

# ECLIPSE

SMART CONTROLLER

**CONTROL UNIT FOR MOTORS 24 Vdc OF ECLIPSE SYSTEM**



## INSTALLATION AND OPERATING MANUAL

ENGLISH

CE

Version 1.2 of 24/06/2015

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## 1. INSTRUCTIONS FOR SAFETY

**ATTENTION: PLEASE CAREFULLY READ THE FOLLOWING SAFETY INSTRUCTIONS BEFORE STARTING THE INSTALLATION OF THIS APPLIANCE; THESE DATA ARE USEFUL TO PREVENT ELECTRICAL CONTACTS, INJURIES AND OTHER ISSUES.**

**KEEP THIS MANUAL FOR FURTHER ADVICE.**

This control unit is only for the activation of solar collectors motors ECLIPSE.

**The use for different applications is not authorised by the manufacturer.**

- After removing the packing, be sure that the appliance is intact.
- Before connecting the appliance, verify that your power supply has the same characteristics as shown on the technical data label of the equipment.
- This machine has to be used only for its original designed purposes and the manufacturer cannot be responsible for any of the damages caused by an improper use.
- Installation of the appliance must be carried out according to the manufacturer's instructions. A failure to observe those recommendations may compromise safety.
- Installation must be performed only by expert and qualified personnel. The operation of electrical power supply system must be performed in compliance with applicable regulations.
- In order to avoid injuries or death danger caused by electrical current, before starting any wiring or adjustment operation, disconnect the power from the supply line.
- In order to ensure a proper disconnection, we recommend you to install a temporary switch (button), bipolar approved. For disconnection from the electricity grid, upstream of the mains, a single-pole power switch must be installed with open contact gaps of 3,5 mm minimum.
- The main connection (Schüko socket) is provided for general supply in single-phase of 230 Vac.
- In order to ensure insulation in accordance with the current standards on electrical safety, it is necessary to use proper connection materials.
- Do not wash the appliance with solvents or water jets. Never immerse the appliance in water.
- **Attention:** in case of fault or malfunctioning, switch off the appliance from the master switch and address directly to a qualified personnel.
- Each repair must be made only by qualified personnel of a technical service authorised by the manufacturer.
- Before cleaning or making any other maintenance operation, you must disconnect the unit from the mains grid. For maximum safety, it is recommended to remove all electrical connections.
- We highly recommend you to use only original spare parts. Failure to comply with the existing measures is likely to undermine safety and clear all benefits coming from the equipment warranty.
- In case of troubles or errors during the installation or functioning, please address to your dealer or directly to the manufacturer.

## 2. MANUFACTURE AND REGULATORY REFERENCES

- Control unit has been designed and made only for controlling and activating ECLIPSE system motors; any other use is forbidden.
- Electrical wiring must meet the EU standards on electrical systems.
- Control units are made in accordance with European directives and are certified with the **CE** mark.
- All appliances connected to the control units must be manufactured according to the current regulations and comply with EU standards in the field.

### 2.1 TECHNICAL DATA

PARAMETER	VALUE
Supply voltage	<b>230 Vac (<math>\pm 10\%</math>)</b>
Frequency	<b>50 <math>\div</math> 60 Hz</b>
Electrical connection type	<b>pre-cabled Schüko socket with 1,5 mt cable</b>
Output voltage	<b>24 Vdc</b>
Control unit consumption in stand-by mode	<b>5 W</b>
Consumption of each single motor connected in motion (for 5 seconds)	<b>120 W</b>
Input/Output	<b>IN: n.2 I/O 5V (signal from solar control unit) n.4 3-pole electrical junction (wiring 24V motors) OUT: n.2 two potential free contacts (output and other units) (alarm signal)</b>
Number of controllable motors	<b>from 1 up to 4</b>
Double electrical insulation	<b>YES</b>
Functioning temperature	<b>-20 <math>\div</math> +70 °C</b>
Protection rating for electrical devices	<b>IP44</b>
Weight ( <i>in order of installation</i> )	<b>3 Kg</b>

## 2.2 PLATE AND MARKING DATA

Each control unit is **CE** marked and can be put on the market and in use within European Union without further formalities. The **CE** mark on the product indicates, *“presumption of conformity with the directives”* issued by the European Community.

The manufacturer has technical archive containing all documentation showing that all products have been tested and verified for approval in compliance with the directives.

The plate data are on an adhesive polyethylene label, on the outside of the electrical control unit.

Values comply with the requirements of the existing Community rules.

The production batch, which identifies the control unit version, is expressed as date on the side label (see next image).

