

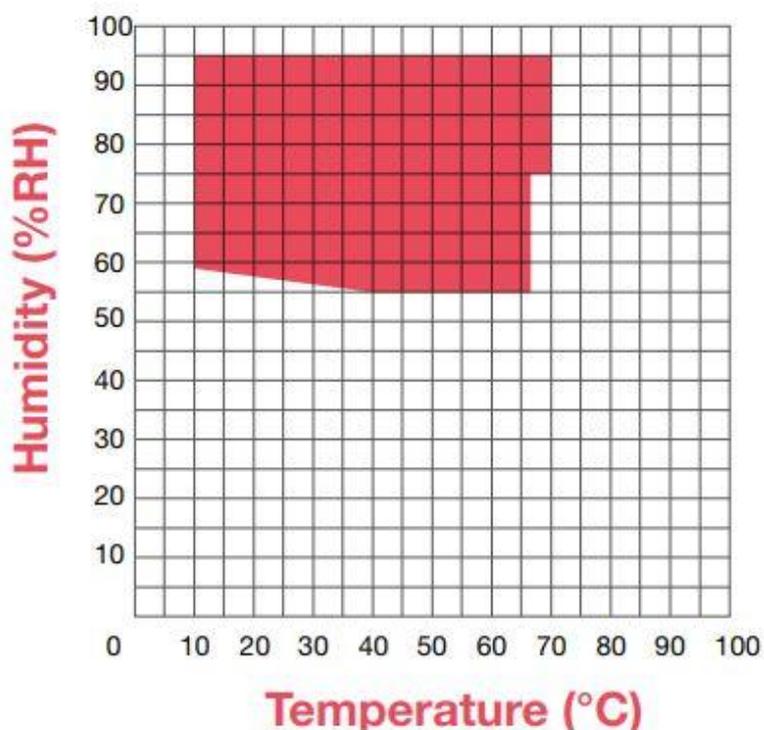
# CLIMATIC CHAMBERS

## User's Manual



Open-ventilated **climatic chambers** with temperature and humidity controllers for short, medium and long-term tests in the medical, food or industrial sectors

Model	Description	Temperature range (with humidity)	Working range %RH
<b>CH 150</b>	Climate chamber 150 l (useful volume)	+10 °C to + 70 °C with humidity 0 °C to + 85 °C without humidity	From +55 to +95 %RH
<b>CH 250</b>	Climatic chamber 250 l (useful volume)	+10 °C to + 70 °C with humidity 0 °C to + 85 °C without humidity	From +55 to +95 %RH



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# 1. Security Information

- **Definitions of warning words and symbols**

The safety information in this manual is very important in order to avoid personal injury, damage to the instrument, malfunction or incorrect results due to non-compliance. Please read this manual carefully in its entirety and make sure you familiarise yourself with the instrument before you start working with it. This manual must be kept near the instrument so that the operator can refer to it if necessary. Safety instructions are indicated by warning terms or symbols.

- **Reporting deadlines:**

**CAUTION / WARNING / DANGER** for a hazardous situation that could lead to injury  
minor or moderate injury, serious injury or death if not avoided.

**NOTICE** for important product information.

**NOTES** useful information.

- **Warning symbols:**



**DANGER**

This symbol indicates an **imminently hazardous** situation which, if not avoided, may result in death or serious (irreversible) injury.



**WARNING**

This symbol indicates a potentially dangerous situation which, if not avoided, may result in death or serious (irreversible) injury.



**ATTENTION**

This symbol indicates a potentially dangerous situation which, if not avoided, may result in minor or moderate (reversible) injury.



**NOTICE**

This symbol draws attention to possible damage to the instrument or instrumental parts.



**NOTES**

This symbol identifies useful product information.

- **Pictograms**

Within this manual there are different symbols identifying dangers, prohibitions and obligations as illustrated below.

- **Danger Symbols**

	Danger of electric shock
	Danger of explosion
	Fire hazard
	Danger of poisoning
	Danger of overheating surfaces
	Danger of damage to health caused by toxic substances
	Risk of injury from tipping objects
	Risk of injury from lifting heavy objects
	Danger of environmental damage
	Danger of corrosion

- **Prohibition symbols**

	Do not wet with water
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- **Symbols of obligation**

	Disconnect the instrument from the power supply by pulling the plug
	Eye protection must be used

## 2. General safety instructions

In cases where the installation, commissioning, cleaning, adjustment or set-up of the climate chamber is not carried out correctly, there is a risk of malfunctioning, which could lead to personal injury and material damage to the instrument and samples. Therefore, the climate chamber must only be installed, commissioned, cleaned, adjusted and set-up by qualified personnel.

 <b>DANGER</b>	
    	<p><b>Danger of electric shock and Danger of death</b></p> <p>Do not get the instrument wet during installation, commissioning function or maintenance.</p> <p>Do not connect the instrument to the power supply if the panel rear is dented or damaged.</p> <ul style="list-style-type: none"> <li>➤ Before opening the rear panel, remove the plug from the power supply.</li> <li>➤ If the power cable or the rear panel of the instrument is damaged, stop using it immediately, unplug it from the power supply and contact your dealer for the necessary repairs.</li> <li>➤ All work on the electrical components of the instrument must only be carried out by qualified personnel.</li> </ul>
	<p><b>Danger of explosion</b></p> <ul style="list-style-type: none"> <li>➤ Only install the instrument where there is no risk of explosion.</li> </ul> <p>Do not keep air/solvent mixtures or explosive dusts nearby.</p> <p>Never introduce materials into the instrument that are explosive or flammable at the selected operating temperature.</p> <p>Never introduce materials containing flammable or explosive solvents into the instrument.</p> <p>Never introduce materials into the instrument which by sublimation or pyrolysis result in the formation of flammable materials at the selected operating temperature.</p>
 	<p><b>Danger of Poisoning and Danger of Death</b></p> <p>Never introduce materials into the instrument whose disintegration could result in the formation of poisonous gases at the selected working temperatures.</p>

