HYDROTHERMAL SYSTEMS

COMPARATO®

www.comparato.com

D NELLO SRL

INSTALLATION AND USER MANUAL MIXING/THERMOREGULATING MOTORISED VALVES

DIAMIX-COMPAMIX
DIAMIX L-COMPAMIX L

CE

Certified Quality System UNI EN ISO 9001/2008

TABLE OF CONTENTS

1. GENERAL DESCRIPTION

The **DIAMIX - COMPAMIX - COMPAMIX** e **DIAMIX L - COMPAMIX L** series valves are motorized mixing ball valves consisting of ball valve and actuator.

CAUTION

Mixing-thermoregulating valves must be installed by qualified personnel according to the specifications of this manual, in compliance with local standards and IEE regulations. **COMPARATO** will not be held responsible for any problems arising from the non-compliance with these instructions. Before the assembly, the installer shall read the instructions carefully. The manufacturer shall not be held liable, both contractually and non-contractually, for any damage to people, animals or things arising from the misuse or from any mistake made during the installation or special maintenance. Likewise, no liability shall derive from any operation performed by unqualified personnel and from all actions infringing the provisions for the operation and laying instructions.

CAUTION! Risk of short-circuit or damage to the device! Before performing any operation, disconnect the power supply. The supply network must be disconnectable by means of a magnetothermic switch and secured with a residual current-operated circuit breaker. **This device must be protected by an earthing equipment.**

CAUTION! **The installer/service engineer/user is not allowed to perform any operation inside the device.** Opening the device, unless expressly authorized, will automatically void the warranty. For further information please contact our Technical Office.

NAME AND BRAND

The following labels are visible on the housing of the actuator:

- **Trademark and name of the manufacturing company:** Hydrothermal systems
  COMPARATO NELLO s.r.l.
  Viale della Libertà, 53 • Località Ferrania
  17014 Cairo Montenotte (SV) ITALY
- **Name of the models:** DIAMIX-COMPAMIX e DIAMIX L-COMPAMIX L
- **Production date:** Month and Year
- **EC regulations compliance:** Sticker bearing the Company brand, EC mark, voltage and power frequency.

USE OF DIAMIX-COMPAMIX

Mixing/thermoregulating valves are specifically used for:

- **sanitary hot water mixing with recirculation system**
- **underfloor heating system**
- **under-bench heating system in greenhouses**
- **thermoregulations in general**

USE OF DIAMIX L - COMPAMIX L

Mixing/thermoregulating valves are specifically used for mixing hot sanitary water in systems where a programmed thermal disinfection of the circuit is needed, in order to significantly reduce the presence and proliferation of legionella bacteria.

Thermal disinfection is compliant with what stated in national guidelines for the prevention and control of the Legionellosis.

N.B.: The multiple variables connected to the realization of plants where this equipment can be installed are so numerous that it is impossible to totally exclude the risk.

NOTE ON OPERATION: for DIAMIX - DIAMIX L and COMPAMIX - COMPAMIX L to operate correctly with plumbing and sanitary fittings, the use of recirculation loop is essential.

2. ELECTRICAL AND MECHANICAL FEATURES

ENVIRONMENTAL CONDITIONS	
Duty temperature	0÷60°C
Storage temperature	0÷60°C
Moisture	25÷85% U.r.

POWER PLATE DATA FOR VERS. 110V AC	
Rated supply voltage	110V +/-10%
Rated frequency	50/60 Hz

POWER PLATE DATA FOR VERS. 230V AC	
Rated supply voltage	230V +/-10%
Rated frequency	50/60 Hz

POWER PLATE DATA FOR VERS. 24V AC	
Rated supply voltage	24V +/-10%
Rated frequency	50/60 Hz

MAX ELECTRICAL POWER ABSORPTION

7,5 VA DIAMIX / DIAMIX L
12 VA COMPAMIX / COMPAMIX L

CLASS PROTECTION

IP 67 for ALL versions

OPERATING TIME (90°)