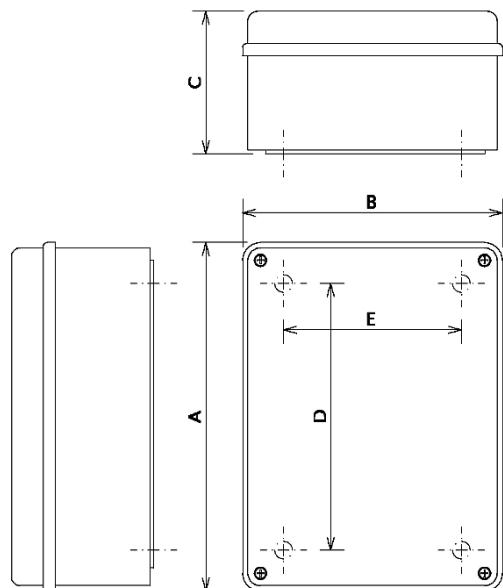


## 2.3 SUPPLIED ACCESSORIES

Each control unit is equipped with:

- n.1 electronic control unit within the plastic container.
- n.1 manual for installation, operating and maintenance instructions.
- n.3 Rubber cable glands Ø 22 mm for connecting cables;
- n.1 replacement fuse 5x20 fast 1.25 A, fixed with tape on back of the cover.

## 2.4 OVERALL DIMENSIONS FOR INSTALLATION



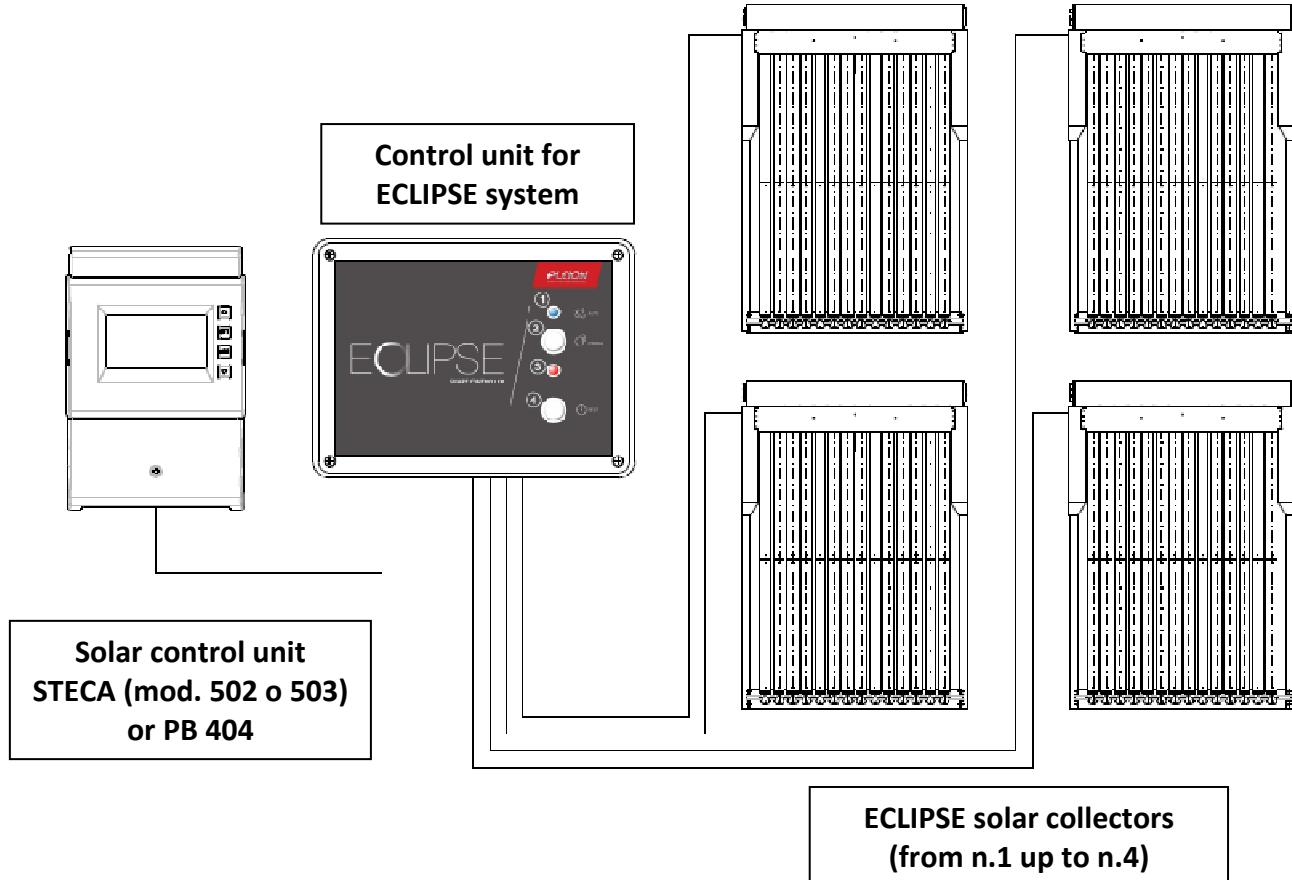
MEASURE	LETTER	VALUE (mm)
Length	A	196
Width	B	146
Depth	C	80
Longitudinal interaxis holes	D	150
Diagonal interaxis holes	E	100