 **WARNING**

	<p><b>Fire hazard</b></p> <p>Climate chambers must not be used if the class 3.1 safety thermostat has failed.</p> <ul style="list-style-type: none"> <li>➤ If the safety thermostat check fails, immediately stop using the climate chamber, unplug the power supply and contact your dealer for the necessary repairs.</li> <li>➤ Always place the instrument on a work surface that is resistant up to a temperature of 100 °C.</li> </ul> <p>Do not put anything under the instrument (paper, plastic film, etc.).</p> <ul style="list-style-type: none"> <li>➤ Always connect the instrument only to a power supply with a fuse of at least 10A. Follow the recommendations of your local power supply company.</li> </ul>
---	--

 **ATTENTION**

	<p><b>Danger of burns</b></p> <ul style="list-style-type: none"> <li>➤ The motors of the num<sup>2</sup> refrigeration units, located at the bottom of the instrument, overheat during operation (including the neighbouring copper pipes) and must not be touched during climatic chamber operation.</li> </ul>
	<p><b>Risk of injury and Danger of breakage</b></p> <ul style="list-style-type: none"> <li>➤ Always place the instrument only on surfaces that can support its weight.</li> </ul>
	<p><b>Tipping hazard and Risk of injury</b></p> <p>Never tilt the climate chamber in any of the 4 directions.</p> <ul style="list-style-type: none"> <li>➤ Always secure the two front wheels of the chamber once it is in place.</li> </ul>
	<p><b>Risk of injury, Risk of slipping or tipping the instrument and Risk of damage to the instrument</b></p> <ul style="list-style-type: none"> <li>➤ The instrument must never be lifted by one or more persons.</li> <li>➤ The instrument must only be transported in its original packaging.</li> <li>➤ The instrument must be lifted from below with mechanical tools (e.g. forklift truck) ONLY when opening or packing.</li> </ul> <p>The instrument must not be lifted or dragged by pulling the door.</p>

### 3. CE marking data

Argolab instruments are manufactured in accordance with Directive 2006/42/EC and the relevant EU Directives applicable at the time of placing on the market (facsimile below).

SUZHOU BEING MEDICAL DEVICE CO.,LTD	<b>DECLARATION OF CONFORMITY UE</b> In accordance with Annex II A - Directive 2006/42/CE Annex IV - EMC Directive and Annex VI - Directive 2011/65/UE (RoHS)	
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No. ISETC.002520200624

Manufacturer's Name : SUZHOU BEING MEDICAL DEVICE CO., LTD  
 Manufacturer's Address : NO. 108 GONGXIANG RD QIANDENG TOWN, KUNSHAN CHINA  
 Tel : +86-21-56633709  
 Email: JILL.SHEN@BLUEPARD.COM  
 Authorised Representative :Giorgio Bormac S.r.l – Via della Meccanica, 25 41012 Carpi (MO)-ITALY

**Object of Declaration:** : CLIMATIC CHARMBER

This declaration of conformity is issued under the sole responsibility of the manufacturer.

**Product names:**

Product description : CLIMATIC CHARMBER  
 Model: LHH-150SD, LHH-250SD  
 Serial Number: from s/n 200100001 to 2600100001  
 Product options: This declaration covers all options of the above products

- *The object of the declaration describe above complies with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:*

<b>EMC directive: 2014/30/UE</b>	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility.
<b>RoHS Directive 2011/65/EU</b>	Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.
<b>LVD Directive: 2014/35/UE</b>	Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits Text with EEA relevance.
<b>Machinery Directive : 2006/42/EC</b>	DIRECTIVE 2006/42/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)

- *and conforms with the following standards:*

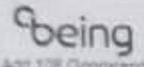
EN 61010-1:2010+A1:2019  
 EN 61326-1:2013  
 EN 61000-3-2:2014  
 EN 61000-3-3:2013  
 EN 60204:2018  
 EN ISO 12100:2010  
 UE regulation 517/2014 concerning F-GAS  
 Directive 2014/68 UE regarding PED

**NAME AND ADDRESS OF THE PERSON AUTHORISED TO COMPILE THE TECHNICAL FILE**

Giorgio Bormac S.r.l. - Via della Meccanica, 25 41012 Carpi (MO) - ITALY

Signed for and on behalf of *name, surname*  
 Place gg/mm/aaaa  
 SHANGHAI SIGNATURE \_\_\_\_\_

Facsimile of the CE marking plate:

 Add: 128 Qiangqiang Rd. Kunshan China    	Name	Incubator		
	Model	BIT-200/ICN-200 Plus		
	Volts	220V/50Hz	Watts	600W
	Temp. Range	RT + 5 °C ~ 70 °C		
	S/N	201148965	Date:	2020. 11
	<b>ARGO LAB</b>		Made in P.R.C	

## 4. Package Contents

The instrument will be delivered complete with the following parts:

1. No. 3 stainless steel gridded shelves.
2. No. 6 shelf supports.
3. No. 1 internal humidity tray protection grid.
4. No. 1 water supply tank complete with cable and pipes
5. No. 2 end caps for  $\varnothing$  25 mm side hole (probe passage).
6. Fuses.
7. Instruction manual.
8. Replacement printer roll.

## 5. Transport

- **Instructions for safe transport**

 <b>ATTENTION</b>	
  	<p><b>Risk of injury, Risk of slipping or tipping the instrument and Risk of damage to the instrument</b></p> <ul style="list-style-type: none"><li>➤ The instrument must never be lifted by one or more persons.</li><li>➤ The instrument must only be transported in its original packaging.</li><li>➤ The instrument must be lifted from below with mechanical tools (e.g. forklift truck) <b>ONLY</b> when opening or packing.</li></ul> <p>The instrument must not be lifted or dragged by pulling the door.</p>

- **Transport of a climate chamber already in use**



1. Switch off the Argolab climate chamber by operating the main switch at the top right.
2. Remove the power plug from the socket.
3. Remove the shelves.
4. Clean the Argolab climate chamber and its shelves (see Chapter 13)
5. Dry the inside of the Argolab climate chamber and the shelves.
6. Wrap the shelves in bubble wrap.
7. Pack the shelves in their original packaging and place them in the Argolab climate chamber.
8. Pack the entire Argolab climate chamber in its original packaging.
9. Take care that the Argolab climate chamber does not get wet during transport.
10. During transport, maintain the permitted ambient temperature (-10 °C to 60 °C).

