

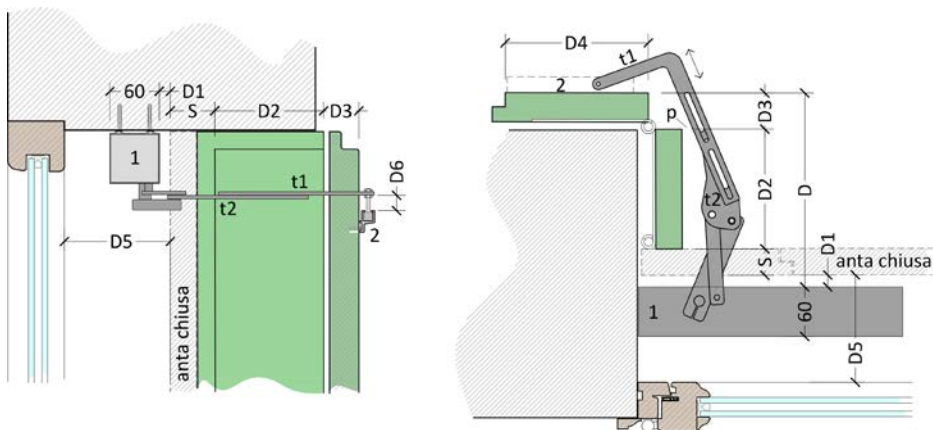


TIP.6 Bandella zancata
Cardine a murare

8. POSITIONING AND ADJUSTMENT OF JOINTS



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° terminal does not touch the sash (recommended minimum distance of 5mm). To increase this distance, you can use the slots on both the 90° terminal and the forearm to adjust it. In general, bear in mind that when closing, the articulated arm must always have the necessary space to extend. 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.



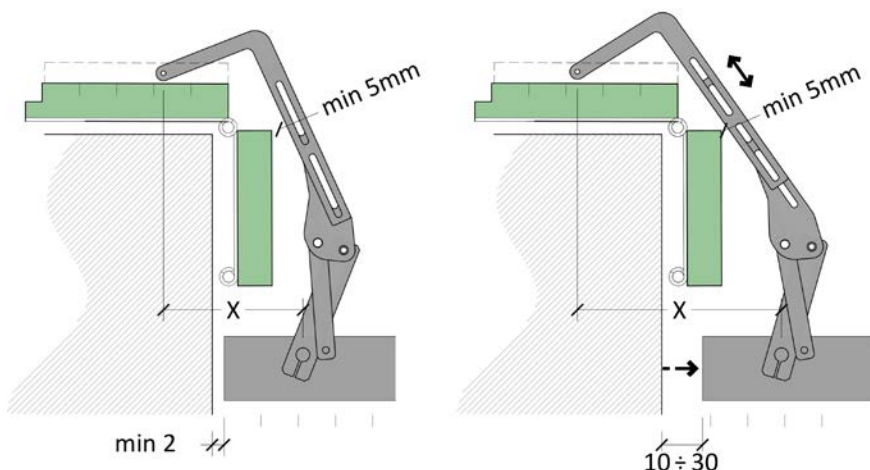
- If there is limited space available between closed shutters and closed glazing - distance "D5" - or if the maximum permitted D = 200 mm is to be used, distance "D1" can be reduced by up to 2 mm so that guide rail 2 in closing will have to pass under the arm and distance "D6" will be approx. 20 mm.



• 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° padovian 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.

MAX. 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.

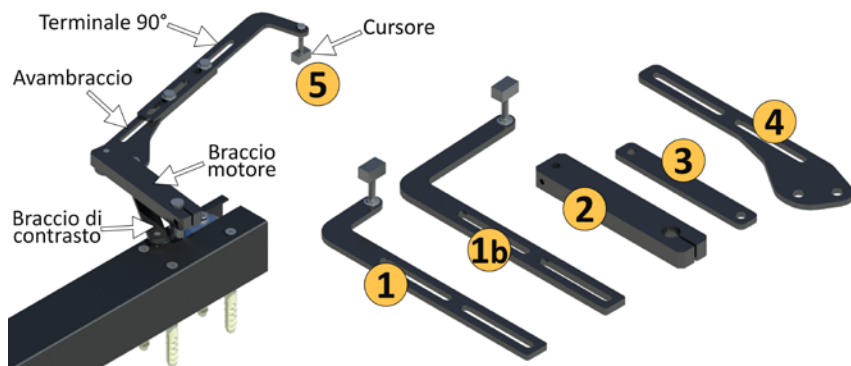


The thrust efficiency of the motorisation improves as the "X" measurement increases, which is the distance measured on the vertical axis between the fulcrum of rotation of the motor arm and the slider located on the track, and the position of the slider with respect to the hinge. Bear in mind that the 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 ST40 product is specifically for casement windows and doors. Any other use does not guarantee correct functioning and compatibility with CE marking.