### 3. DESCRIPTION

Control unit has been developed to activate ECLIPSE solar collector motors.

Each unit can activate from 1 min. up to 4 max. motors.

Operation of motors is sequential, not simultaneous.



**PLEASE NOTE: Control system can be automated if properly connected to a solar control unit STECA mod. 502 and 503 or PB 404.**

### IMPORTANT DATA CONCERNING ELECTRIC MOTOR SPECIFICATIONS

Each motor is supplied with a 20 mt power cable and connection to control unit; such length is dimensioned for a proper system functioning.

The **CE** mark of control unit considers motors connection by using the supplied electric cable.

ATTENTION. In case of modifications to the length of electric cables of motors:

- the **CE** mark of control unit ceases;
- electrical connections must be redesigned according to new lengths;
- lifeline protection level and system phase displacement must be checked again;
- a new certificate of compliance concerning the electric system must be issued by a qualified and authorised electrotechnical installer (Italian Ministerial Decree 37/2008).

## 4. INSTRUCTIONS FOR ASSEMBLY AND STARTING

**THESE INSTRUCTIONS ARE ADDRESSED TO QUALIFIED TECHNICAL PERSONNEL.**

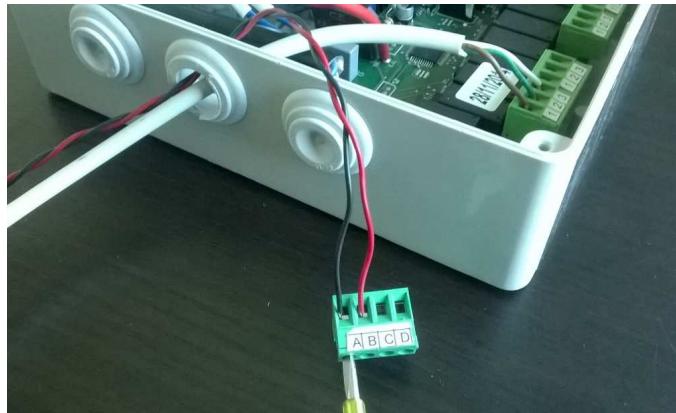
In order to facilitate the installation operations and ensure the proper system functioning, it is recommended to follow those instructions and cautions.

### 4.1 SETUP AND WIRING

1. Ensure that the appliance has been kept intact, away from damages during transportation.
2. Choose the suitable position to place the electricity box, according to the distance from solar control unit and ECLIPSE solar collectors. Control unit does not need any maintenance service, but it has to be placed away from direct weather agents.
3. Open the cover by unscrewing the n.4 locking screws. For a more comfortable way of work, you should remove the cover from the box base.
4. Place the appliance box in the chosen position and use a pencil to draw the drill hole on the support (wall or other).
5. Drill with a drill bit diameter corresponding to the wall plug or fixing screw.
6. Mount the appliance box, by fixing all screws permanently.
7. Open with a cutter or a pair of scissors the rubber cable gland, for running all connection cables. During the drilling process, pay special care not to touch the electronic board with the blade as that could cause irreversible damages.



8. Complete the electrical wiring path and make the proper electrical connections by following the wiring diagram on page 13. To facilitate the electrical connections gently remove the electrical junction boxes and then replace them properly.



## 4.2 RESET AND FIRST TURN ON

The control unit is able to operate properly only if at the time of first turn on all the plastic layers are on the back of the solar collector. In order to check this alignment, the control unit contains the "**RESET**" function.

The "**RESET**" function checks - in sequence - the position of the plastic layers fixed to each collector/motor and opens the layers completely, irrespective of the position they are. The "**RESET**" function goes on about 40 seconds; it's very important to wait until the end of the process and not activate any control before.

The "**RESET**" function has to be run always at the first turn on of the control unit and when it's not known the position of the plastic layers (for example after a maintenance operation).