## 6. Conservation

- Store the Argolab climate chamber only in closed, dry rooms.
- The permissible storage temperature is -10 °C to 60 °C, while the maximum permissible storage humidity is 85% RH in the absence of condensation.



## 7. First Installation

- **Instrument positioning and preliminary operations**

The climatic chamber must be installed under the following conditions:

- Stable work surface with a horizontal, heat-resistant, dry and clean surface.
- Minimum spaces of 100 cm on the front and right side of the instrument (front view) of 50 cm on the other sides (Figure 1).
- Ambient temperature between 15 °C and 30 °C and relative humidity not exceeding 85%.
- Well-ventilated environment and absence of strong magnetic fields, vibrations or combustibles.
- Grounded power socket.
- Power supply 220/240 V - 50 Hz.



Once the instrument is in place, secure the front wheels using the brake.

 <b>NOTICE</b>	
	<p><b>Risk of overheating - Damage to the appliance</b>  DO NOT install appliances in unventilated places.  Make sure there is sufficient ventilation to disperse heat.</p>

 <b>DANGER</b>	
	<p><b>Risk of explosion and danger to life.</b>  DO NOT operate the device in potentially explosive areas.  DO NOT use explosive dust or air-soluble mixtures in the environment.</p>

### • Filling and tank connection

- Position the machine's feed tank close to the right side of the machine (front view) near the feed quick coupling (**Errore. L'origine riferimento non è stata trovata.**);
- Connect the short hose inside the supply tank to the blue quick coupling so that it is 'in the draw' at the bottom of the tank below the minimum level (**Errore. L'origine riferimento non è stata trovata.**);
- Connect the supply hose (long) between the machine and the tank to the respective blue quick couplings on the right side of the machine (**Errore. L'origine riferimento non è stata trovata.**) and on the feed tank (outer side);
- Fill the feed tank to the minimum level (**Errore. L'origine riferimento non è stata trovata.**).

**IMPORTANT: Only fill the machine's feed tank with deionised, demineralised or distilled water and not with water from other sources.**

**The water level must always be above the float detecting the minimum water level** (**Errore. L'origine riferimento non è stata trovata.**).

- Connect the red float cable to the plug on the right side of the machine (front view), see **Errore. L'origine riferimento non è stata trovata.**



*Figure 1 - Positioning of the instrument and feed tank*



*Figure 2 - Feedwater connections*



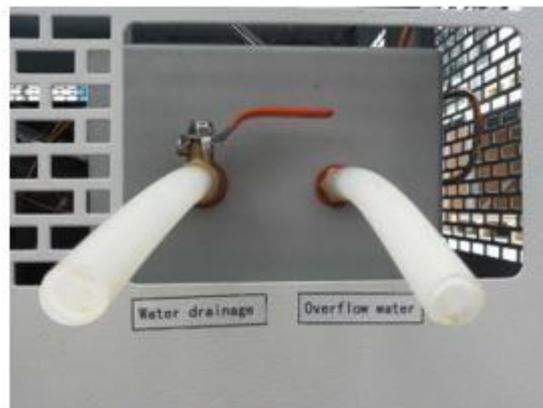
*3 - Minimum H<sub>2</sub>O feed level*

- **Positioning the drain pan**

At the rear of the instrument are two exhaust pipes (**Errore. L'origine riferimento non è stata trovata.**), below which a collection tray must be placed. An outlet (Overflow water, on the right in **Errore. L'origine riferimento non è stata trovata.**) is used to drain excess condensate and must therefore always remain open.

The other outlet (Water drainage, left in **Errore. L'origine riferimento non è stata trovata.**) equipped with a tap, is instead connected to the humidification tray inside the chamber and is used when it is necessary to completely empty the latter, for example during cleaning. For this reason, it is fitted with a tap which should normally remain closed and should only be opened when necessary.

**IMPORTANT: Make sure that during machine operation the tap is always in the closed position and is only opened when you want to empty the humidification tray.**  
**Operating the machine with the humidification tray deprived of water could severely damage the heating element inside the tray.**



*Figure 4 - Exhaust pipes*

If there is a fixed, wall or floor drain at the climatic chamber installation site, the instrument drains can be connected to it.

To do this, it is necessary to replace the supplied rubber hoses with longer ones, paying particular attention to their slopes.

**IMPORTANT: The user is solely responsible for the regular emptying of the drip tray behind the machine or the correct connection of the drains to a fixed drainage system. Any liquid spillage or flooding is not the fault of the instrument.**

- **Filling the humidification tray**

When the instrument is first installed and whenever the chamber humidification tray is emptied, e.g. during routine maintenance, the tray must be filled.

To restore the correct water level, proceed as follows:

- Check that the supply tank has been correctly positioned, connected and filled as described above
- Check that the tap on the 'Water drainage' hose (left in **Errore. L'origine riferimento non è stata trovata.**) is closed.
- Switch the instrument on via the ON/OFF button on the side control panel, but do not start the operating cycle.
- Wait a few minutes (about 10-15) until the water level in the humidification tray is sufficient to cover the heating element.