9. ARTICULATION DETAILS



1	Slotted 90° terminal	1b	Extended 90° terminal for Padua
2	Engine arm	3	Contrasting arm
4	Forearm	5	Slider

10. CHOICE OF APPLICATION TYPE

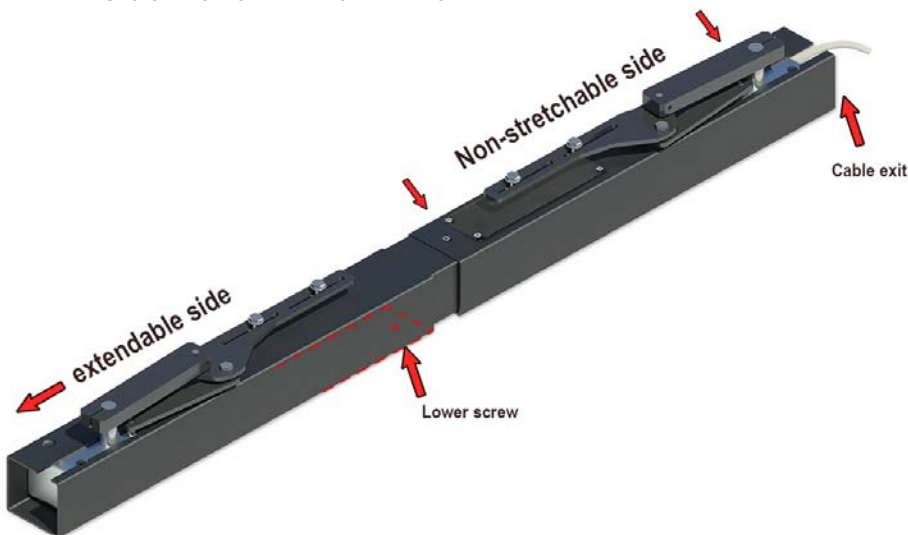
	<p>Side-by-side guide:</p> <p>Position the automation as shown in the section. It is necessary to maintain a minimum distance of 25 mm between the automation and the inside of the leaf. If, for various reasons, this distance is exceeded, check that the joints do not come into contact with the wall or the leaf during movement (see chapter on joint adjustment).</p> <ul style="list-style-type: none"> - Please note that the greater the distance between the drive and the door, the lower the drive's pushing efficiency..
	<p>Guide below:</p> <p>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.</p>
	<p>Built-in automation:</p> <p>Depending on the type of material your lintel is made of, the distance between the edge of the wall and the drive may vary, but in no case should it be less than 40 mm. If, for various reasons, this distance is exceeded, it is necessary to check that the joints do not come into contact with the wall or the leaf during movement (see the chapter on joint adjustment). Please note that the greater the distance between the automation and the leaf, the less efficient the automation will be.</p> <p>Mounting accessories:</p> <p>Sheet metal for flush-mounting omega plate for fastening the automation (only with side-by-side or underneath rail)</p>

11. PHYSICAL INSTALLATION OF AUTOMATION

11.1 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, even before installing the automation, it is necessary to check that the leaves have compatible characteristics (in particular, the maximum weight of the leaf must be 70 kg/140 kg and the maximum surface area of the leaf must not exceed 1.8 sq.m./2.5 sq.m. for each leaf). It is also necessary to check the rotation of the leaves, which must rotate fluidly, free and unobstructed. We suggest performing 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.