To run the "**RESET**":

1. the control unit has to be not powered (Schuko disconnected);
2. Switch all DIP switches (SW1) as shown in the table below (upwords).

SW1 POSITION						
ON	<input type="checkbox"/>					
	1	2	3	4	5	6

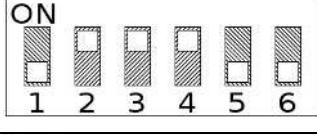
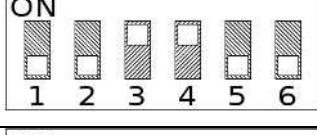
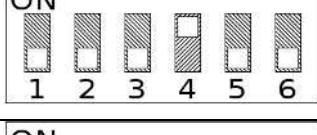
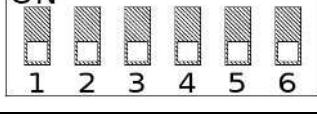
3. Plug the wall socket Schüko to power the control unit. The BLUE led on the front cover lights up and the RED led starts flashing for about 40 seconds: the control unit rotates the plastic layers on the backside of each solar collector connected, in sequence.
4. When the RED led goes out the "**RESET**" is finished; cut the power by disconnecting the wall socket Schüko.

## 4.3 PROGRAMMING

The control unit is equipped with a protection system that allows to exclude the motors with anomalies. For the correct operation it is necessary to enable the motors connected to the control unit, switching the microswitches (SW1), depending on the number of motors connected, as shown in the chart below.

**PLEASE NOTE:** The programming of the control unit can be performed only when it is not powered (Schuko disconnected). The programming will have no effect if it's done without first disconnect the power.



SW1 POSITION	NUMBER AND MOTOR TYPE
 1 2 3 4 5 6	1 motor (M1)
 1 2 3 4 5 6	2 motors (M1 + M2)
 1 2 3 4 5 6	3 motors (M1 + M2 + M3)
 1 2 3 4 5 6	4 motors (M1 + M2 + M3 + M4)

**PLEASE NOTE:** For the correct operation of the encoder, except for the "RESET" function, microswitches n. 5 and n. 6 must be placed in OFF position (downward).

## 4.4 STARTING

Completed the programming of the control unit:

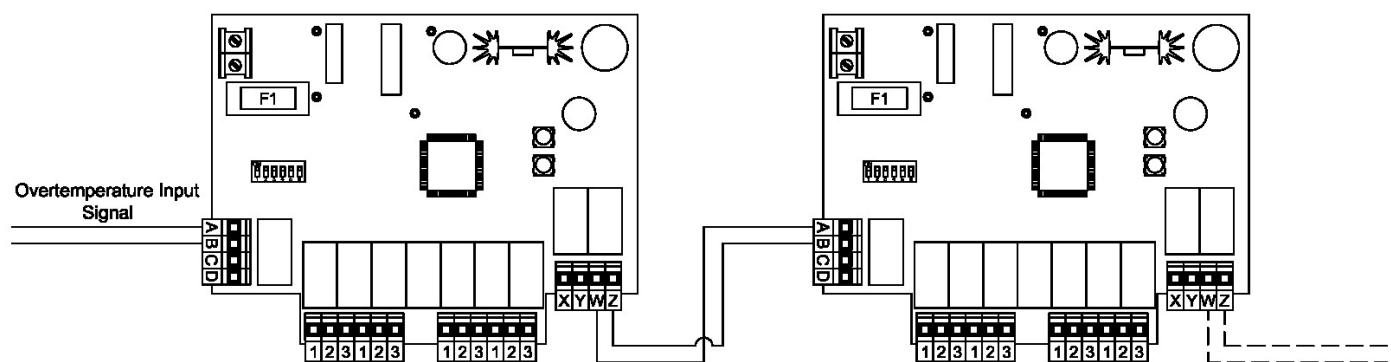
1. close the cover by connecting the electrical junction box of the buttons, keep the proper mounting direction and screw the n.4 locking screws;
2. connect the plug to a Schüko socket and power the control unit;
3. run the test by checking the light blue LED, as indicator of correct power supply and functioning.

## 4.5 SUPPLEMENTARY CONNECTIONS

### 1. Connection in series of multiple control units

For connection in series of multiple control units, it is necessary to connect **W** and **Z** terminals of the upstream control unit to **A** and **B** terminals of the downstream control unit (see diagram below).

In this way, the over temperature input signal is replicated on each cascade control unit, by using a single solar control unit.



### 2. Switching-off remote control (holiday function)

The forced switching-off control can be remoted at distance by the control unit (for ex. in the house), by connecting to **C** and **D** terminals an I/O switch (as wiring diagram on page 13).