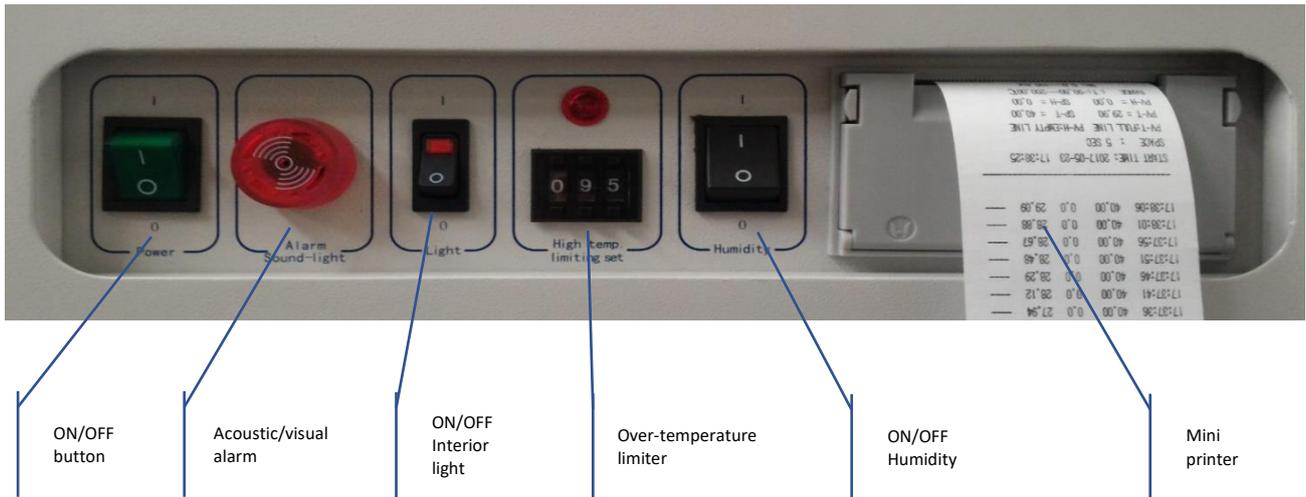
Once a sufficient level of water in the humidification tray has been reached, an operating cycle can begin. The 'float' system in the humidification tray will maintain the correct water level inside the tray.

## 8. Instrument parts



**Figure 5 - Instrument parts**

**Figure 1 - Side control panel**

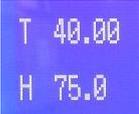


- **Display and controls**



**Figure 7 - Front control panel**

COMMAND	DESCRIPTION
FIX RUNNING	Indicates the current operating mode (FIX or PROG) and operating status (STOP or RUNNING).
10 21	Indicates the current time.

	<p>Displays the set temperature (°C) and humidity (%RH) parameters.</p>
	<p>While the instrument is running, it shows the Set time (S=set) in hh:mm / Total elapsed working time (R=running) in hh:mm.</p>
	<p>Indicates that the instrument is in standby and ready to start with the currently selected mode (FIX or PROG).</p>
	<p>The (Start/Stop) button is used to start or stop operation of the instrument.</p>
	<p>The 'OK' (set) button allows you to enter the various submenus of the main menu and then to select (flash) and confirm the parameter you wish to change.</p>
	<p>↶ The button is used to switch from the standby screen to the main menu and to exit all the various menus and submenus.</p>
	<p>They allow you to increase or decrease the value of the parameter being edited.</p>
	<p>The shift key (SHIFT) allows you to move quickly between the digits (units, tens, etc.) of the parameter value you are editing.</p>

## 9. Technical Specifications

Climate rooms ARGOLab	CH 150	CH 250
Useful volume	150 litres	250 litres
Working range Temperature/ Resolution _ Moisture-free	0...+85°C /0.01°C	0...+85°C /0.01°C
Working range Temperature/ Resolution _ With humidity	+10...+70°C /0.01°C	+10...+70°C /0.01°C
Working range %RH / Resolution	+55...+95 %RH / 0.1%	+55...+95 %RH / 0.1%
Temperature homogeneity _ Moisture-free	± 0,5°C	± 0,5°C
Temperature homogeneity _ With humidity	± 1.5°C (10-70°C _ 55-95 %RH)	± 1.5°C (10-70°C _ 55-95 %RH)
Temperature variation over time _ Moisture-free	± 0,2°C	± 0,2°C

Temperature variation over time _ With humidity	± 0.5°C (10-70°C _ 55-95 %RH)	± 0.5°C (10-70°C _ 55-95 %RH)
Moisture fluctuation	≤ 2% (10-70°C _ 55-95 %RH)	≤ 2% (10-70°C _ 55-95 %RH)
Timer	99:59 hh:min and ∞	99:59 hh:min and ∞
Programming	1-100 steps	1-100 steps
Security class	3.1	3.1
Power supply/power	230 V / 2200 W	230 V / 2200 W
Inside dimensions (W*H*D)	550 x 670 x 405 mm	600 x 830 x 500 mm
Number of shelves (standard/max)	3/10	3/12
Minimum distance between shelves	45 mm	45 mm
Maximum shelf load	10 Kg	15 Kg
External dimensions (W*H*D)	690 x 1520 x 790 mm	740 x 1680 x 885 mm
Weight	145 Kg	185 Kg

## 10. Operation

- **Switching on the instrument and standby screen**

Connect the power cable to a grounded power outlet. Switch the instrument on via the ON/OFF button in the top right-hand corner. The button and the display light up.

The display shows the initialisation sequence and then the instrument is ready for use. proposes the standby screen and is ready to operate in one of two available modes: fixed parameter mode (**FIX MODE**) or programme mode (**PROG MODE**), see **Errore. L'origine riferimento non è stata trovata.** e **Errore. L'origine riferimento non è stata trovata..**



**Figure 8 - Stand-by display in FIX Mode**



**Figure 9 - Stand-by display in PROG Mode**

The words '**STOP**' and '**READY**' indicate in both operating modes that the instrument has stopped and is ready to start a new operating cycle.

As seen in the green-highlighted area of **Errore. L'origine riferimento non è stata trovata.**, in FIX mode it is possible to set the operating parameters directly in this screen, while in PROG mode it is necessary to access the 'EDIT SEG' submenu.

- **Setting parameters in FIX mode**

If the instrument is set to 'FIX' mode, either in standby or during an operating cycle, the desired temperature and humidity parameters can be changed at any time.

Press the OK button briefly, the value of the last changed parameter is highlighted. If you want to change this parameter then press the OK button again, the value starts flashing and using the buttons **↑** **↓** increase or decrease it and then confirm it with the OK button: the selection disappears and the new value is displayed (**Errore. L'origine riferimento non è stata trovata.**).

If the first press of the OK button does not highlight the parameter you wish to change, simply move the selection to the desired one using the buttons   and proceed to change the value as explained in the previous paragraph.