35 SEC. DIAMIX / DIAMIX L
45 SEC. COMPAMIX / COMPAMIX L

ADJUSTMENT RANGE: -15°C ... +85°C

RATED PRESSURE

16 bar DIAMIX / DIAMIX L (25 bar 1/2")
10 bar COMPAMIX / COMPAMIX L

FLUID TYPE

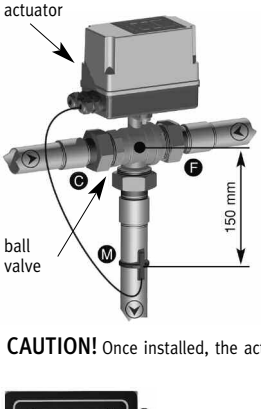
Water / Water-glycol mixture (max 30%)

BALL VALVES MATERIALS

Body and ball	Brass
Seal	P.T.F.E
O-ring	EPDM

FLUID TEMPERATURE

+7 °C ... +100°C
-20 °C ... +100 °C versions with spacer for insulation

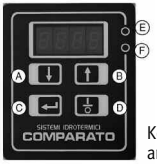


3. INSTALLATION OF DIAMIX - COMPAMIX

C : HOT inlet (red)
F : COLD inlet (green)
M : MIXED outlet (red and green)

Place the temperature sensor on the outlet pipe, at a minimum distance of 150 mm from the TEE intersection and always upstream the first drawing. Secure it with the special rubber clamp. **NB: The pipe section where the temperature probe will be placed must be made of metal. The following part of the pipe can be of any type, provided it is suitable to the use.**
To help performing the ordinary maintenance operations, it is advisable to install manual interception valves on the inlets and outlets of the mixing valve.

CAUTION! Once installed, the actuator connection should not be at the bottom of the valve.



Keyboard and display

A : DECREASES the value
B : INCREASES the value
C : ENTER
D : ON/OFF
E : RED led = HOT inlet opening command
F : GREEN led = COLD inlet opening command

3.1. ELECTRICAL CONNECTIONS

Before making the electrical connections the supply power must be properly disconnected. To make the connections, it is not necessary to remove the actuator cover: just connect the preset power chord to the mains.
PHASE – brown • NEUTRAL – blue • GROUND – yellow/green

CAUTION: THIS DEVICE MUST BE PROTECTED BY AN EARTHING EQUIPMENT. The earthing wire connection shall be secured in order to avoid accidental disconnections. The electrical installation shall be performed only by qualified personnel and according to current standards.

3.2. ACTIVATION

When the equipment is powered, the installed software version is shown on the display for a few seconds.

Immediately afterwards, if the equipment was "off" the last time it was powered (default condition at the time of purchase), the "OFF" message appears. To turn it on, press the "ON/OFF" button once: the display will be similar to the one described in the following step.

The display shows the temperature measured by the probe; the mixing valve is working. In case of power shortage, no operator action is needed when the power is restored: the mixing valve starts working again according to the last settings. In order to turn it off, press the "ON/OFF" button: if the equipment is still powered, the "OFF" sign will appear.

3.3. TEMPERATURE REGULATION

To change the set temperature, press either the "A" or the "B" button: the display will show the chosen value. Press "A" to decrease it or "B" to increase it. During this step, the displayed number blinks. Adjustment range: -15 / +85 °C.
Then, press "ENTER" or wait for 20 seconds in order to set the value. The device starts working again automatically.

3.4. PROGRAMMING

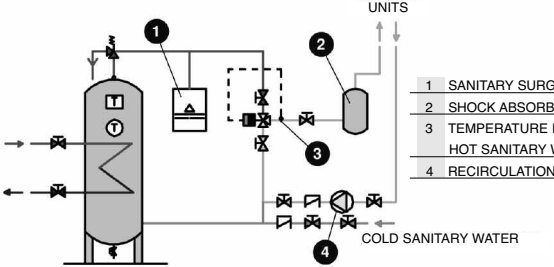
To access the programming level when the device is “OFF”, press the “A” button and the “B” button simultaneously for 3 seconds; when the display shows “P1”, release the buttons.
Scroll the main menu with the “A” and “B” buttons. To access the sub-menu, press "ENTER".