The switching-off of the switch will activate motors and make the plastic covering layers close; when switching-on the switch, the signal functioning coming from the solar control unit is restored.

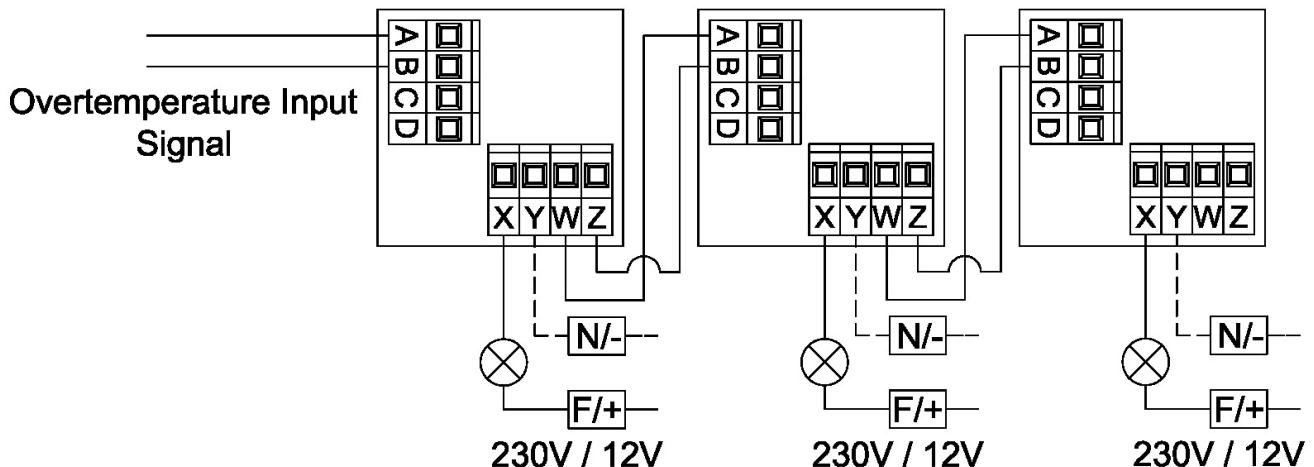
Conditions for the switching-off control use are the same as for the manual mode functioning (see section 5.2).

### 3. Anomalies alarm remote signal

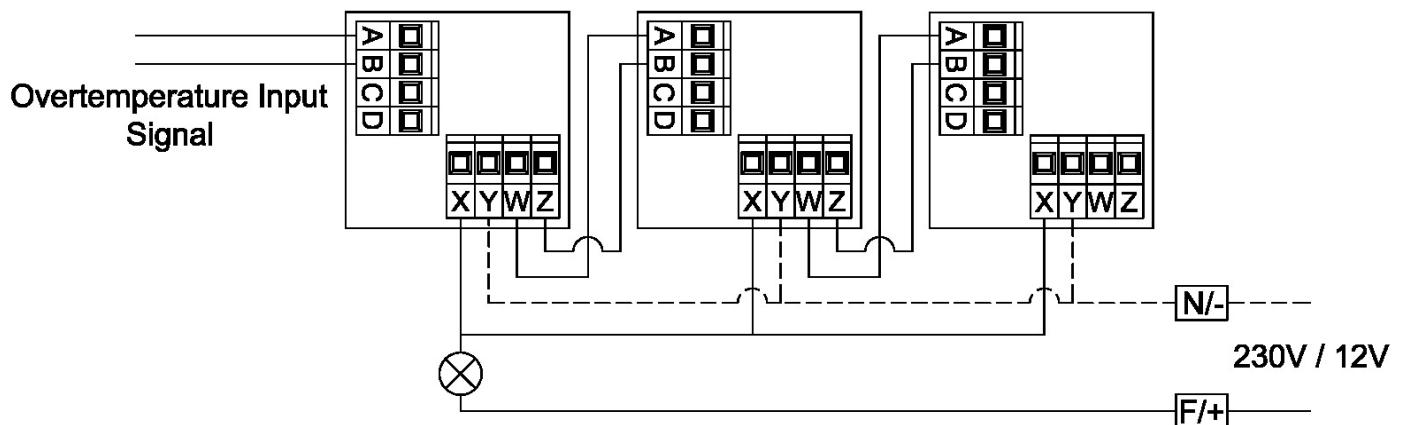
In order to display any kind of anomaly, the alarm control can be remoted at distance by the control unit, by connecting to **X** and **Y** terminals a warning signal (flashing light or beeper) and following the wiring diagram on page 13.