**Figure 10 - Changing parameters in FIX mode**

**NOTE:** While changing values, it is possible at any time to move quickly between digits using the SHIFT key  .



• **Main menu**

From the standby screen, pressing the  button accesses the main menu within which several submenus can be found:



**Figure 11 - Main menu**

- 1.**RUN MODE** - choice of desired operating modes.
- 2.**COM SET** - selection of desired output type: mini printer in this case
- BASIC SET** - setting of time and other machine parameters.
- 4.**SETUP** - access to service (only for service-enabled users).

**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing  .



- **RUN MODE submenu**

From the main menu (**Errore. L'origine riferimento non è stata trovata.**) move the choice indicator  to 'RUN MODE' and press OK to access the submenu (**Errore. L'origine riferimento non è stata trovata.**).



*Figure 12 - RUN MODE submenu*

Move the cursor  to where desired and press OK to enter.

**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing .



- **RUN MODE submenu → OPER MODE**

The RUN MODE submenu leads to the OPER MODE submenu (**Errore. L'origine riferimento non è stata trovata.13**), where the desired operating mode can be selected:

- FIX, the instrument works with the humidity and temperature parameters set in the standby screen for an indefinite time (continuous) or for a preset time.
- PROG, the instrument works with the set programme.

**NOTE:** To change the operating mode from FIX to PROG and vice versa, the machine must not be running any operating cycle. If an operating cycle is running, return to the standby screen and stop it by a long press (≈4 seconds) of the (Start/Stop) button.



Move the cursor  to 'PROG' and 'FIX' using the buttons  . Press OK to confirm.

OPER MODE SET	10:25
OPER MODE: ▢ PROG FIX	

*Figure 13 - OPER MODE submenu*

**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing ←.



- **RUN MODE submenu → EDIT SEG**

The RUN MODE submenu leads to the EDIT SEG submenu (Figure 14), where the machine can be programmed for the 'PROG' programme operation mode.

SG	TEMP	HUMI	HH.MM
01	0.00	0.0	0.00
02	0.00	0.0	0.00
03	0.00	0.0	0.00
04	0.00	0.0	0.00
05	0.00	0.0	0.00

*Figure 14 - SEG EDIT submenu*

The machine is programmed by setting appropriate 'segments' (steps) of operation, each consisting of temperature, relative humidity and working time.

The instrument's memory allows setting from 1 to 100 operating segments, and through their combination one or more programmes can be created.

To set parameter values in the different segments, simply move the light selection to them using the SHIFT key ←, press OK (the value flashes), change the value using the keys ↑ ↓ and press OK to confirm.

When you have finished setting the desired segments, press the ← button to return to the previous submenu.

**Example programme**

Suppose we were to perform the following test on a production batch:

A - 4-hour working cycle at T= 30 °C, H= 50 %RH;

B - 4-hour working cycle at T= 40 °C, H= 60 %RH;

C - 2-hour duty cycle at T= 40 °C, H= 75 %RH;

D - 6-hour duty cycle at T= 50 °C, H= 85 %RH;

so the correct programming will be as follows:

SG (segment)	TEMP (temperatures)	HUMI (humidity)	HH.MM (time)	
01	30.00	50.0	0.01	A
02	30.00	50.0	4.00	
03	40.00	60.0	0.01	B
04	40.00	60.0	4.00	
05	40.00	75.0	0.01	C
06	40.00	75.0	2.00	
07	50.00	85.0	0.01	D
08	50.00	85.0	6.00	
09	40.00	75.0	0.00	END

As can be seen in the table above, **each work cycle (A, B, C, D) is always made up of two programming segments**: the first (highlighted in blue) represents the desired 'ramp' (in terms of time), i.e. the speed at which the desired conditions are to be reached (also known as the gradient), while the second is the actual work cycle.

Note that the times 0.01 (1 minute) circled in red are not realistic times for reaching the set working conditions, but represent a method of forcing the instrument to reach them in the shortest possible time (maximum gradient).

If, on the other hand, you wish to set a well-defined ramp to reach the set environmental conditions, simply set a finite time physically sufficient to reach them, e.g. 1.00 (1 hour). Naturally, the shorter this time is, the greater the inclination of the ramp (gradient).

**NOTE:** In order to end the programme, a final segment must be set with the time parameter with the value 0.00 (circled in green). This forces the programme to stop.

**NOTE:** In this way, within the limits of the machine's memory, several programmes consisting of a certain number of segments can be set, which can be recalled when operating in PROG mode.



In fact, taking the previous programming as an example:

SG (segment)	TEMP (temperatures)	HUMI (humidity)	HH.MM (time)	
01	30.00	50.0	0.01	PROGRAM 1
02	30.00	50.0	4.00	
03	40.00	60.0	0.01	
04	40.00	60.0	4.00	
05	40.00	75.0	0.01	
06	40.00	75.0	2.00	
07	50.00	85.0	0.01	
08	50.00	85.0	6.00	
09	50.00	85.0	0.00	
10	40.00	75.0	0.01	PROGRAM 2
11	40.00	75.0	3.00	
12	70.00	95.0	0.01	
13	70.00	95.0	5.00	
14	70.00	95.0	0.00	

Two programmes, Programme 1 and Programme 2, ranging from segment 1 to 9 and 10 to 14 respectively, have been stored.

**WARNING:** Once the desired segments have been configured, the machine has one or more programmes in memory but is not able to work in PROG mode if:

- the operating mode PROG has not been set
- the programme's Start, End and Repeat parameters have not been defined (see RUN SIGN)

- **RUN MODE submenu → RUN SIGN**

The RUN MODE submenu leads to the RUN SEGMENT (Figure 15), where it is possible to define the Start (TOP), End (END) segment and the Number of Repetitions (RPT) of the desired programme.

PT SET		10:25
☞	TOP	0
	END	0
	RPT	0

**Figure 15 - RUN SIGN submenu**

Returning to the example above, if we wanted to choose to use programme 1 and repeat it only once, we would have to set the above parameters as follows:

TOP= 1, END= 9, RPT= 0

If instead we wanted to repeat programme 2 three times, we would set:

TOP= 10, END= 13, RPT= 3

**NOTE:** a programme can also run in an infinite loop, i.e. it will repeat in a 'loop' until it is stopped manually. To do this, simply set the parameter **RPT= 0??**.