MENU	SUB MENU	FUNCTION
P1	X.X	Indicates the temperature sampling range. Press “A” or “B” to set the value. Press “ENTER” to save the value and exit the sub-menu. The adjustment range is from 2.0 sec. to 10.0 sec. (default, 3.0 sec).
P2	MMM	Indicates the number of minutes after which the "set temperature not reached” alarm is triggered. Press “A” or “B” to set the minutes; if the value is P2=0, the “set temperature not reached” alarm is disabled. Press “ENTER” to save the minutes value and exit the sub-menu. Adjustment range 0 min to 250 min.

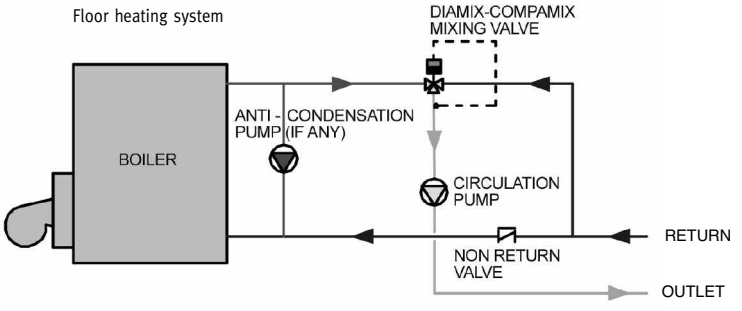
3.5. ALARM DESCRIPTION

ALARM	MEANING
“Alt”	The set point temperature was not reached in P2 time. To reset the alarm (3 digital outlet activation, optional), turn the device off and then on again with the “ON/OFF” button.

3.6. APPLICATION EXAMPLES Hot sanitary water production system



1 SANITARY SURGE CHAMBER
2 SHOCK ABSORBER TANK
3 TEMPERATURE PROBE HOT SANITARY WATER
4 RECIRCULATION PUMP



3.7. ACCESSORIES

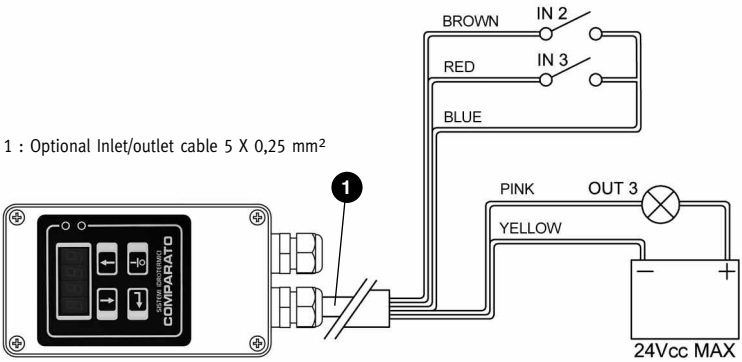
SPACER FOR INSULATION

SPACER FOR INSULATION and MANUAL OVERRIDE

OUTLET CABLE (optional)

INLET	FUNCTION	DESCRIPTION
2	**Forcing towards hot**	If you close the inlet, the geared motor starts up: the valve is turned counter clockwise towards the hot way (during this phase the temperature control is disabled); the display shows the "Man" message.
3	**Forcing towards cold**	If you close the inlet, the geared motor starts up: the valve is turned clockwise (during this phase the temperature control is disabled); the display shows the "Man" message.