If there are multiple control units in series, the alarm remote signal can be implemented as follows:

- dedicated signal for each control unit;



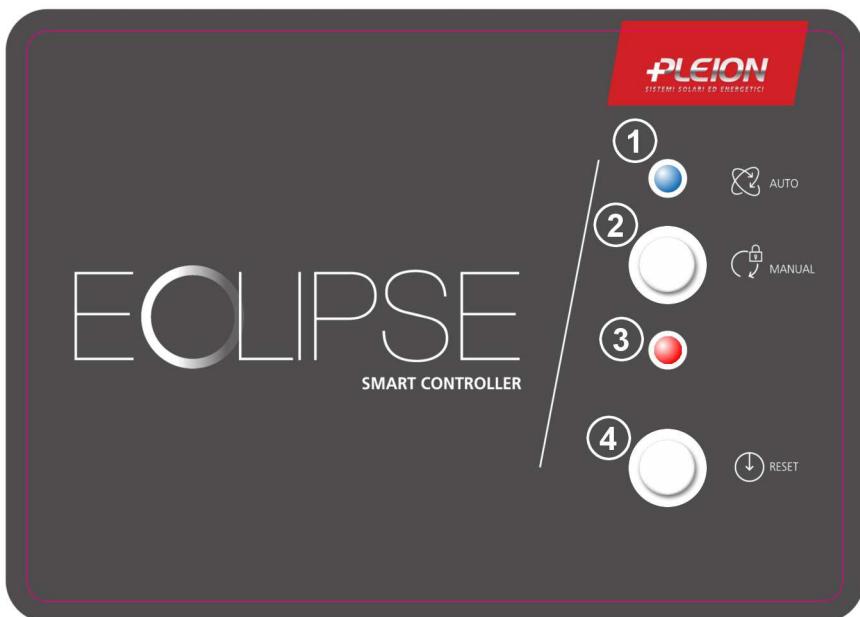
- single signal for all control units.



## 5. FUNCTIONING

**THIS CHAPTER DESCRIBES TWO DIFFERENT FUNCTIONING MODES OF THE CONTROL UNIT AND THEIR PROCESSING.**

**ATTENTION. CONTROL UNIT HAS ALREADY BEEN FACTORY PROGRAMMED; SETTINGS CANNOT BE MODIFIED BY USERS, NOR BY PLEION TECHNICAL ASSISTANCE SERVICE.**



KEY/LED	FUNCTION	NUMBER
<b>BLUE led</b>	AUTOMATIC mode	[1]
<b>“MANUAL” key</b>	how to shift from AUTOMATIC – MANUAL mode	[2]
<b>RED led</b>	covering layers closing	[3]
<b>“RESET” key</b>	alarm reset	[4]

Control unit operates into 2 modes:

- **AUTOMATIC** (light blue led [1] on);
- **MANUAL** (light blue led [1] off).

The shifting from one mode to another is made by pushing the “MANUAL” key [2].

## 5.1 AUTOMATIC MODE

Once voltage is given, control unit goes into AUTOMATIC mode (light BLUE led [1] on).

In AUTOMATIC mode, control unit automatically manages the functioning of motors, that is the opening and closing of the dimming layers of ECLIPSE solar collector.

Layers are kept under collector tubes, by allowing solar radiation of collector itself until an overtemperature signal acts (danger for stagnation) coming from the solar control unit. In this case, the control unit activates motors and brings to closing the dimming layers and keeps covered the solar collector until the overtemperature signal from the solar control unit is on.

During the opening and closing, the RED led [3] flashes. When layers are in covering mode, the RED led [3] is on. When layers are under the collector, the RED led [3] is off.

For a proper functioning, **Rs** and **Rs** terminals of the solar control unit must be connected to A and B terminals of the control unit, as shown in the wiring diagram on page 15.

**W** and **Z** terminals of the control unit are a free contact which closes when the dimming layers are in covering mode. Such signal can be used to activate other devices, for example connection to other control units (by using the connection to a single solar control unit).

## 5.2 MANUAL MODE

In order to shift to MANUAL mode, simple push the “MANUAL” key [2]. In MANUAL mode (light BLUE led [1] off ), control unit brings to closing the covering layers, independently from the signal coming from the solar control unit, and keeps covered the solar collector until the AUTOMATIC mode is restored.

MANUAL mode can be activated when solar collector is not used for a long period (ex. holiday) a/o for protecting it from strong weather agents (ex. hail).

When the system is in MANUAL mode, light BLUE led [1] is off and RED led [3] is on.