11.2 EXTENDING AUTOMATION TO THE WIDTH OF THE WINDOW



Unscrew the lower screw in the lower part of the drive as shown in the picture

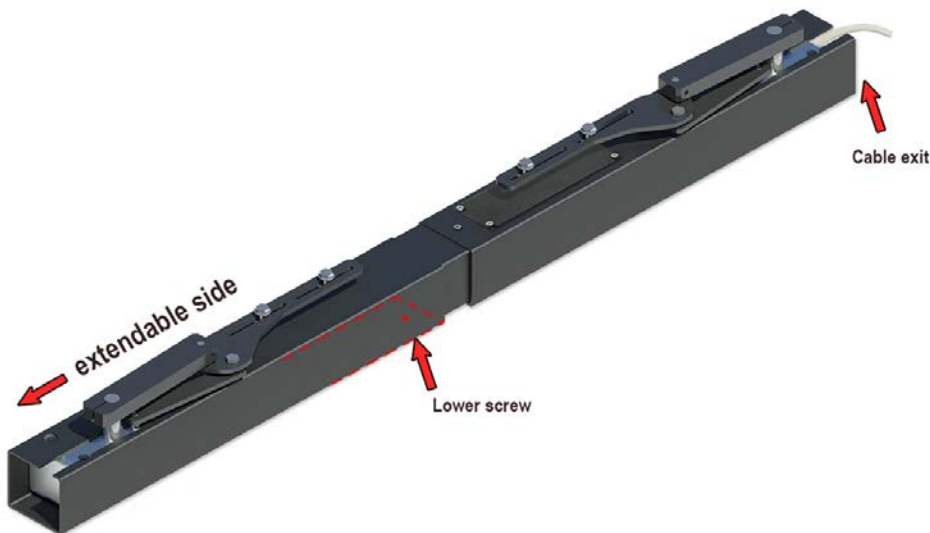
The structure of the ST40 consists of 3 plastic casings, one of which is extendable. Once you have opened the package, you must extend the automation so that it covers the entire width of the passageway, from the wall shoulder to the opposite shoulder in standard application cases. In the case of claddings or other structures that reduce the net passage width, align the automation with the internal perimeter of these structures and not with the wall shoulder. ST40 is supplied in three different sizes in order to adapt dynamically to different window widths: the first size covers widths from 80 to 100 cm, the second from 100 to 120 cm and the last size covers widths from 120 to 140 cm.

Take care not to slide the cover over the central telescopic device.



PLEASE NOTE: only one part of the automation is extendable. You can easily recognise the extendable part because it is the part opposite the cable outlet and the part opposite the rectangular plate covering the electronics, which is attached to the casing with 4 screws..

Once the extension of the automation has been identified (normally net span minus 5mm), unscrew the lower self-drilling screw shown in the photo. Gently slide the extensible part along the central telescopic element until it reaches the architectural light of the window or door frame, taking care to leave 2÷3 mm. on each side.



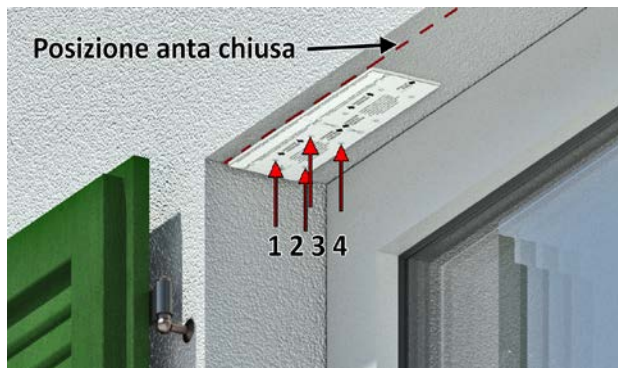
Extend the drive (window width -5 mm.) Re-tighten lower screw

Once the length has been identified and the automation has been extended, tighten the lower self-drilling screw previously unscrewed. This operation is essential to guarantee adequate rigidity to the automation in its final extension..

11.3 MOTOR POSITIONING



Use the template provided. In the case of an application with underneath rail (see application areas on page 8), the template must be cut with scissors at the corresponding dotted line "underneath rail version".



Mark the position of the closed shutters on the top transom of the window. Position the template with the text facing downwards, keeping the template aligned on the long side with your closed sash position marks and against the shoulder on the short side (unless otherwise assessed). Mark the position of the 4 holes on the transom (4 holes per side), drill and insert the 8 mm diameter Fisher plugs (not supplied). (not supplied).

11.4 FIXING AUTOMATION AND JOINT ADJUSTMENT

Fasten the automation using all 8 high-strength screws supplied (4 on each side), as unsuitable fastening of the automation may compromise its operation. (Use a normal screwdriver, NOT a cordless drill) Bring both the leaves and the articulations of the automation to the open position. Position the terminals at 90° below the forearm and, without fastening them completely, slide them along the slots until they reach the maximum possible extension, taking care that the forearm is not in contact with the shutter for any reason (minimum safety distance 5mm). Now firmly tighten the nuts that secure the 90° terminals to the forearms.