OUTLET	FUNCTION	DESCRIPTION
3	**Temperature alarm**	The outlet is activated if the set point temperature is not reached within P2 time ("AL t")



1 : Optional Inlet/outlet cable 5 X 0,25 mm²

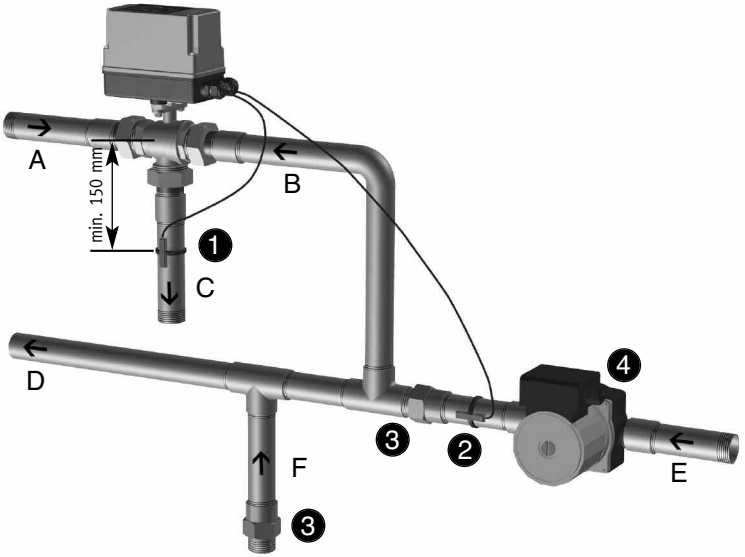
WARNING
The total cable length shall not exceed 30 meters.

NOTE:
In floor heating systems it is advisable to use the digital inlet 3 – forcing towards cold – in order to position the mixing valve passageway towards the return to the floor heating system when the circulation pump stops.
This configuration prevents any high-temperature peak in the radiating panel circuit when the pump is restarted.

IMMERSION PROBE

Install the temperature probe in the well G1/8"(not included). Afterwards, connect the probe to the actuator using the cable equipped with the suitable connector.

4. INSTALLATION OF DIAMIX L / COMPAMIX L



A : Hot water inlet from the boiler
B : Cold water inlet to valve
C : Mixed water outlet (recirculation starting point)
D : Inlet to the boiler
E : Recirculation return
F : Cold water inlet

1 : Mixing probe
2 : Legionella probe
3 : Check valve
4 : Recirculation pump

Place the mixing probe on the outlet pipe, at a minimum distance of 150 mm from the TEE intersection and always upstream the first drawing. Secure it with the special rubber clamp. Place the legionella probe on the final tract of the recirculation ring. Secure it with the special rubber clamp.

NB: The pipe section where the temperature probe will be placed must be made of metal. The following part of the pipe can be of any type, provided it is suitable to the use.

CAUTION!

Once installed, the actuator connection should not be at the bottom of the valve.

4.1. DISINFECTION CYCLE OPERATION

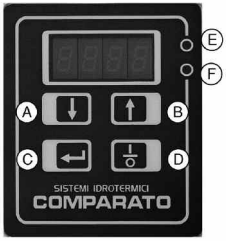
DIAMIX L and **COMPAMIX L** deal with the thermal disinfection cycle of the recirculation ring of the DHW distribution plant, as per the national guidelines for the prevention and control of the Legionellosis. Disinfection timing and modes are automatically set on the basis of the user's needs and the plant's features.
Programming is realised through a display and a keyboard; the cycle can be activated once a week or on a daily basis. The user will have to program hour and day of disinfection cycle's repetition (if weekly programmed).
During the disinfection process, the temperature control is disactived and the valve is oriented towards the hot water inlet; the water's temperature reading is realised by the second temperature probe (Legionella probe on sanitary circuit), the pump relay is triggered (optional) and activated by the Disinfection Cycle digital outlet (optional).

CAUTION
During the disinfection cycle the hot sanitary water supplied to users can reach dangerous temperatures which could cause scalds. Set the time and day of disinfection when it is unlikely that someone needs to use hot sanitary water.