**PLEASE NOTE. In case of supply interruption, when switching on, control unit will start functioning always in AUTOMATIC mode.**

ATTENTION! In the case of solar thermal system with seasonal operation (where it's important guarantee the coverage of the solar field during the summer months of non-use) it is recommended to set an external switch between C and D terminals. The switch, closed manually at the stop of the system, freezes MANUAL mode / holiday function (see par. 4.5 point 2 on page 10 and the wiring diagram on page 15). So the control unit restarts in MANUAL mode (covering layers closed), even in case of power failure.

At the restart of the solar system, is enough open the switch to return to the AUTO mode.

## 5.3 ANOMALIES ALARM

All motors supplied by Pleion have encoders, a device for detecting any malfunction and protect the functioning of motors. Control unit is then able to recognise the proper functioning of motors.

In the event that there are some anomalies (for ex., a malfunctioning of motor due to an object stuck between plastic layers), control unit:

interrupts the power supply to the motor with anomalies;

continues to power and control the other connected motors;

sends the signal for anomaly by simultaneously flashing the RED led [3] and the light BLUE led [1] and closing the **X** and **Y** terminals (this signal can be used to remote the alarm).

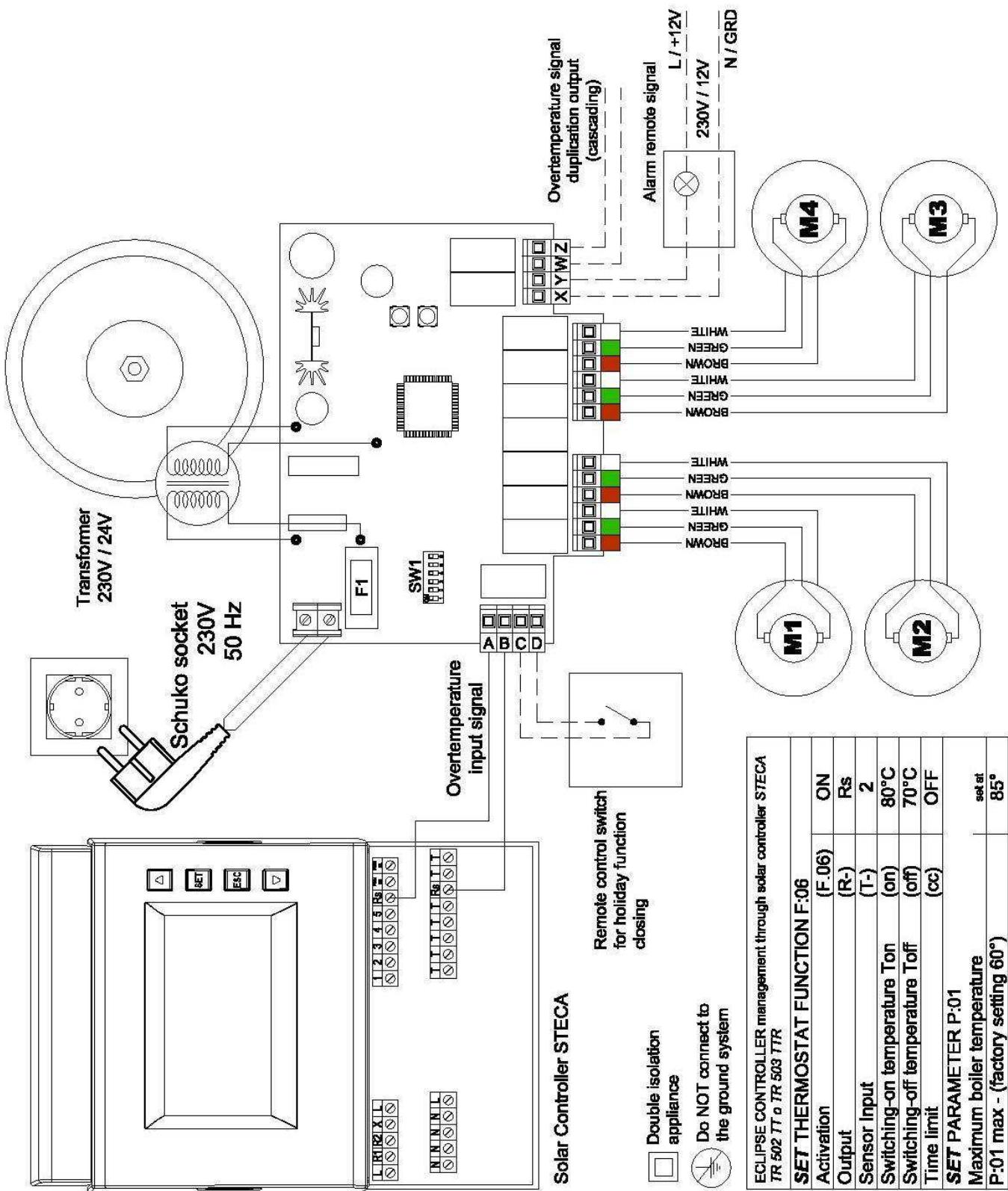
## 5.4 AFTER ALARM RESET

In case of anomalies, the control unit functioning can be restored only manually, by pushing the “RESET” key [4].