**NOTE:** in the case of repetitions of a programme greater than 1 or to infinity (loop), the last useful segment before the one with time 0.00 must be set as END. E.g. previous case (repetition of programme 2 3 times) the parameters to be set are TOP= 10, END= 13, RPT= 3



Move the cursor  to move between parameters using the keys   . Press OK to change the value using the keys   . Press OK again to confirm.

**NOTE:** Naturally, the instrument controller requires that the value of the END parameter (final segment) is always greater than the initial one (TOP), so for example when the END parameter is zero (e.g. first machine setting), the TOP value will not be editable. In this case, therefore, proceed to set the END value first and then the TOP value.



**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing  .



**NOTE:** It is not possible to programme with RH = 0, if you DO NOT move the humidity switch to OFF (Figure 6).

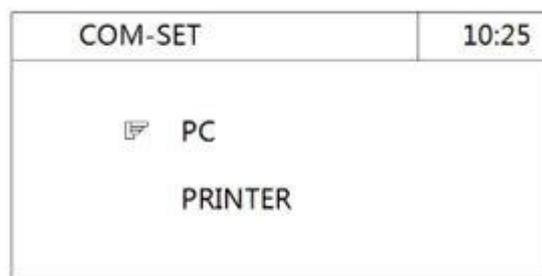


**NOTE:** It is not possible, within the same programme, to enter steps with Moisture and steps without Moisture.



- **COM SET submenu**

From the main menu (**Errore. L'origine riferimento non è stata trovata.**) move the choice indicator  to 'COM SET' and press OK to enter the submenu (Figure 16).



*Figure 16 - COM SET submenu*

Move the choice indicator  to the communication device type you wish to use.

Confirm the mini-printer already selected by default, model "WH-A52Z20" and access the sub-menu where you can choose the desired print type: CURVE= graphic, TABLE= table. By pressing OK the value becomes editable, move the cursor  to choose the desired mode using the buttons   and press OK again.

- **Submenu COM SET → Setting print parameters TABLE**

If tabular printing has been selected, the display shows the following screen (see Figure 17 and 18) depending on whether the print frequency is in seconds or minutes.

COMM SET		10:25
	BPS:	9600
	SPEED:	3600 S/LN
	PRTM:	SEC
	PRINT:	ON

Figure 17 - Impostable TABLE (in sec)

COMM SET		10:25
	BPS:	9600
	SPEED:	60 M/LN
	PRTM:	MIN
	PRINT:	ON

Figure 18 - Impostable TABLE (in min)

Move the cursor  to move between parameters using the buttons   . Press OK to change the value using the keys   . Press OK again to confirm.

**BPS:** bits per second, unit of measurement of transmission speed. It must be set to 9600.

**SPEED:** is the print interval, i.e. the time interval (in seconds or minutes) you want to elapse between one print and the next. Setting range from 5 to 9999.

**PRTM:** choice of print interval unit. SEC= seconds, MIN= minutes.

**PRINT:** activation or deactivation of the printer.

**NOTE:** To change the BPS, SPEED, and PRTM parameters, the printer must be switched off (PRINT= OFF) in both CURVE and TABLE modes.



**IMPORTANT:** When the unit of measurement of the print range is changed in the TABLE form, it is also automatically changed in the CURVE form. Also note that when the operator changes the unit of measure, the numerical value on the side does not automatically adjust, but remains unchanged.

#### Example

SPEED= 60	→ Change unit to MIN→	SPEED= 60
PRTM= SEC		PRTM= MIN

As shown, the printing interval changed dramatically from one minute to one hour.

- **Submenu COM SET → Setting print parameters CURVE**

If graph printing has been selected, the display proposes the following screens (see Figure 19 and 20), which alternate by scrolling with the buttons   and in which you can set the axis limits for temperature and humidity values.

COMM SET		10:25
	BPS:	9600
	SPEED:	600 S
	T_R_H:	-10.00 °C
	T_R_L:	100.00 °C
	PRINT:	OFF

COMM SET		10:25
	BPS:	9600
	SPEED:	600 S
	H_R_H:	0.0 %
	H_R_L:	100.0 %
	PRINT:	OFF

*Figure 19 - Temperature axis setting*

*Figure 20 - Humidity axis setting*

**BPS:** bits per second, unit of measurement of transmission speed. It must be set to 9600.

**SPEED:** is the print interval, i.e. the time interval (in seconds or minutes) you want to elapse between one print and the next. Setting range from 5 to 9999.

**T\_R\_H:** Upper limit of the temperature axis. Factory set at 100 °C.

**T\_R\_L:** Lower limit of the temperature axis. Factory set at -10 °C.

**H\_R\_H:** Upper limit of the humidity axis. Factory set at 100 %.

**H\_R\_L:** Lower limit of the humidity axis. Factory set at 0 %.

**PRINT:** Activation or deactivation of the printer. In CURVE mode when the printer is activated in a screen (e.g. temperature), it is also automatically activated in the humidity screen.

**NOTE:** To change the BPS, SPEED, and PRTM parameters, the printer must be switched off (PRINT= OFF) in both CURVE and TABLE modes.



**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing .

- **BASIC SET submenu**

From the main menu (**Errore. L'origine riferimento non è stata trovata.**) move the choice indicator  to 'BASIC SET' and press OK to access the submenu (Figure 21**Errore. L'origine riferimento non è stata trovata.**).



*Figure 21 - BASIC SET submenu*

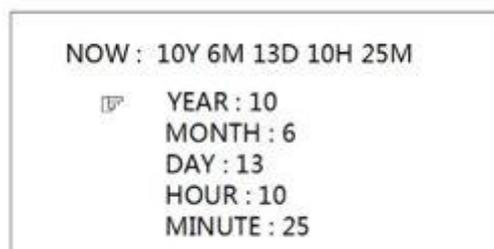
Move the cursor  to where desired and press OK to enter.

**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing .



- **Submenu BASIC SET → TIME SET**

The BASIC SET submenu leads to the TIME SET submenu (**Errore. L'origine riferimento non è stata trovata.**2), where the current date and time can be set.