11.5 POSITIONING AND FASTENING THE SLIDING RAILS

When positioning the track on the sash, refer to the positioning instructions in the table shown on page 9. Determine the correct length of the track by comparing it to your sashes, and shorten it if necessary. Prepare the holes on the outer sides of the track, paying attention to the size of the screw head to identify its position on the vertical axis of the track, making sure that once fixed it remains adherent and flat to the track. In the case of aluminium, PVC or steel frames, we recommend the use of 4mm rivets. With the sashes open, align the slider with the rail and mark the first position on the sash. Then close the sash and align the slider with the rail to locate and mark a second position on the sash. After having fixed the track correctly, the slider should slide along its entire path, without friction and without altering the 90° terminal arm up or down, as the joints must maintain the same tension in every phase of the automation movement, otherwise friction could cause fatigue or, in the worst case, interrupt the movement of the automation.

11.6 CHECKING MOVEMENTS AND FASTENINGS

Check the stability of the rail fastening and if necessary, add fastening screws or use thicker screws if necessary. It is also advisable to carry out a check during the various opening/closing phases of the leaf, in order to be sure that the slider on the leaf never leaves the guide. The guide must be free during the entire movement phase. Therefore, the rail must be fixed after checking the correct movement.

12. ACCESS TO INTERNAL ELECTRONICS



At the bottom of the motor, on the cable outlet side, there is a metal cover plate, measuring 140x43 mm, attached to the ST40 casing with 4 screws. The standard board is pre-wired and configured with pre-optimised "default" parameters that are valid for most users and types of common use. The board is positioned inside the casing with a length of cable that allows the board to be completely removed from the plastic casing. The utmost care must be taken when removing and repositioning the board, ensuring that the cables remain firmly connected. Once the adjustments have been made to the board, it is recommended that the cover be closed using the original screws, taking care to reposition them carefully in the holes provided, screwing them in without excessively tightening them, as they are threaded on the plastic body. If you lose the screws, do not use different sizes to avoid damaging the electronics.



Changing the default parameters of the circuit board is not recommended and should only be carried out when essential. Configuration parameters should only be changed by knowledgeable and qualified operators.

13. ELECTRICAL INSTALLATION



WARNING !

The electrical installation must be carried out in accordance with the national standards in force, as well as for all legal obligations. 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. Good radio wave propagation depends on the nature of the environments to be crossed. The range of radio waves is influenced by the type of construction.

**ELECTRICAL SYSTEM DIAGRAM
RADIO CONTROL**



**ELECTRICAL SYSTEM DIAGRAM
AUTOMATIC CONTROL UNIT**



At the customer's request, the power supply can be moved to the top left, always with an inside view.

14. ELECTRICAL INSTALLATION



WARNING !

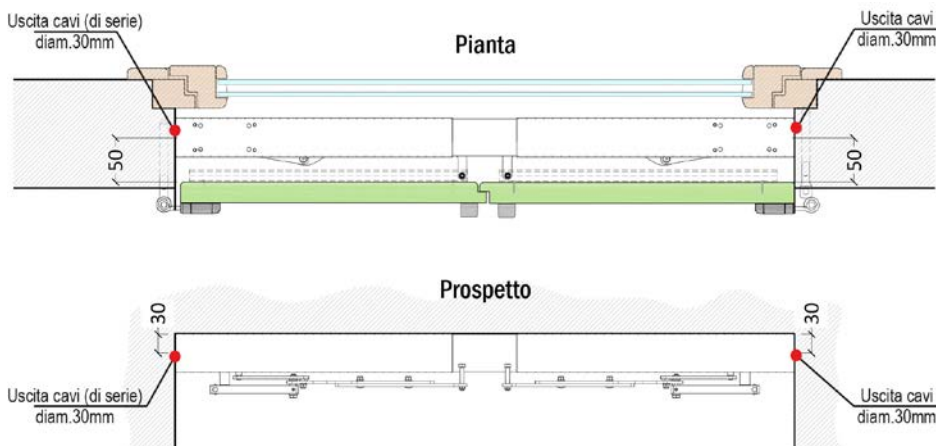
The electrical installation must be carried out in accordance with the national standards in force. Electrical connections must be carried out de-energised; do not supply power to the work area until all assembly operations have been completed.