During the cycle, the display toggles between the "SAni" message, the water temperature detected by the legionella probe "C XX" and the progress percentage of the disinfection cycle "P XX". The duration of the disinfection cycle will depend on the hot water temperature reachable by the system: the higher the temperature, the shorter the cycle.
The disinfection can be programmed once a week.
The following table shows the cycle duration depending on the temperature:

WATER TEMPERATURE	DURATION
More than 70C°	30 minutes
Between 65°C and 70°C	1 hour
60° to 65°C	2 hours
57,5°C to 60°C	3 hours
55° to 57,5°C	4 hours

If during the disinfection cycle the water is not hot enough (temperature below 55°C for more than 60 minutes), the "disinfection cycle temperature too low" alarm is triggered, the cycle is aborted, the valve returns to the mixing mode and the display toggles between the **"AL bt"** message and the temperature detected by the mixing probe.
In case of power shortage, the "power shortage during disinfection cycle" alarm is triggered, the cycle is aborted, the valve returns to the mixing mode and the display toggles between the **"AL d"** message and the temperature; the 2 digital outlet "Disinfection alarm" is triggered (optional).
The maximum duration of the disinfection cycle is 5 hours; if the cycle is not over after the aforementioned amount of time, the actuator goes back to its thermoregulating function, the "Disinfection cycle duration time exceeding 5 hours" alarm is triggered and the display toggles between the **"AL ot"** message and the temperature.



Keyboard and display

A : DECREASES the value
B : INCREASES the value
C : ENTER
D : ON/OFF
E : RED led = HOT inlet opening command
F : GREEN led = COLD inlet opening command

4.2. ELECTRICAL CONNECTIONS

Before making the electrical connections the supply power must be properly disconnected. To make the connections, it is not necessary to remove the actuator cover: just connect the preset power chord to the mains.
PHASE – brown • NEUTRAL – blue • GROUND – yellow/green

CAUTION:
THIS DEVICE MUST BE PROTECTED BY AN EARTHING EQUIPMENT. The earthing wire connection shall be secured in order to avoid accidental disconnections. The electrical installation shall be performed only by qualified personnel and according to current standards.

4.3. ACTIVATION

See page 4

4.4. TEMPERATURE REGULATION

See page 4

4.5. DISINFECTION CYCLE SETTING

Press “C-ENTER” when the display shows the “OFF” message: the “U1” message will appear. Use the “A” and “B” buttons to scroll the main menu and increase or decrease the sub-menu value.
Press the "ENTER" key to save the value and enter the sub-menu.

If no key is pressed for 30 seconds, it automatically exits the programming menu (the amended value will be saved).

MENU	SUB MENU	FUNCTION
U1	HH MM	**Current time setting** HH MM indicates hours and minutes on the clock. Press “A” or “B” to set the hours. HH blinks during the setting; press “ENTER” to save the hour setting and move on to the minutes. Press “A” or “B” to set the minutes. MM blinks during the setting; press “ENTER” to save the minute value and exit the sub-menu.
U2	G	**Current day setting** G is the day of the week. Press “A” or “B” to set the day. 1 = Monday. 2 = Tuesday. 3 = Wednesday. 4 = Thursday. 5 = Friday. 6 = Saturday. 7 = Sunday. Press “ENTER” to save the day setting and exit the sub-menu.
U3	G	**Disinfection cycle day setting** G is the disinfection cycle day of the week. Press “A” or “B” to set the day. 1 = Monday. 2 = Tuesday. 3 = Wednesday. 4 = Thursday. 5 = Friday. 6 = Saturday. 7 = Sunday. 8 = Daily disinfection cycle. 0 = Disinfection cycle off. Press “ENTER” to save the day setting and exit the sub-menu. (Default 1)
U4*	HH MM	**Disinfection cycle time setting** HH MM indicates the starting time (hour and minutes) of the disinfection cycle. Press “A” or “B” to set the hours. HH blinks during the setting; press “ENTER” to save the hour setting and move on to the minutes. Press “A” or “B” to set the minutes. MM blinks during the setting; press “ENTER” to save the minute value and exit the sub-menu. (Default 02:00)

* The U4 menu is present only when U3 is not zero.