*Figure 22 - TIME SET submenu*

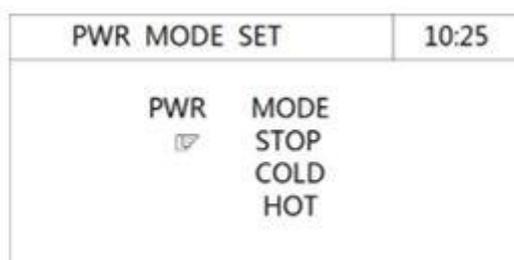
Move the cursor  to move between parameters using the keys  . Press OK to change the value using the keys  . Press OK again to confirm.

**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing .



- **Submenu BASIC SET→ POWER MODE**

The BASIC SET submenu leads to the POWER MODE submenu (Figure 23), where it is possible to set the mode in which the machine resumes operation after a power failure.



*Figure 23 - POWER MODE submenu*

Move the cursor  using the buttons   to choose the desired mode:

- STOP= when power is restored to the instrument, it does not automatically resume the operating cycle but must be restarted manually;
- COLD= when power is restored to the instrument, it automatically resumes operation from the beginning of the cycle (FIX mode) or from the first step of the current programme at the moment of power failure (PROG mode);
- HOT= when power is restored to the instrument, it automatically resumes operation from the precise point in the cycle (FIX mode) or from the beginning of the current programme step at the moment of power failure (PROG mode).

**NOTE:** At any time it is possible to return to the previous menu/submenu by pressing .

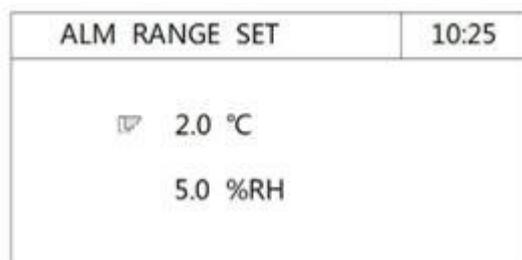


- **Submenu BASIC SET→ ALARM RANGE**

The BASIC SET submenu leads to the ALARM RANGE submenu (**Errore. L'origine riferimento non è stata trovata.**24), where the instrument's alarm thresholds can be set.

**NOTE:** these alarms are only visual, i.e. the display only communicates when the machine is outside these value ranges.





**Figure 24 - ALARM RANGE submenu**

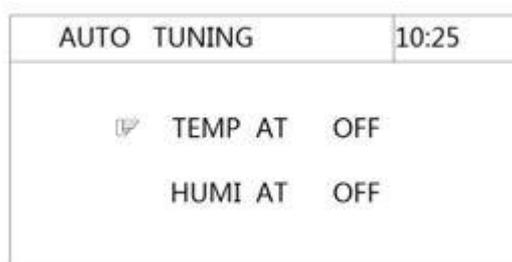
Move the cursor  to move between parameters using the keys   . Press OK to change the value using the keys   . Press OK again to confirm.

**NOTE:** The instrument's alarm thresholds are already set by default at 2.0 °C temperature and 5 % relative humidity. It is advisable not to change these values and if they are different, reset them to the above conditions.



- **Submenu BASIC SET → AUTO TUNING**

The BASIC SET submenu leads to the AUTO TUNING submenu (Figure 25), where it is possible to set the automatic repartitioning of the controller's PID parameters.



**Figure 25 - AUTO TUNING submenu**

Move the choice indicator  to the desired parameter using the keys   , press OK to change it using the keys   . Press OK again to confirm.

**IMPORTANT:** These parameters are already set in OFF mode by the factory because their modification is only recommended for experienced users. It is therefore advisable not to change these parameters and if they should be different, to reset them to the above-mentioned conditions.

## 11. Exclusion of moisture generation

When the instrument is to be used in negative temperature conditions, it is absolutely necessary to exclude water loading and moisture generation.

**IMPORTANT: Otherwise, the formation of ice could cause considerable damage to machine parts that would not be covered by warranty as a result of inappropriate use.**

To exclude water loading and moisture generation, put the **Errore. L'origine riferimento non è stata trovata.**26 to position "0" and set the humidity to zero (in both FIX and PROG).



*Figure 26 - Moisture exclusion button*

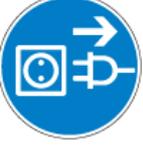
## 12. Introduction of samples into the climate chamber

 <b>DANGER</b>	
	<p><b>Danger of explosion and Danger of death</b></p> <p>Never introduce materials into the instrument that are explosive or flammable at the selected operating temperature.</p> <p>Never introduce materials containing flammable or explosive solvents into the instrument.</p> <p>Never introduce materials into the instrument which by sublimation or pyrolysis result in the formation of flammable materials at the selected operating temperature.</p>
	<p><b>Danger of Poisoning and Danger of Death</b></p> <p>Never introduce materials into the instrument whose combustion could result in the formation of poisonous gases.</p> <p>Never introduce materials into the instrument that can react with moisture and form explosive gases.</p>

## 13. Cleaning and Maintenance

Proper maintenance and cleaning of the instrument ensures its good condition.

The internal chamber of the instrument is made of stainless steel, so it can be cleaned with any detergent as long as it is not aggressive and/or corrosive.

 <b>DANGER</b>	
  	<p><b>Danger of electric shock and Danger of death</b> DO NOT spray water or detergents on interior and exterior surfaces. Turn off the main switch and disconnect the mains plug before cleaning.</p> <ul style="list-style-type: none"><li>➤ Dry the device completely before switching it on again.</li></ul>

It is recommended to clean the internal and external surfaces with a normal all-purpose cleaner sprayed on a soft dampened cloth, so that it is not concentrated. Before proceeding with cleaning or decontamination, the user must ensure that the method adopted does not damage the instrument.

**NOTE:** It is always advisable to use cleaning products not in pure form but in solution with water or sprayed pure but on a cloth moistened with water. Before proceeding with cleaning or decontamination, the user must ensure that the method used does not damage the instrument.