RADIO SPECIFICATIONS

Frequency : 433.92 Mhz Transmitter range : approx : 70m free field Good radio wave propagation depends on the nature of the environments to be traversed. The range of the radio waves is influenced by the type of construction

15. ELECTRICAL CONNECTIONS

15.1 CABLE ACCESS TO MOTORS

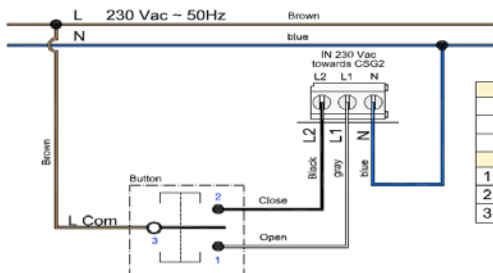


15.2 TYPE OF CONTROL BUTTON AND CONNECTION TO THE INTEGRATED CONTROL UNIT



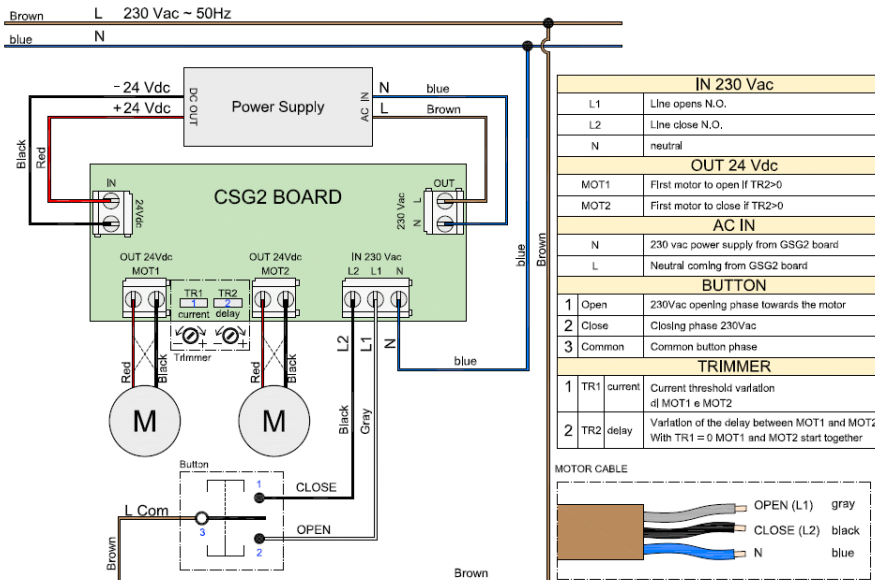
The switch must necessarily be of the type: up and down switch interlocked without latching

COMMAND CONNECTION FUNCTIONAL DIAGRAM



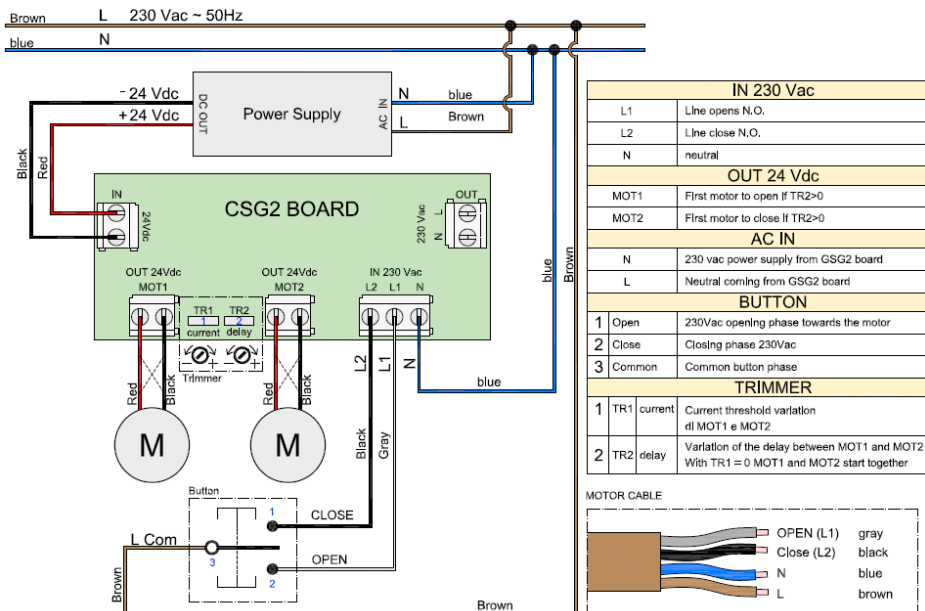
IN 230 Vac su GSG2	
L1	Line opens N.O.
L2	Line close N.O.
N	neutral
BUTTON	
1 Apre	Opening phase towards 230Vac motor
2 Chiude	Close phase 230Vac
3 Comune	Common button phase