Control unit will require the connected motors to move as the “RESET” function (see previous paragraphs) and then will set back again in the mode requested by the system.

If this procedure does not succeed and the alarm is always running even after 3 manual reset attempts, please contact Pleion Technical Assistance.

## 6. WIRING DIAGRAM AT 1 - 4 MOTORS



## 7. DECLARATION OF CONFORMITY TO EU DIRECTIVES

**S.G. Elettronica s.r.l.** - Via Ferrari, 28  
30037 Scorzè Venezia – ITALY  
P.IVA 02272310273  
Tel. 041.5841973 / Fax 041.5841979  
[www.almot.it](http://www.almot.it) – [info@almot.it](mailto:info@almot.it)

The company **S.G. Elettronica s.r.l.** declares that the items are in conformity with all technical regulations related to products within the scope of application of the Community Directives **2006/95/CE, 2004/108/CE and 99/5/CEE**,

that is:

**ETSI EN 301 489-3 V1.4.1:2002**  
**ETSI EN 301 489-1 V1.8.1:2008**  
**EN 300 220-1 V2.1.1:2006**  
**ETSI EN 300 220 - 2 V2.1.2:2007-06**  
**EN 50371 (2002)**  
**EN 60950-1:2006 EN 60950-1/A11:2009**

### **The declaration of incorporation for partly completed machinery (Directive 2006/42/CE, Annex II- B)**

The Manufacturer, **S.G. Elettronica srl**, declares that gearmotor for roller blinds and sun awnings of **HAD101 151 201 251 351 501 Classic model**:

- it is intended for incorporation into a covering system for making a machine according to **Directive 2006/42/CE**. Such machine cannot be put into service before being declared in conformity with the provisions of Directive 2006/42/CE (Annex II-A).
- It is in compliance with the essential requirements applicable to the following regulations:
  - machines directive 2006/42/CE (Annex I, Chap. 1);
  - low voltage directive 2006/95/CE;
  - Electromagnetic Compatibility Directive 2004/108/CE.

Year of manufacture: **2014**

Scorzè, **10/10/2009**

Signature of the legal representative:

**Sandro Zottino**



## 8. ENVIRONMENT PROTECTION

All material used for the manufacture of control units are recyclable. We recommend that machine and its accessories, together with package, etc... are sent to an ecological centre for reusing materials.

## 9. LEGAL AND CONVENTIONAL WARRANTY

The manufacturer, as guarantor, will ensure the proper functioning of the machine. He will undertake to replace the defective parts for bad quality material or construction defects according to Italian Law - Art. 1490 of Civil Code.

The warranty of good functioning of appliances given by the manufacturer means that he will be ready for repairing or replacing free of charge, in the shortest time, those parts that could fail during the warranty period. The buyer cannot claim the right to any indemnity for damages, direct or indirect, or other expenses. Any attempt for repairs by unauthorised personnel will void the warranty.

Warranty does not include fragile parts or exposed to natural wear as well as to corrosive operations, to overloads even if temporary, etc. The manufacturer is not responsible for any damage caused by improper installation, manoeuvring, handling or insertion, from excessive solicitations or incompetence. Repairs under warranty are always to be considered "*ex works producer*". Transport costs (one way and return) are always paid by the buyer.

Legal warranty covers the product and each single part for a period of **24 months** from the purchase date. Conventional warranty is an additional coverage given free of charge by the manufacturer. Its terms, effective date and duration are established by the "Certificate of Conventional Warranty" Pleion, and released as the product is made functioning.

## 10. FINAL OBSERVATIONS

Pleion products are manufactured in a workmanlike concerning safety, in accordance with the current applicable laws.

Properly assembled, installed and used according with these instructions, are not dangerous for the safety of people, animals and properties. Products that fall within the scope of the EC directives fully comply with the essential requirements.

When **CE** marked, they can be placed on the market and put into service within the European Union without further formalities.

The **CE** marking on product, package and related instructions for use, indicates "presumption of conformity with the directives" issued by the EEC.



PLEION  
SISTEMI SOLARI ED ENERGETICI

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