4.6. PROGRAMMING

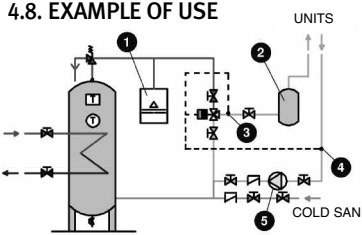
To access the programming level when the device is “OFF”, press the “A” button and the “B” button simultaneously for 3 seconds; when the display shows “P1”, release the buttons.
Scroll the main menu with the “A” and “B” buttons. To access the sub-menu, press "ENTER".

MENU	SUB MENU	FUNCTION
P1	X.X	X.X indicates the temperature sampling range. Press “A” or “B” to set the value. Press “ENTER” to save the value and exit the sub-menu. The adjustment range is from 2.0 sec. to 10.0 sec. (default, 3.0 sec).
P2	MMM	MMM indicates the number of minutes after which the "set temperature not reached" alarm is triggered. Press “A” or “B” to set the alarm minutes; if the value is P2=0, the “set temperature not reached” alarm is disabled. Press “ENTER” to save the minutes value and exit the sub-menu. Adjustment range 0 min to 250 min.

4.7. ALARM DESCRIPTION

ALARM	MEANING
“ALot”	**The duration of the disinfection cycle is more than 5 hours.** To reset the alarm, press "ENTER".
“ALbt”	**The disinfection cycle temperature is too low (temperature below 55°C for more than 60 minutes).** To reset the alarm, press "ENTER".
“AL d”	**No power supply during the disinfection cycle.** To reset the alarm, press "ENTER" (2 digital outlet activation, optional).
“AL t”	**The set point temperature was not reached in P2 time.** To reset the alarm, press the “ON/OFF” button to turn the device off and then on again (3 digital outlet activation, optional).

4.8. EXAMPLE OF USE



Hot sanitary water production system with DISINFECTION cycle

1	SANITARY SURGE CHAMBER
2	SHOCK ABSORBER TANK
3	TEMPERATURE PROBE FOR HOT SANITARY WATER
4	RECIRCULATION TEMPERATURE PROBE
5	RECIRCULATION PUMP

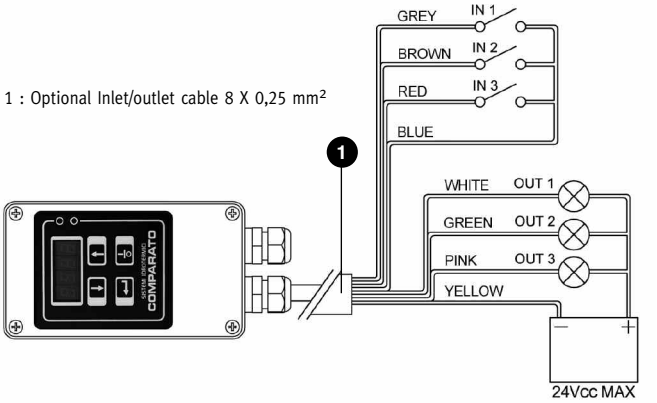
4.9. ACCESSORIES (SEE PAGE 6)

OPTIONAL OUTPUT CABLE (L version)

INLET	FUNCTION	DESCRIPTION
1	Manual activation of disinfection cycle	If you close the inlet for at least 2 seconds, the disinfection cycle activates
2	Forcing towards hot	If you close the inlet, the geared motor starts up: the valve is turned counter clockwise towards the hot way (during this phase the temperature control is disabled); the display shows the "Man" message.
3	Forcing towards cold	If you close the inlet, the geared motor starts up: the valve is turned clockwise (during this phase the temperature control is disabled); the display shows the "Man" message.