WIRING DIAGRAM CSG2 - dead man



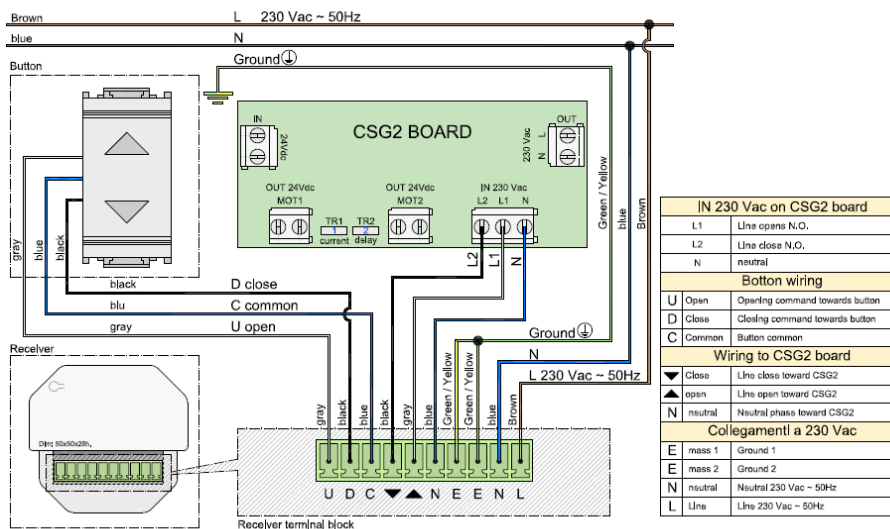
15.1 CONNECTIONS TO THE BOARD

WIRING DIAGRAM CSG2 - IMPULSIVE COMMAND



15.2 CIRCUIT DIAGRAM FOR RADIO RECEIVER MODEL EWSCE230

WIRING DIAGRAM FOR CONNECTION TO EWSCE230 RECEIVER ON CSG2 BOARD

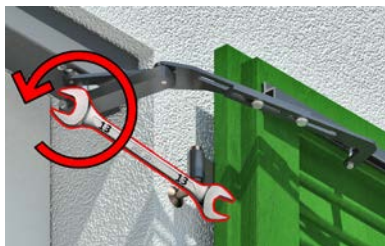


16. Compatibility with home automation systems



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.

17. Activation



1.0

Unlock the motor arm (joint components see illustration on page 11) with a spanner No. 13 to make the leaves manually operable. Position the leaves in ajar position, approximately 5cm apart.



2.0

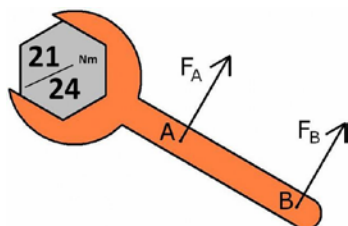
Give an impulse to the closing command.

CHIUSURA DELLE ANTE



3.0

When both motors have come to a complete standstill, bring both leaves to a complete closure.



4.0

Tighten firmly the 13 mm nuts that connect the pin to the motor arm. Tightening must be carried out firmly to prevent slippage between the motor shaft and the joints over time. We recommend the use of an elongated spanner that allows effective and long-lasting tightening. (N.B. Slippage of the motor shaft, when it occurs over time, makes repeated commissioning necessary. The torque required to tighten the nuts is between 21 and 24 Nm.



Once the activation procedure is complete, the automation is ready for use..

18. 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, simply interrupt 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.