 <b>ATTENTION</b>	
	<p><b>Danger of corrosion - Damage to equipment</b> DO NOT use cleaning agents containing acids or halides. DO NOT use neutral detergent on other surfaces (e.g. on the galvanised parts of the hinges or on the rear wall of the outer structure).</p> 

	<p><b>Eye contact - Eye damage caused by chemical burns</b>          DO NOT discharge into the sewage system.          ➤ Wear protective goggles.</p>
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**IMPORTANT:** Should the instrument be sent for service, it would be necessary to ensure that it is properly cleaned and possibly decontaminated from pathogens.

It is also advisable to put the instrument back in its original packaging to send it to the repair service and, failing that, to pack it adequately to cope with transport.

Any damage caused by incorrect shipment will not be covered by warranty.

## 14. Routine maintenance operations

OPERATION	FREQUENCY
Cleaning the external body	Monthly or as needed
Interior room cleaning	Quarterly or as needed
Emptying and cleaning the humidification tank	Quarterly or as needed
Emptying and cleaning the feed tank	Quarterly or as needed
Checking of nozzles and discharge pipes	Quarterly or as needed
Checking the compartment of refrigeration units	Monthly or as needed
Checking the heat sinks of refrigeration units	Monthly or as needed
Checking the cooling fans of refrigeration units	Monthly or as needed
<p><b>NOTE:</b> All the frequencies listed indicate the ideal frequency with which to carry out maintenance operations. If, for operational reasons, it is not possible to comply with them, it is advisable to carry them out at the earliest opportunity.</p>	

- **Cleaning the outside of the instrument**

To clean the instrument externally, it is not necessary to interrupt the operating cycle. However, care must be taken not to inadvertently disconnect or damage the supply and drain cables and pipes.

As suggested in paragraph 13, use a soft cloth and a non-aggressive and/or corrosive cleaning product not in purity but always diluted with water.

- **Internal instrument cleaning**

To clean the instrument internally, it is necessary to interrupt the operating cycle and switch off the instrument using the ON/OFF button on the side control panel.

Before cleaning, open the instrument and wait for the internal chamber to cool down. Naturally, this time will vary depending on the operating temperature at which the instrument was before being switched off.

As suggested in paragraph 13, use a soft cloth and a non-aggressive and/or corrosive cleaning product not in purity but always diluted with water.

- **Emptying and cleaning the humidification tank**

To empty and subsequently clean the humidification tank, it is necessary to interrupt the operating cycle and switch off the instrument using the ON/OFF button located on the side control panel. Then wait the necessary time for the heating element to cool down (at least 30 minutes) before emptying.

**CAUTION: Before emptying the humidification tray, make sure that the water covering the heating element has cooled down completely.**

Proceed to empty the tank via the tap on the 'Water drainage' hose (left in **Errore. L'origine riferimento non è stata trovata.**).

Once the humidification tray has been emptied, proceed with cleaning using a soft cloth and a non-aggressive and/or corrosive cleaning product not in pure form but always diluted with water, as suggested in paragraph 13.

Thoroughly rinse the tank with deionised or demineralised water before starting the filling cycle.

- **Emptying and cleaning the feed tank**

For emptying and subsequent cleaning of the feed tank it is necessary to interrupt the operating cycle and switch off the instrument using the ON/OFF button located on the side control panel. Then disconnect the hose and the power cable between the submersible pump and the instrument (**Errore. L'origine riferimento non è stata trovata.**).

Disconnect the pump from the bottom and after emptying the tank, clean it with a soft cloth and a non-aggressive and/or corrosive detergent, not pure but always diluted with water. Thoroughly rinse the tank with deionised or demineralised water before refilling.

- **Checking nozzles and discharge pipes**

Although the use of deionised or demineralised water prevents clogging, it is good practice to periodically check that all instrument drains are clear and efficient. These checks can be done visually.

- **Checking the compartment of refrigeration units, heat sinks and fans**

To inspect the compartment of the refrigeration units and its components, it is necessary to interrupt the operating cycle, switch off the instrument using the ON/OFF button located on the side control panel and disconnect the power supply cable from the electrical socket. Then wait the time necessary for the heat sinks and refrigerating units to cool down (at least 30 minutes) before proceeding with the inspection.

Remove the bottom grid panel at the front of the instrument (**Errore. L'origine riferimento non è stata trovata.**) by unscrewing the fixing screws and access the compartment. Check that the compartment of the refrigeration units and the various components are clean, in particular check that the heat sink surface is well cleaned and has no bent metal fins. If cleaning is necessary, take particular care not to bend these fins. It is recommended to use a normal vacuum cleaner, but be careful to keep the suction nozzle at a distance. For the other parts, use a soft cloth and a non-aggressive and/or corrosive cleaning product not in pure form but always diluted with water.

Reposition the front grilled panel (**Errore. L'origine riferimento non è stata trovata.**) in its place and retighten the fixing screws.

## 15. Problems and corrective actions

Like any device, ARGOLAB Climate Chambers may be subject to functional problems.

The table below shows some of the most frequent problems and a 'how to' for the user.

We recommend in any case, in addition to carefully reading the following, to contact your dealer in order to receive adequate support.

<b>PROBLEM</b>	<b>CAUSE / CORRECTION</b>
Acoustic-visual alarm 'NO WATER'	Refill the external H2O supply tank beyond the float
%RH value at full scale (100%)	Check capacitor panel (low front grille) and remove dust. If not solvable, <b>CONTACT SERVICE</b>
°C value at full scale (100°C or incorrect)	Resistor failure. <b>CONTACT SERVICE</b>
Continuous H2O discharge from the 'overflow' pipe	Internal float to be checked; <b>CONTACT SERVICE</b>
Empty printer toner cartridge	<b>CONTACT SUPPORT</b>
Weak' and/or distorted press	Check the correct paper fit

## 16. Warranty

Under normal conditions of use, this instrument is guaranteed for a period of 24 months from the date of purchase.

The guarantee is only valid if the purchased product remains original. It does not apply to any product or parts thereof that have been damaged due to incorrect installation, improper connections, misuse, accident or abnormal operating conditions.

We accept no liability for damage caused by use not in accordance with instructions, lack of maintenance and any unauthorised modifications.

## 17. Disposal of electronic equipment



This equipment is subject to regulations for electronic devices.  
Dispose of in accordance with existing local regulations.