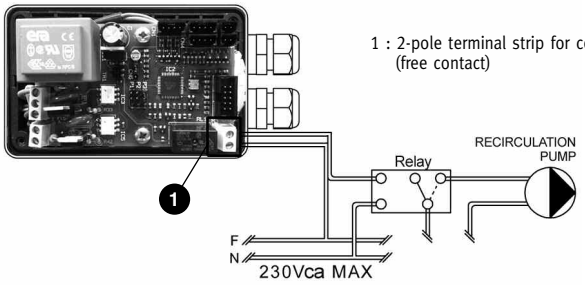
OUTLET	FUNCTION	DESCRIPTION
1	Disinfection cycle	The outlet is activated during the disinfection cycle
2	Disinfection alarm	The outlet is activated if there is a power shortage ("Ald") during the disinfection cycle.
3	Temperature alarm	The outlet is activated if the set point temperature is not reached within P2 time ("AL t")

1 : Optional Inlet/outlet cable 8 X 0,25 mm²



Description of DIGITAL OUTLET FOR SANITARY RECIRCULATION PUMP CONTROL

The outlet is activated (contact closing) during the disinfection cycle.

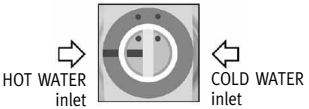


5. BALL VALVE POSITIONING - ACTUATOR

In order to achieve the correct positioning of the Actuator on the ball valve, please proceed as follows:

- Get the Actuator on the "completely hot" position (flashing red led)
  by setting the set point temperature on a higher value than the probe's temperature
- Wait for the achievement of the limit switch.
- If necessary, turn the ball valve's control rod until the notches on the rod are as in the picture:

DIAMIX / DIAMIX L



COMPARATO CONNECTION

ISO 5211 CONNECTION

COMPAMIX / COMPAMIX L

NOTE: After having correctly positioned the ball valve, it is possible to couple the Actuator with the cable gland oriented equally to the hot inlet or to the cold inlet.

- Couple the actuator with the ball valve.

6. GENERAL WARRANTY CONDITIONS

WARRANTY

Motorised/thermoregulating valves are covered by a 3-year warranty from the date marked on the base of the actuator (year of production).
The warranty refers to the plain product and does not cover any replacement cost and/or maintenance and/or any other indirect cost. Products are covered by an Allianz s.p.a. insurance according to current rules regarding the manufacturer's responsibility for any damage arising from defective products.
For any returned good, users should contact the Reseller they bought the items from. The goods should be returned postage-free.

DURING THE WARRANTY PERIOD

During the warranty period, **COMPARATO NELLO S.r.l.** will repair or replace, free of charge, any product or component, provided it turns out to have a manufacturing defect. Any repair or replacement of the component or of the product itself does not extend the warranty period. **COMPARATO NELLO S.r.l.** reserves the right to replace the Product with an identical one; if the product is out of production, it will be replaced with one with identical specifications, provided that, according to the unquestionable opinion of **COMPARATO NELLO S.r.l.**, the repair is not economically excusable.

WARRANTY EXCLUSION PROVISION

Interventions and/or repairs and/or spare parts will not be covered by this Warranty if it turns out that they are defective because of:
• tampering • failure due to carelessness and/or unskilfulness during the installation (wrong, incomplete or missing assembling/wiring/setting) • electrostatic discharge, electric discharge conducted/induced because of lightning or other phenomena not ascribable to the product, irradiated electromagnetic disturbances, intermittent or discontinuous power supply. • defects or damages caused by fall, breakage, liquid seepage • repairs made by unauthorized people • products with expired warranty • systems made in a non-workmanlike manner • any other damage not directly ascribable to **COMPARATO NELLO S.r.l.**

COMPARATO

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