19. Adjustment trimmer



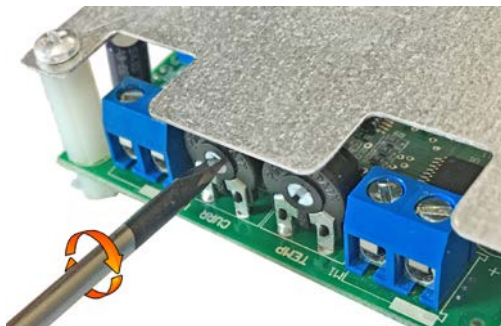
The board, as standard, is pre-wired and configured with pre-optimised "default" parameters that are valid for most users and types of common use. Changing the default parameters of the electronic board is not recommended and should only be done when essential. Modification of the configuration parameters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

19.1 TRIMMER TEMP: INCREASING THE OPENING DELAY OF THE LEAVES:



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.

19.2 CURR TRIMMER: INCREASING MOTOR POWER:



Setting the CURR trimmer allows you to set the thrust torque. 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.

20. SPECIAL PROGRAMMING FUNCTIONS

20.1 REVERSING THE FIRST SASH

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 invert the opening direction of the leaves, in addition to swapping the motor cables on the terminal boards MOT1 and MOT2, it is also necessary to invert the polarity by connecting the RED cable in place of the BLACK cable for each motor.

21. SOLENOID BOLT ASSEMBLY

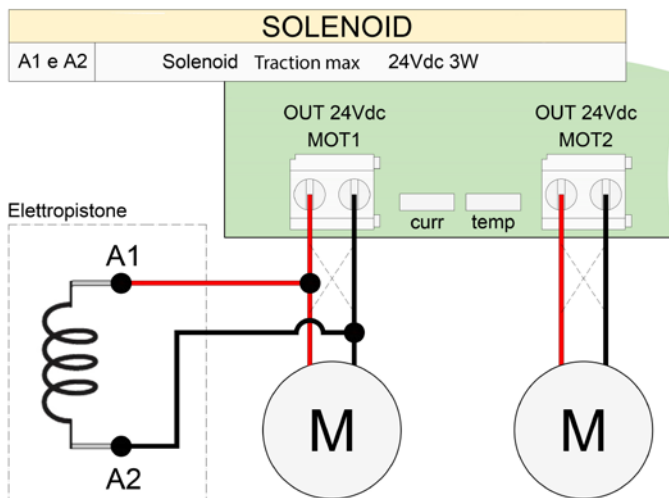


The solenoid bolt is an optional accessory and must be mounted close to the stop of the main sash in the closing position. A small perforated flange must be mounted on the sash, and when it is in the closed position, this hole must coincide with the solenoid bolt. The solenoid bolt cables must be routed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



N.B. Our system can handle elected pistons powered at 24V that do not exceed a current consumption of 600mA

21.1 SOLENOID BOLT CONNECTION WIRING DIAGRAM



The solenoid plunger is connected by bridging the motor cables corresponding to the first leaf to be opened. For further information, refer to the instructions on the solenoid plunger package.



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



In the event of defects/malfunctions, 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.

22. MAINTENANCE



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

22.1 PERIODIC MAINTENANCE



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

22.2 EXTRAORDINARY MAINTENANCE



User: Contact the Electromechanical Operator in case of breakages or malfunctions.

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'.

23. INCIDENTS AND ANOMALIES



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 result in immediate forfeiture of the supplier's warranty and consequent liability for safety and operation.

24. 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.

25. Limitations of liability

The ST40 offers a torque of 40 Nm: this is the maximum drive torque available on the transmission pin which, through the arm and track, imparts movement to the sash or maintains its position. It is the responsibility of the purchaser/installer to establish whether this torque is adequate for the needs of the application required; 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 hinges, 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 to this end cannot be guaranteed.



26. 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 sito: www.chiaroscuro.eu

Dichiara che il prodotto elettrico

Model ST40

Description Actuator for swing door movement

It complies with the legislative provisions transposing the following directives and subsequent amendments:

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

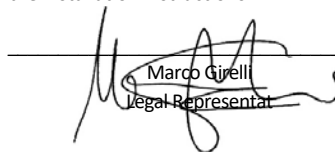
2006/95/EC EC Directive (Low Voltage Directive) and subsequent amendments

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 ST40 actuator is used exclusively for the intended applications and the installation is carried out in accordance with the installation instructions.

ALA, 20/01/2020


Marco Girelli
Legal Representative

27. 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 the costs for 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 all responsibility for any damage to persons or things caused by incorrect use or imperfect use of the equipment. The Court of Rovereto (ITALY) is competent for any possible controversy.